Appendices A to P

CLOVERDALE RANCHERIA OF POMO INDIANS FEE-TO-TRUST AND RESORT CASINO PROJECT

Final Environmental Impact Statement

Lead Agency
United States Bureau of Indian Affairs
Pacific Region

April 2014

Cooperating Agencies
National Indian Gaming Commission, Cloverdale Rancheria of Pomo Indians, United States Environmental Protection Agency, California Department of Transportation, Sonoma County, and City of Cloverdale

ESA

Appendices A to P

CLOVERDALE RANCHERIA OF POMO INDIANS FEE-TO-TRUST AND RESORT CASINO PROJECT

Final Environmental Impact Statement

Lead Agency
United States Bureau of Indian Affairs
Pacific Region
2800 Cottage Way
Sacramento, CA 95825

April 2014

Cooperating Agencies
National Indian Gaming Commission, Cloverdale Rancheria of Pomo Indians, United States Environmental Protection Agency, California Department of Transportation, Sonoma County, and City of Cloverdale

Prepared by:
ESA
2600 Capitol Avenue
Suite 200
Sacramento, CA 95816
916.564.4500
www.esassoc.com

Los Angeles

Oakland

Olympia

Petaluma

Portland

San Diego

San Francisco

Seattle

Tampa

Woodland Hills

207737

Appendix A
Preliminary Grading Study

ESA

PRELIMINARY GRADING STUDY

For

CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

July 2009

Prepared for:

ESA
8950 Cal Center Drive
Building 3, Suite 300
Sacramento, CA 95826

Prepared by:

Adobe Associates, Inc.
1220 North Dutton Avenue
Santa Rosa, California 95401
Phone: (707) 541-2300

TABLE OF CONTENTS

Preliminary Grading Study

	Page Number
Preliminary Grading	1-2

Exhibits

Preliminary Grading Plan – Alternative A
Preliminary Grading Plan – Alternative B
Preliminary Grading Plan – Alternative C
Preliminary Grading Plan – Alternative D
Preliminary Grading Plan – Alternative E

Preliminary Grading:

Preliminary grading analysis has been conducted on each of the site plan alternatives A-E. Finished grade contours and rough earthwork quantities are shown on exhibits titled, "Preliminary Grading Plan – Alternative (A to E)."

Geotechnical reports were not available at the time this study was prepared. Earthwork quantities calculated for each alternative include volumes for spoil material anticipated from building foundations and underground utility installations.

Factors that may potentially impact grading quantities were excluded from the preliminary grading quantities shown below in Table 1 - Preliminary Earthwork Quantities. Excluded factors include soil types, soil expansion and shrinkage, compaction, unsuitable materials, and site strippings.

Table 1 - Preliminary Earthwork Quantities

	Excavation			**Fill**		
Alternative	Site Exc. (cy)	Spoils (cy)	Subtotal (cy)	Site Fill (cy)	**Net Import (cy)**	**Net Export (cy)**
A	158,000	25,000	183,000	182,000		1,000
B	134,000	20,000	154,000	181,000	27,000	
C	134,000	20,000	154,000	181,000	27,000	
D	135,000	15,000	150,000	184,000	34,000	
E	74,000	22,000	96,000	100,000	4,000	

Alternative A is considered the ultimate developed site. Initial site development may occur using one of the B-D alternatives with development phasing established to reach the ultimate development shown by alternative A.

Building pad elevations for alternative A were used for alternatives B-D to minimize development impact to existing site improvements should a phased development be realized. The result is that alternative A, the ultimate site development, is conceptually designed to be an earthwork balanced site. No import or export of soils materials is necessary outside of the project boundary.

To construct alternative B-D using the ultimate building pad elevations shown in Alternative A, soil material will need to be imported to the site, see table 1. During construction of the south underground garage, excess soil material will need to be exported from the site. The building pad and site grading elevations of each alternative could be independently adjusted to balance if each alternative was considered the ultimate developed condition. Actual site earthwork balance would consider the earthwork needs of other improvements associated with the project including wastewater ponds, wastewater treatment facilities, and domestic water facilities grading during the design phase of the project.

Retaining walls will be required for alternatives A-D. Elevation differences between building pads will be supported by retaining wall systems integrated into the building foundation designs. Parking structures will also require integrated retaining capability.

The use of retaining walls is also planned in the site grading for alternatives A-D. A retaining wall system is included in the preliminary grading design near the south end of the site at the southern limit of the building pads. Retaining wall heights are anticipated to be up to eight feet in height. As an option, terracing could be considered in this area using a series of walls with heights less than eight feet and landscape terraces between them.

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-A_Grading.dwg, Kevin Maas, 1/8/2009 2:04:20 PM

EARTHWORK	
CUT (CY)	FILL (CY)
183,000	182,000

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY GRADING PLAN - ALTERNATIVE A

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-B_Grading.dwg, Kevin Maas, 1/8/2009 2:09:28 PM

EARTHWORK	
CUT (CY)	FILL (CY)
154,000	181,000

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY GRADING PLAN - ALTERNATIVE B

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-C_Grading.dwg, Kevin Maas, 1/8/2009 2:11:12 PM

EARTHWORK	
CUT (CY)	FILL (CY)
154,000	181,000

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY GRADING PLAN - ALTERNATIVE C

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-D_Grading.dwg, Kevin Maas, 1/8/2009 2:13:03 PM

EARTHWORK	
CUT (CY)	FILL (CY)
150,000	184,000

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

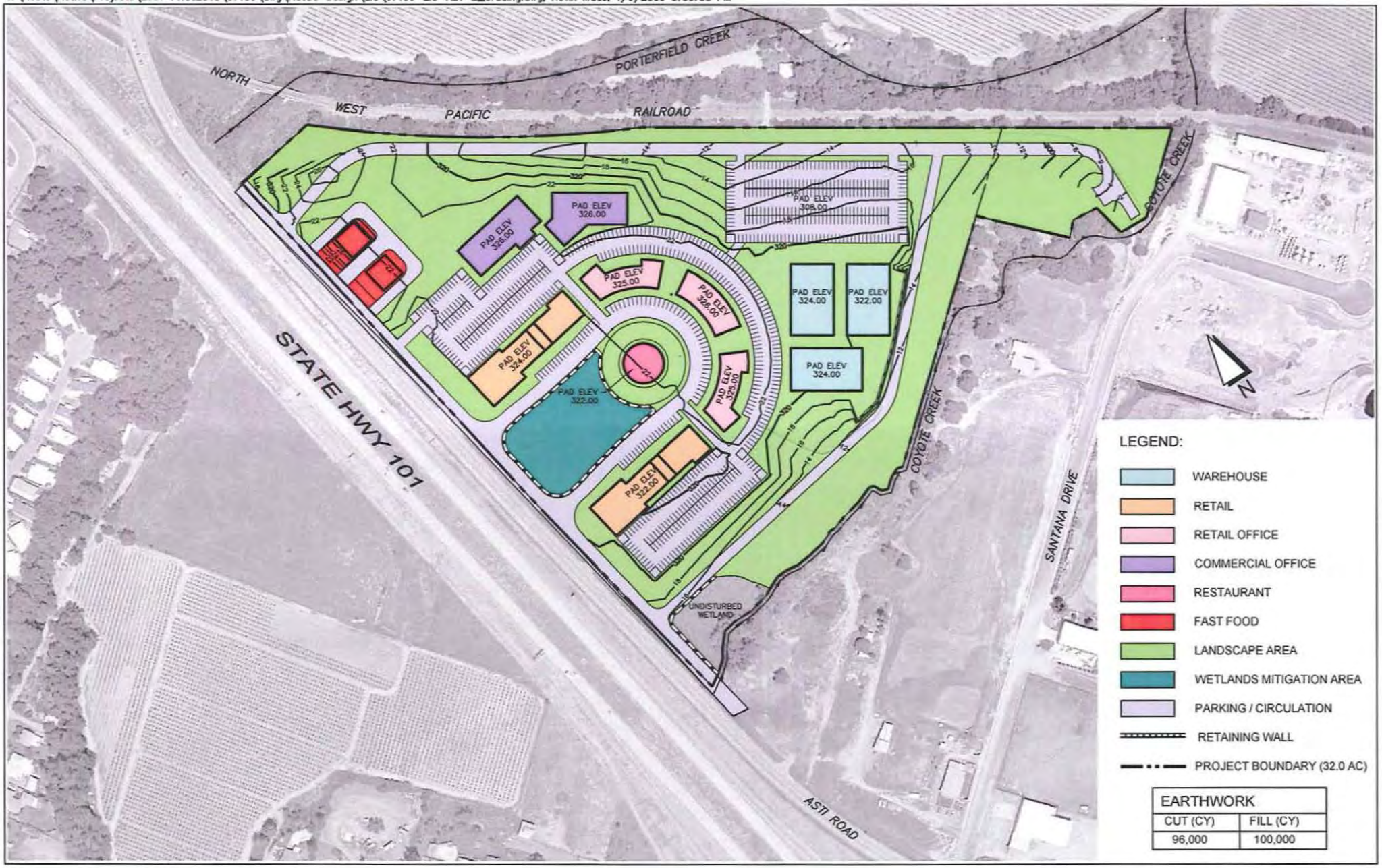
PRELIMINARY GRADING PLAN - ALTERNATIVE D

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-E_Grading.dwg, Kevin Maas, 1/9/2009 3:33:53 PM



EARTHWORK	
CUT (CY)	FILL (CY)
96,000	100,000

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY GRADING PLAN - ALTERNATIVE E

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

Appendix B
Preliminary Drainage Study

ESA

PRELIMINARY DRAINAGE STUDY

For

CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

June 29, 2009

Prepared for:

ESA
8950 Cal Center Drive
Building 3, Suite 300
Sacramento, CA 95826

Prepared by:

Adobe Associates, Inc.
1220 North Dutton Avenue
Santa Rosa, California 95401
Phone: (707) 541-2300

TABLE OF CONTENTS

Preliminary Drainage Study

	Page Number
Existing Terrain and Topography	1
Sensitive Areas	1
Storm Water Run-On	2
Wetlands	3
Drainage System Discharge Outfalls	3-4
Storm Water Runoff	4-5
Storm Water Quality	6

Exhibits

Preliminary Overall Site Plan
Preliminary Drainage Plan – Alternative A
Preliminary Drainage Plan – Alternative B
Preliminary Drainage Plan – Alternative C
Preliminary Drainage Plan – Alternative D
Preliminary Drainage Plan – Alternative E

Preliminary Drainage

Existing Terrain and Topography:
The proposed 69.8-acre project site is a trapezoidal shaped site bounded by the Russian River on the east side, the City of Cloverdale Wastewater Treatment Plant on the north side, Coyote Creek on the southern boundary, and State Highway 101 along the western boundary. Refer to the exhibit herein titled, "Preliminary Overall Site Plan".

Porterfield Creek flows from the northwest corner of the project site to the southeast corner parallel to and along the east side of the railroad tracks which bisects the project.

Surface drainage from the western 32-acre portion of the site flows across a gently sloping existing ground surface from the west to the east to Porterfield Creek, and then to the Russian River. Typical ground slopes range from one and a half percent to three percent. Presently, this area is primarily pasture land with several residential and barn structures.

The eastern 37.8-acre portion of the site is currently used as a vineyard and surface drainage flows from the north to the south. Surface runoff from the northern half of the vineyard flows to Porterfield Creek near the middle of the site. The southern half of the vineyard flows to Porterfield Creek near the southeast corner of the vineyard.

Sensitive Areas:
The Russian River is the receiving water body for drainage in the vicinity of the City of Cloverdale. Considered a sensitive water body, the Russian River is listed on the State 303(d) list of impaired water bodies. Listed impairments include nutrients, pathogens, and sedimentation/siltation.

The Environmental Protection Agency (EPA) Region 9 is the Federal agency responsible for compliance with the Federal Clean Water Act (CWA). Considerations for storm water quality mitigations during construction and post-construction will be required. The proposed construction activities and post-construction improvements require compliance with the CWA regulations through the National Pollutant Discharge Elimination System (NPDES) permits and requirements.

NDPES requirements include the filing of an application for permit coverage and the preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is a document in which pollutants from construction activities and ultimate development uses are identified and specific best management practices (BMPs) are specified to mitigate and eliminate pollutant runoff from the project site. BMPs will consist of a combination of physical improvements (i.e. silt fences, fiber rolls, hydro-seed, etc.) and practices (i.e. water sampling, subcontractor training, BMP inspection and maintenance, etc).

Preliminary wetland delineations have been conducted for the project site and are discussed further in the wetlands section herein.

Storm Water Run-On:
Drainage from offsite areas run on to the project site at several locations along the project's north and west boundaries. Refer to the exhibit titled, "Preliminary Overall Site Plan."

Significant storm water run-on occurs at the north end of the vineyard property from Heron Creek which has a watershed area of over 1,000 acres. Prior to the construction of Highway 101 in the early 1990's, Heron Creek flowed along the west side of the City's wastewater treatment plant (WWTP) and became tributary to Porterfield Creek near the northwest corner of the project. During the construction of Highway 101, Asti Road was re-aligned causing Porterfield Creek to be altered. Drainage problems arose subsequent to highway construction and the Asti Road realignment and have become a subject of litigation between locals and the City, and between the City and Caltrans.

The project is awaiting the outcome of this litigation to determine the improvements to be made by the City, necessary to address Heron Creek drainage problems. The City intends to explore solutions for mitigating the litigated drainage issues. It is presently unknown what impacts the City's ultimate drainage solution may have on the project.

In the absence of information about future mitigation impacts, the project has planned for the existing condition, where surface water from an approximate 1,000 acre watershed enters the vineyard property. To address this existing condition, a surface drainage channel is proposed to be constructed to the east along the north boundary to the east boundary and then to the south to Porterfield Creek, replacing the existing surface ditch through the vineyard. The constructed drainage channel would move storm water around the proposed wastewater treatment facilities and spray fields.

Porterfield Creek is a defined water course originating from offsite areas to the west and skirts the north end of the project. The project site elevations are approximately 25 to 30 feet higher in elevation than the creek bottom of Porterfield Creek. Porterfield Creek appears to have diminished flow capacity from near the middle of the vineyard site to its confluence with the Russian River. The agricultural diversion channel, located on the vineyard property, characteristics give way to a shallow, wider and more natural appearing creek in this section. Large storm events appear to breach the low-lying constructed berm along the creek's east bank and spill into the vineyard. Storm water which breeches the east bank of Porterfield Creek returns to the creek near the southeast corner of the project.

Another source of storm water run-on to the project site is Highway 101 and the area immediately west of the highway. Two existing 30-inch diameter culverts discharge storm water at the west boundary of the project. Evidence of potential wetlands exists near the discharge end of both of these culverts. The tributary area to each of these culverts is approximately 20 acres. Preliminary wetland delineations have been conducted at each location of run-on drainage and are shown on the drainage exhibits for Alternatives A-E herein.

Wetlands:
A wetland mitigation area has been planned on the project site and is located at the east side of Asti Road between the project entrances. Site improvements in the vicinity of both preliminary wetland delineation areas will be designed and constructed to avoid the wetlands areas. Alternatives A through D propose the use of retaining walls to protect proposed fill locations from impacting both wetland areas. Alternative E proposes the use of retaining walls to protect the wetland area between the project entrances on Asti Road and the wetland area located near the southwest corner of the project site.

Drainage System Discharge Outfalls:

Site portion west of railroad tracks:
Presently concentrated storm water drainage on the portion of the site west of the railroad tracks exits the site from four culvert outfall locations. Pre-development sheet flow runoff occurs at the northwest end of the site, at the easterly most portions of the site, and along the southern boundary adjacent to the Coyote Creek.

Existing culvert locations and sizes are proposed to be maintained for the developed site alternatives. Project improvements are proposed to mitigate post-construction storm water runoff to pre-construction run-off rates, reducing potential development impacts to the pre-development (existing) conditions. Improvements proposed include subterranean detention systems and upland drainage release systems.

Two storm drain outfalls exist along the northeast boundary, passing under the railroad track and discharging indirectly to Porterfield Creek. The northern culvert is an 18-inch pipe which discharges upstream to an area showing highly erodible soil conditions. Proposed site improvements would extend the 18-inch culvert through the erodible areas and discharge to the existing drainage course downstream. Energy dissipation would be provided at the discharge end of the culvert.

Slope protection practices such as hydro-seeding, planting, and soil reinforcement mats are proposed during construction to prevent erosion and sediment transport to Porterfield Creek. This would mitigate pollutants from being transported from this area to Porterfield Creek.

The southern culvert crossing the railroad tracks is a 24-inch culvert. Field inspection of this culvert revealed the existence of two water lines within the culvert, which appear to be used as a way to move well water from Porterfield Creek to locations on the west side of the railroad track. These water lines will be removed or relocated during construction of site utilities, to provide full capacity of the drainage culvert.

Proposed building improvements for alternatives A-E require concentrated flows to be directed toward the southern project boundary where existing sheet flow discharges occur. Upland drainage release systems are proposed at a minimum of two locations along the south boundary. Upland drainage release systems consist of a field of large diameter rock placed near the existing grade surface which spreads concentrated flow to a sheet flow condition prior to being discharged over the natural ground surface to Coyote Creek. Upland drainage release systems are an increasingly common and effective way to discharge to creeks and waterways without the construction of pipe outfalls, head walls, and erosion protection within the flow areas of the waterway.

Site portion east of railroad tracks:
Surface water leaves the east portion of the site at two locations. Natural low points exist at both locations where storm water runoff is discharged over the existing ground surface to Porterfield Creek. One existing outfall location, located near the middle of the project site discharging to the east bank of Porterfield Creek, is proposed be left in its natural condition.

A second outfall location, near the southeast corner of the site, is also proposed to be left in its natural condition. This location will be the downstream end of the constructed drainage ditch conveying the flows from Heron Creek.

Storm Water Runoff:
Storm water runoff from the project site is proposed to be limited to the pre-development runoff conditions. Pre-development and post development runoff volumes were analyzed using Pond Pack software by Bentley. Increased runoff from the developed site would be mitigated by several methods including detention facilities and pervious surfaces.

Pervious concrete surfaces are proposed for a considerable portion of the driveway and parking surfaces. Refer to the exhibits titled, “Preliminary Drainage Plan – Alternative (A-E)” for porous surface locations and for pervious and non-pervious surface areas.

Minimizing the amount of impervious surfacing has the benefit of reducing runoff by allowing more opportunity for infiltration and groundwater recharge. Additional benefits to porous concrete surfaces are surface water filtration, storm water storage, reduced storm drainage piping and structures, and reduced heat surface versus asphalt paving surfaces.

Increased storm water runoff from the project site would be mitigated further by detaining runoff during periods of high intensity rain events and metering the discharge to pre-development discharges. A detention system would provide a reservoir to collect the runoff during the periods of high rainfall.

Subterranean detention systems are proposed under the parking areas in alternatives A-E. Surface runoff will be treated using methods described in the section titled “Storm Water Quality” herein, prior to entering the detention system. A subterranean detention system would be constructed using a network of large diameter pipes for temporary storage and an outlet structure which restricts discharges from the detention system to pre-

development flow rates. Stormwater runoff is stored in the detention system when the inflow rate to the storage pipe network exceeds the outflow rate. The temporarily stored water is released as the inflow rate drops below outflow rates and no stored stormwater is retained in the system.

Storm water detention storage design determines the storage volume required to detain the increased runoff from a 10-year storm event, to discharge the runoff at the pre-development runoff rate or less. Storm events greater than 10-year events will be detained to the storage capacities designed for the 10-year event and excess flows will bypass, via culverts, the detention facility and discharge into the upland drainage release system.

Exit flow from the subterranean detention pipe system is to be controlled using a concrete outlet structure located immediately downstream of the detention system. The outlet structure would be constructed using an orifice or weir designed to restrict discharges to the predevelopment 10-year storm peak flow rate.

Subterranean detention system locations and discharge locations are shown on the exhibits titled, "Preliminary Drainage Plan – Alternative (A-E)." Approximate detention storage volumes are shown in Table 1 below and assume that no other means (i.e. porous concrete surfaces) of onsite storm water storage is utilized.

Table 1 – Subterranean Detention System Volume Requirements

Alternative	10-year Storm Volume (cf)	10-year Storm Volume (ac-ft)
A-D	60,100	1.38
E	31,800	0.73

The required storage volume will be detained in storage pipe network beneath the parking lot located west of the parking garage. A 60,100 cubic foot storage area is equivalent to approximately 3,200 lineal feet of 60-inch diameter pipe, which is easily accommodated within the parking lot area.

Upland drainage release systems will be constructed to discharge runoff to the existing creeks and natural drainage courses along the perimeter of the site. Upland drainage release systems can be an environmentally friendly alternative to the culvert outfall structures which have traditionally been constructed within creek banks.

Upland drainage release systems function by allowing runoff collected in a piped system to bubble up to the ground surface through a bed of coarsely graded rock laid in a linear configuration parallel to and outside of a creek bank. Runoff is discharged to the receiving water as sheet flow runoff rather than concentrated flow. Sheet flow runoff possesses less kinetic energy than concentrated runoff and when located near low sloping creek banks and/or well vegetated banks will greatly reduce potential erosion and sediment transport impacts.

Storm Water Quality:
Cloverdale Rancheria site runoff enters Porterfield Creek along the northeast boundary and Coyote Creek along the southern boundary. Both creeks are tributary to the Russian River, the receiving water body, approximately 1/3 of a mile southeast of the project site. Pollutants of concern for the Russian River basin, according to the State of California 303 (d) list, include nutrients, pathogens, and sediment/siltation.

Potential sources for nutrients are agricultural activities. Pathogens are a pollutant associated with urban runoff, while the source of sediment and siltation includes agriculture, construction and land development, and urban runoff. Treatment of runoff is accomplished through a combination of source controls and treatment controls.

Proposed source treatment controls to be used on the project site for storm water quality mitigation include the following:

- Landscaping designs to prevent sediment transport to storm drain systems.
- Design landscaping to vector control requirements - avoid water ponding.
- Use porous concrete surfacing in driveways and parking areas – maximizes pervious surfaces and reduces runoff while filtering pollutant particles from runoff, reduces required stormwater detention volumes, reduces storm drain pipe and structure improvements.
- Treat runoff in landscaping or porous concrete surfaces prior to storing in storm water detention facility.
- Use upland drainage release system to release water to existing creeks – avoids the need to place storm drain outfall piping, headwall structures, and energy dissipation improvements within existing creek banks.
- Discharge roof drainage directly to landscape or porous concrete surfaces – allows treatment prior to entering storm drain system.
- Incorporate Integrated Pest Management (IPM) principles and techniques for design and maintenance.

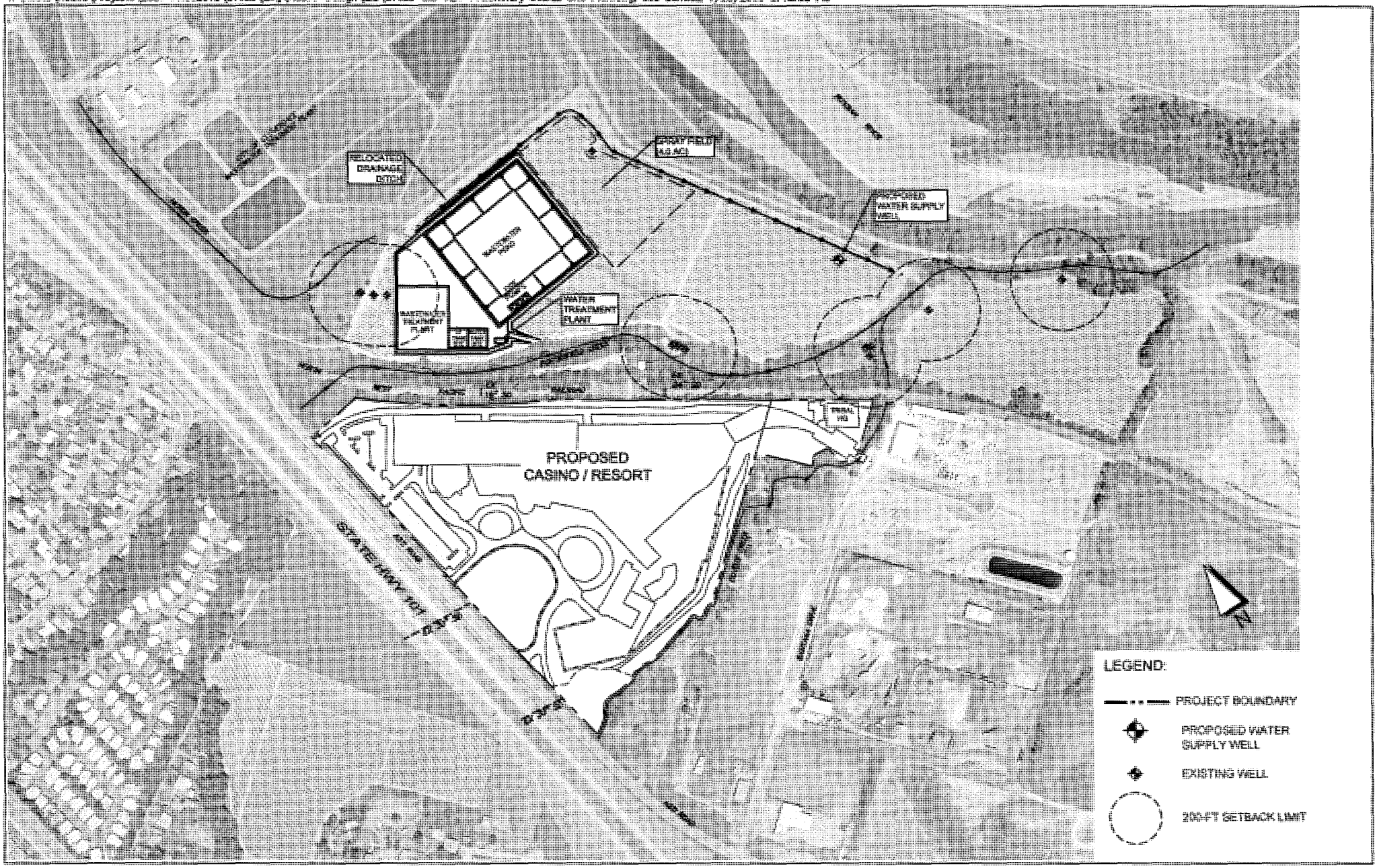
Proposed treatment controls to maintain or improve water quality include the following:

- Use bio-swales to channel and treat surface water
- Proprietary treatment systems maybe used as an alternative to porous concrete surfaces.

Dimensions and sizing for best management practices (BMPs) are determined using Environmental Protection Agency BMP criteria and the Guidelines for Standard Urban Storm Water Mitigation Plan prepared cooperatively by Sonoma County, City of Santa Rosa, and the Russian River Watershed Association.

In addition to the above source and treatment controls, which are post-construction or permanent controls, best management practices (BMPs) will be implemented during the construction phase. These BMPs control the transport of pollutants from the construction site to the natural water ways. An erosion and sediment control plan will be prepared with the construction design drawings and a Storm Water Pollution Prevention Plan (SWPPP) as required by the EPA Region 9 prior to the start of construction. Both documents will describe the devices and practices to control pollutant runoff during and after construction.

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-Preliminary Overall Site Plan.dwg, Joe Correll, 1/20/2009 3:45:58 PM



CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

GRAPHIC SCALE: 1" = 500'

0 250 500 1,000

PRELIMINARY OVERALL SITE PLAN

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-A_Drainage.dwg, Joe Conwell, 1/9/2009 4:32:26 PM

SURFACE AREAS			
PERVIOUS (AC)	% OF TOTAL	NON-PERVIOUS (AC)	% OF TOTAL
15	47	17	53

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

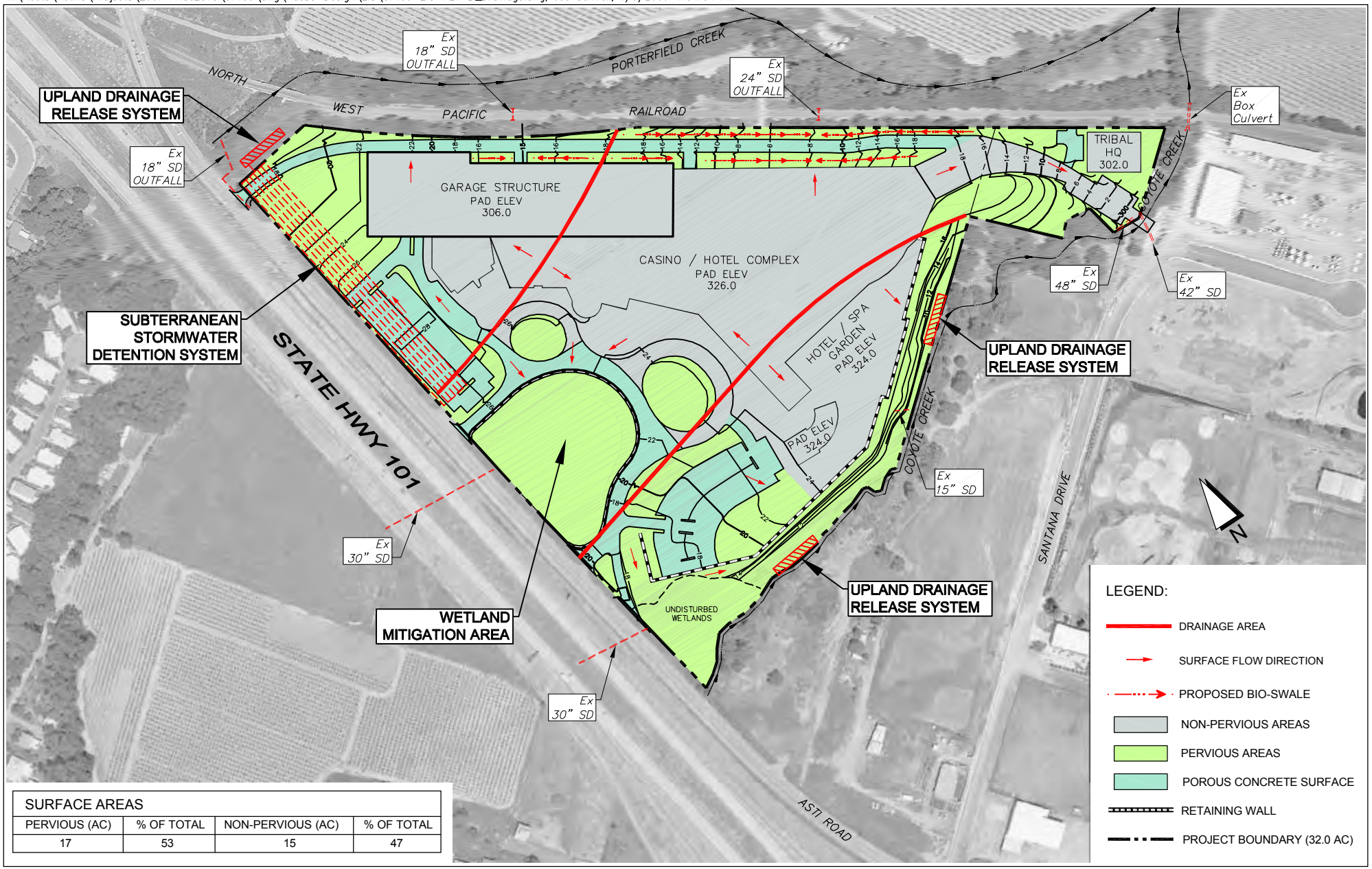
PRELIMINARY DRAINAGE PLAN - ALTERNATIVE A

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-B_Drainage.dwg, Joe Conwell, 1/9/2009 4:34:34 PM



SURFACE AREAS			
PERVIOUS (AC)	% OF TOTAL	NON-PERVIOUS (AC)	% OF TOTAL
17	53	15	47

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY DRAINAGE PLAN - ALTERNATIVE B

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-C_Drainage.dwg, Joe Conwell, 1/9/2009 4:36:16 PM

SURFACE AREAS			
PERVIOUS (AC)	% OF TOTAL	NON-PERVIOUS (AC)	% OF TOTAL
17	53	15	47

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY DRAINAGE PLAN - ALTERNATIVE C

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-D_Drainage.dwg, Joe Conwell, 1/9/2009 4:37:41 PM

SURFACE AREAS			
PERVIOUS (AC)	% OF TOTAL	NON-PERVIOUS (AC)	% OF TOTAL
20	63	12	37

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

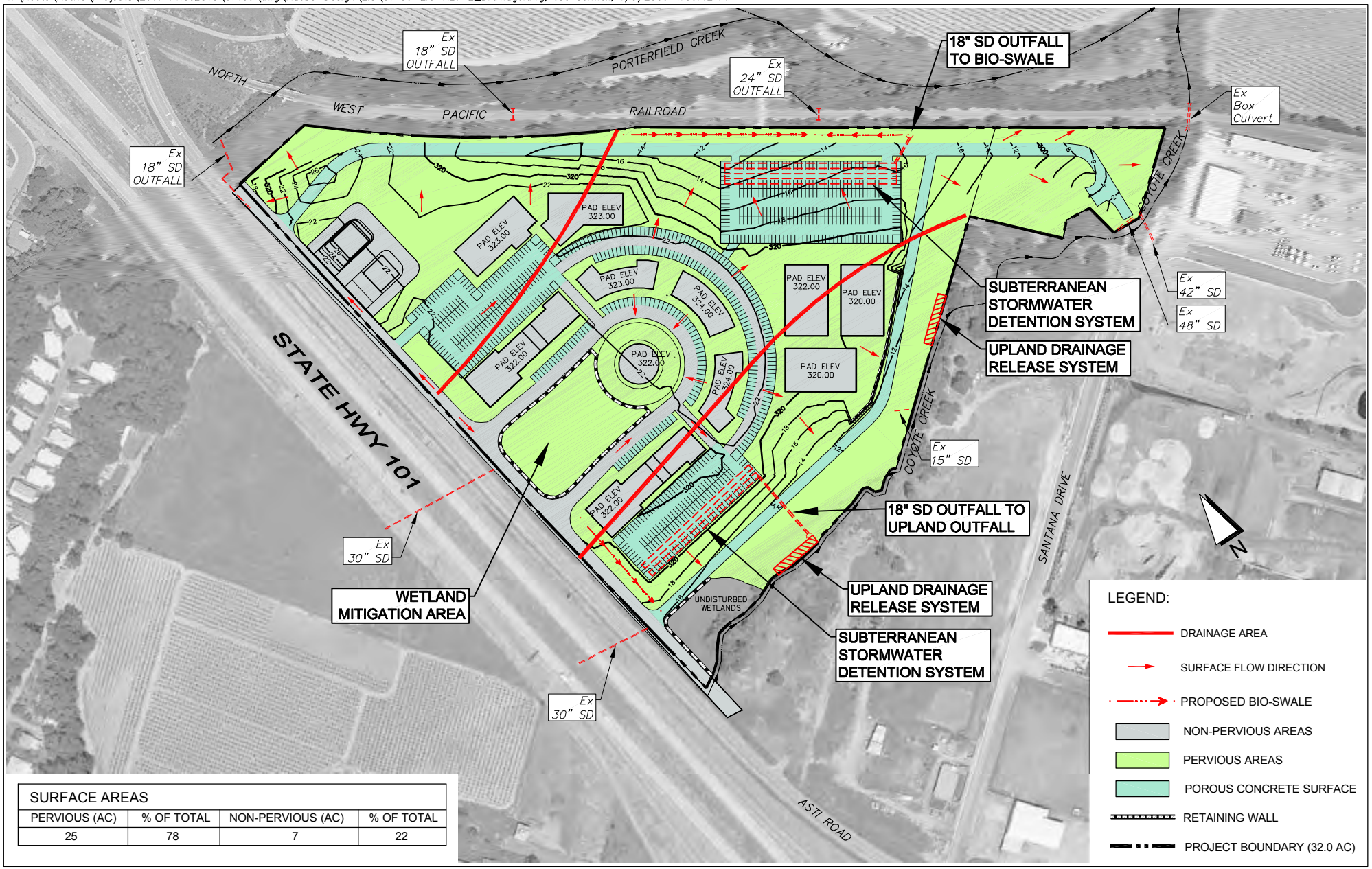
PRELIMINARY DRAINAGE PLAN - ALTERNATIVE D

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-E_Drainage.dwg, Joe Conwell, 1/9/2009 4:39:12 PM



SURFACE AREAS			
PERVIOUS (AC)	% OF TOTAL	NON-PERVIOUS (AC)	% OF TOTAL
25	78	7	22

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY DRAINAGE PLAN - ALTERNATIVE E

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

Appendix C
Air Quality Data

3/5/2009 3:15:15 PM

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\cloverdale alt A.urb924

Project Name: cloverdale alt a

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (lbs/day unmitigated)	43.08	58.57	109.69	0.12	98.81	3.84	100.08	20.64	3.53	21.80	15,461.50
2011 TOTALS (lbs/day unmitigated)	38.83	33.30	86.23	0.11	0.49	1.96	2.45	0.18	1.79	1.97	12,865.33

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	3.56	4.29	12.77	0.00	0.04	0.04	5,016.47

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	293.98	413.57	4,871.44	2.98	492.05	93.52	298,327.80

3/5/2009 3:15:15 PM

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	297.54	417.86	4,884.21	2.98	492.09	93.56	303,344.27

3/5/2009 3:17:35 PM

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\cloverdale alt A.urb924

Project Name: cloverdale alt a

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	0.84	3.38	2.91	0.00	9.69	0.19	9.88	2.02	0.17	2.20	455.66
2011 TOTALS (tons/year unmitigated)	5.05	4.33	11.21	0.01	0.06	0.25	0.32	0.02	0.23	0.26	1,672.49

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.59	0.77	1.47	0.00	0.00	0.00	913.95

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	58.47	88.13	941.56	0.52	89.80	17.06	51,898.21

3/5/2009 3:17:35 PM

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	59.06	88.90	943.03	0.52	89.80	17.06	52,812.16

3/5/2009 3:16:06 PM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\cloverdale alt A.urb924

Project Name: cloverdale alt a

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 1/1/2010-7/30/2010 Active Days: 151	3.09	25.37	15.11	0.00	**98.81**	1.26	**100.08**	**20.64**	1.16	**21.80**	2,575.25
Mass Grading 01/01/2010-08/01/2010	3.09	25.37	15.11	0.00	98.81	1.26	100.08	20.64	1.16	21.80	2,575.25
Mass Grading Dust	0.00	0.00	0.00	0.00	98.80	0.00	98.80	20.63	0.00	20.63	0.00
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Mass Grading On Road Diesel	0.01	0.19	0.04	0.00	0.00	0.01	0.01	0.00	0.01	0.01	24.45
Mass Grading Worker Trips	0.08	0.20	2.60	0.00	0.01	0.01	0.02	0.01	0.01	0.01	303.49
Time Slice 8/2/2010-10/1/2010 Active Days: 45	3.08	25.19	15.06	0.00	98.81	1.26	100.07	20.64	1.15	21.79	2,550.80
Fine Grading 08/02/2010-10/01/2010	3.08	25.19	15.06	0.00	98.81	1.26	100.07	20.64	1.15	21.79	2,550.80
Fine Grading Dust	0.00	0.00	0.00	0.00	98.80	0.00	98.80	20.63	0.00	20.63	0.00
Fine Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.08	0.20	2.60	0.00	0.01	0.01	0.02	0.01	0.01	0.01	303.49

3/5/2009 3:16:06 PM

Time Slice 10/4/2010-11/30/2010 Active Days: 42	3.70	22.29	17.01	0.01	0.05	1.77	1.82	0.02	1.63	1.64	2,602.81
Asphalt 10/02/2010-12/01/2010	3.70	22.29	17.01	0.01	0.05	1.77	1.82	0.02	1.63	1.64	2,602.81
Paving Off-Gas	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.98	18.01	10.28	0.00	0.00	1.57	1.57	0.00	1.44	1.44	1,418.44
Paving On Road Diesel	0.25	3.84	0.88	0.00	0.02	0.19	0.21	0.01	0.17	0.18	501.52
Paving Worker Trips	0.17	0.45	5.85	0.01	0.03	0.01	0.05	0.01	0.01	0.02	682.84
Time Slice 12/1/2010-12/1/2010 Active Days: 1	43.08	**58.57**	109.69	**0.12**	0.54	**3.84**	4.38	0.19	**3.53**	3.72	**15,461.50**
Asphalt 10/02/2010-12/01/2010	3.70	22.29	17.01	0.01	0.05	1.77	1.82	0.02	1.63	1.64	2,602.81
Paving Off-Gas	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.98	18.01	10.28	0.00	0.00	1.57	1.57	0.00	1.44	1.44	1,418.44
Paving On Road Diesel	0.25	3.84	0.88	0.00	0.02	0.19	0.21	0.01	0.17	0.18	501.52
Paving Worker Trips	0.17	0.45	5.85	0.01	0.03	0.01	0.05	0.01	0.01	0.02	682.84
Building 12/01/2010-01/01/2012	6.76	36.20	91.69	0.11	0.49	2.07	2.56	0.17	1.90	2.07	12,743.26
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	1.03	14.20	8.79	0.03	0.11	0.70	0.80	0.04	0.64	0.67	2,759.43
Building Worker Trips	2.08	5.46	71.70	0.08	0.38	0.18	0.56	0.14	0.16	0.30	8,362.63
Coating 12/01/2010-01/01/2012	32.62	0.08	0.99	0.00	0.01	0.00	0.01	0.00	0.00	0.00	115.43
Architectural Coating	32.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.08	0.99	0.00	0.01	0.00	0.01	0.00	0.00	0.00	115.43
Time Slice 12/2/2010-12/31/2010 Active Days: 22	39.38	36.28	92.68	0.11	0.49	2.07	2.56	0.18	1.90	2.07	12,858.69
Building 12/01/2010-01/01/2012	6.76	36.20	91.69	0.11	0.49	2.07	2.56	0.17	1.90	2.07	12,743.26
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	1.03	14.20	8.79	0.03	0.11	0.70	0.80	0.04	0.64	0.67	2,759.43
Building Worker Trips	2.08	5.46	71.70	0.08	0.38	0.18	0.56	0.14	0.16	0.30	8,362.63
Coating 12/01/2010-01/01/2012	32.62	0.08	0.99	0.00	0.01	0.00	0.01	0.00	0.00	0.00	115.43
Architectural Coating	32.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.08	0.99	0.00	0.01	0.00	0.01	0.00	0.00	0.00	115.43

3/5/2009 3:16:07 PM

Time Slice 1/3/2011-12/30/2011 Active Days: 260	38.83	33.30	86.23	0.11	0.49	1.96	2.45	0.18	1.79	1.97	12,865.33
Building 12/01/2010-01/01/2012	6.21	33.23	85.32	0.11	0.49	1.95	2.44	0.17	1.79	1.96	12,749.82
Building Off Road Diesel	3.39	15.67	10.85	0.00	0.00	1.14	1.14	0.00	1.05	1.05	1,621.20
Building Vendor Trips	0.93	12.60	8.28	0.03	0.11	0.63	0.74	0.04	0.58	0.62	2,759.86
Building Worker Trips	1.90	4.96	66.19	0.08	0.38	0.18	0.56	0.14	0.16	0.30	8,368.76
Coating 12/01/2010-01/01/2012	32.62	0.07	0.91	0.00	0.01	0.00	0.01	0.00	0.00	0.00	115.51
Architectural Coating	32.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.07	0.91	0.00	0.01	0.00	0.01	0.00	0.00	0.00	115.51

Phase Assumptions

Phase: Fine Grading 8/2/2010 - 10/1/2010 - Fine Site Grading

Total Acres Disturbed: 19.77

Maximum Daily Acreage Disturbed: 4.94

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2010 - 8/1/2010 - Mass Site Grading

Total Acres Disturbed: 32

Maximum Daily Acreage Disturbed: 4.94

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 6.62

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

3/5/2009 3:16:07 PM

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 10/2/2010 - 12/1/2010 - Paving

Acres to be Paved: 4.94

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 12/1/2010 - 1/1/2012 - Building Construction

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 12/1/2010 - 1/1/2012 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

3/5/2009 3:17:09 PM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Operational Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\cloverdale alt A.urb924

Project Name: cloverdale alt a

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
High turnover (sit-down) rest.	66.81	95.31	1,123.13	0.69	113.39	21.55	68,754.76
Hotel	24.71	31.07	366.09	0.22	36.96	7.03	22,410.88
casino	95.75	136.59	1,608.62	0.99	162.52	30.89	98,528.39
specialty retail	45.00	63.03	742.34	0.45	75.00	14.25	45,468.65
entertainment center	22.56	32.01	376.96	0.23	38.08	7.24	23,089.08
convention center	39.15	55.56	654.30	0.40	66.10	12.56	40,076.04
TOTALS (lbs/day, unmitigated)	293.98	413.57	4,871.44	2.98	492.05	93.52	298,327.80

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
High turnover (sit-down) rest.		41.96	1000 sq ft	52.45	2,200.80	66,024.06

3/5/2009 3:17:09 PM

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Hotel		2.94	rooms	244.00	717.36	21,520.80
casino		39.43	1000 sq ft	80.00	3,154.40	94,632.00
specialty retail		14.63	1000 sq ft	99.50	1,455.69	43,670.55
entertainment center		26.40	1000 sq ft	28.00	739.20	22,176.00
convention center		26.40	1000 sq ft	48.60	1,283.04	38,491.20
					9,550.49	286,514.61

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	44.8	2.0	97.3	0.7
Light Truck < 3750 lbs	18.3	2.7	90.7	6.6
Light Truck 3751-5750 lbs	19.8	1.5	98.0	0.5
Med Truck 5751-8500 lbs	7.2	1.4	97.2	1.4
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	66.7	33.3
Lite-Heavy Truck 10,001-14,000 lbs	1.0	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.2	8.3	16.7	75.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.2	0.0	0.0	100.0
Other Bus	0.1	0.0	100.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.5	66.7	33.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

3/5/2009 3:17:09 PM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	30.0	30.0	30.0	30.0	30.0	30.0
Trip speeds (mph)	60.0	60.0	60.0	60.0	60.0	60.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
High turnover (sit-down) rest.				5.0	2.5	92.5
Hotel				5.0	2.5	92.5
casino				2.0	1.0	97.0
specialty retail				2.0	1.0	97.0
entertainment center				2.0	1.0	97.0
convention center				2.0	1.0	97.0

Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Home-based work average speed changed from 35 mph to 60 mph

Home-based work rural trip length changed from 16.8 miles to 30 miles

Home-based shop average speed changed from 35 mph to 60 mph

Home-based shop rural trip length changed from 7.1 miles to 30 miles

Home-based other average speed changed from 35 mph to 60 mph

Home-based other rural trip length changed from 7.9 miles to 30 miles

3/5/2009 3:17:09 PM

Operational Changes to Defaults

Commercial-based commute average speed changed from 35 mph to 60 mph

Commercial-based commute rural trip length changed from 14.7 miles to 30 miles

Commercial-based non-work average speed changed from 35 mph to 60 mph

Commercial-based non-work rural trip length changed from 6.6 miles to 30 miles

Commercial-based customer average speed changed from 35 mph to 60 mph

Commercial-based customer rural trip length changed from 6.6 miles to 30 miles

3/5/2009 3:19:52 PM

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt B.urb924

Project Name: Cloverdale alt B

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (lbs/day unmitigated)	27.95	30.24	66.43	0.08	67.04	1.79	68.54	14.01	1.64	15.39	9,238.33
2011 TOTALS (lbs/day unmitigated)	27.49	27.62	61.95	0.08	0.33	1.69	2.03	0.12	1.55	1.67	9,242.83

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	2.52	2.82	10.01	0.00	0.03	0.03	3,274.36

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	205.64	289.74	3,412.96	2.09	344.75	65.51	209,010.76

3/5/2009 3:19:52 PM

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	208.16	292.56	3,422.97	2.09	344.78	65.54	212,285.12

3/5/2009 3:21:49 PM

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt B.urb924

Project Name: Cloverdale alt B

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	0.71	3.63	2.65	0.00	6.57	0.20	6.77	1.37	0.18	1.56	453.93
2011 TOTALS (tons/year unmitigated)	3.57	3.59	8.05	0.01	0.04	0.22	0.26	0.02	0.20	0.22	1,201.57

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.41	0.51	1.12	0.00	0.00	0.00	596.27

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	40.93	61.76	659.66	0.36	62.92	11.96	36,360.29

3/5/2009 3:21:49 PM

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	41.34	62.27	660.78	0.36	62.92	11.96	36,956.56

3/5/2009 3:20:25 PM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt B.urb924

Project Name: Cloverdale alt B

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 1/1/2010-7/30/2010 Active Days: 151	3.41	**30.24**	16.22	0.01	**67.04**	1.50	**68.54**	**14.01**	1.38	**15.39**	3,210.92
Mass Grading 01/01/2010-08/01/2010	3.41	30.24	16.22	0.01	67.04	1.50	68.54	14.01	1.38	15.39	3,210.92
Mass Grading Dust	0.00	0.00	0.00	0.00	67.00	0.00	67.00	13.99	0.00	13.99	0.00
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Mass Grading On Road Diesel	0.33	5.05	1.16	0.01	0.03	0.25	0.27	0.01	0.23	0.24	660.11
Mass Grading Worker Trips	0.08	0.20	2.60	0.00	0.01	0.01	0.02	0.01	0.01	0.01	303.49
Time Slice 8/2/2010-10/1/2010 Active Days: 45	3.08	25.19	15.06	0.00	67.01	1.26	68.27	14.00	1.15	15.15	2,550.80
Fine Grading 08/02/2010-10/01/2010	3.08	25.19	15.06	0.00	67.01	1.26	68.27	14.00	1.15	15.15	2,550.80
Fine Grading Dust	0.00	0.00	0.00	0.00	67.00	0.00	67.00	13.99	0.00	13.99	0.00
Fine Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.08	0.20	2.60	0.00	0.01	0.01	0.02	0.01	0.01	0.01	303.49

3/5/2009 3:20:25 PM

Time Slice 10/4/2010-12/1/2010 Active Days: 43	3.52	21.06	16.73	0.01	0.04	1.71	1.75	0.02	1.57	1.59	2,441.39
Asphalt 10/02/2010-12/01/2010	3.52	21.06	16.73	0.01	0.04	1.71	1.75	0.02	1.57	1.59	2,441.39
Paving Off-Gas	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.98	18.01	10.28	0.00	0.00	1.57	1.57	0.00	1.44	1.44	1,418.44
Paving On Road Diesel	0.17	2.60	0.60	0.00	0.01	0.13	0.14	0.00	0.12	0.12	340.10
Paving Worker Trips	0.17	0.45	5.85	0.01	0.03	0.01	0.05	0.01	0.01	0.02	682.84
Time Slice 12/2/2010-12/31/2010 Active Days: 22	**27.95**	29.92	**66.43**	**0.08**	0.33	**1.79**	2.12	0.12	**1.64**	1.76	9,238.33
Building 12/02/2010-01/01/2012	5.76	29.87	65.76	0.07	0.33	1.79	2.12	0.12	1.64	1.76	9,159.81
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	0.70	9.63	5.96	0.02	0.07	0.47	0.54	0.02	0.43	0.46	1,870.36
Building Worker Trips	1.41	3.70	48.60	0.06	0.26	0.12	0.38	0.09	0.11	0.20	5,668.25
Coating 12/02/2010-01/01/2012	22.19	0.05	0.67	0.00	0.00	0.00	0.01	0.00	0.00	0.00	78.52
Architectural Coating	22.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.05	0.67	0.00	0.00	0.00	0.01	0.00	0.00	0.00	78.52
Time Slice 1/3/2011-12/30/2011 Active Days: 260	27.49	27.62	61.95	**0.08**	0.33	1.69	2.03	0.12	1.55	1.67	**9,242.83**
Building 12/02/2010-01/01/2012	5.30	27.57	61.33	0.07	0.33	1.69	2.02	0.12	1.55	1.67	9,164.26
Building Off Road Diesel	3.39	15.67	10.85	0.00	0.00	1.14	1.14	0.00	1.05	1.05	1,621.20
Building Vendor Trips	0.63	8.54	5.61	0.02	0.07	0.43	0.50	0.02	0.40	0.42	1,870.65
Building Worker Trips	1.29	3.36	44.87	0.06	0.26	0.12	0.38	0.09	0.11	0.20	5,672.41
Coating 12/02/2010-01/01/2012	22.19	0.05	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	78.57
Architectural Coating	22.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.05	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	78.57

Phase Assumptions

Phase: Fine Grading 8/2/2010 - 10/1/2010 - Fine Site Grading

Total Acres Disturbed: 13.41

Maximum Daily Acreage Disturbed: 3.35

Fugitive Dust Level of Detail: Default

3/5/2009 3:20:25 PM

20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2010 - 8/1/2010 - mass site grading
Total Acres Disturbed: 13.41
Maximum Daily Acreage Disturbed: 3.35
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 178.81
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 10/2/2010 - 12/1/2010 - Paving
Acres to be Paved: 3.35
Off-Road Equipment:
4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day
1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 12/2/2010 - 1/1/2012 - Building Construction
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3/5/2009 3:20:25 PM

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 12/2/2010 - 1/1/2012 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

3/5/2009 3:21:25 PM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Operational Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt B.urb924

Project Name: Cloverdale alt B

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
High turnover (sit-down) rest.	48.15	68.69	809.42	0.50	81.72	15.53	49,550.61
Hotel	14.28	17.95	211.55	0.13	21.36	4.06	12,950.55
casino	80.82	115.30	1,357.88	0.83	137.19	26.07	83,170.28
specialty retail	39.75	55.68	655.80	0.40	66.26	12.59	40,167.78
entertainment center	22.64	32.12	378.31	0.23	38.22	7.26	23,171.54
TOTALS (lbs/day, unmitigated)	205.64	289.74	3,412.96	2.09	344.75	65.51	209,010.76

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
High turnover (sit-down) rest.		41.96	1000 sq ft	37.80	1,586.09	47,582.64
Hotel		2.94	rooms	141.00	414.54	12,436.20

3/5/2009 3:21:25 PM

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
casino		39.43	1000 sq ft	67.53	2,662.71	79,881.24
specialty retail		14.63	1000 sq ft	87.90	1,285.98	38,579.31
entertainment center		26.40	1000 sq ft	28.10	741.84	22,255.20
					6,691.16	200,734.59

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	44.8	2.0	97.3	0.7
Light Truck < 3750 lbs	18.3	2.7	90.7	6.6
Light Truck 3751-5750 lbs	19.8	1.5	98.0	0.5
Med Truck 5751-8500 lbs	7.2	1.4	97.2	1.4
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	66.7	33.3
Lite-Heavy Truck 10,001-14,000 lbs	1.0	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.2	8.3	16.7	75.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.2	0.0	0.0	100.0
Other Bus	0.1	0.0	100.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.5	66.7	33.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

3/5/2009 3:21:25 PM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	30.0	30.0	30.0	30.0	30.0	30.0
Trip speeds (mph)	60.0	60.0	60.0	60.0	60.0	60.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
High turnover (sit-down) rest.				5.0	2.5	92.5
Hotel				5.0	2.5	92.5
casino				2.0	1.0	97.0
specialty retail				2.0	1.0	97.0
entertainment center				2.0	1.0	97.0

Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Home-based work average speed changed from 35 mph to 60 mph

Home-based work rural trip length changed from 16.8 miles to 30 miles

Home-based shop average speed changed from 35 mph to 60 mph

Home-based shop rural trip length changed from 7.1 miles to 30 miles

Home-based other average speed changed from 35 mph to 60 mph

Home-based other rural trip length changed from 7.9 miles to 30 miles

Commercial-based commute average speed changed from 35 mph to 60 mph

3/5/2009 3:21:25 PM

Operational Changes to Defaults

Commercial-based commute rural trip length changed from 14.7 miles to 30 miles

Commercial-based non-work average speed changed from 35 mph to 60 mph

Commercial-based non-work rural trip length changed from 6.6 miles to 30 miles

Commercial-based customer average speed changed from 35 mph to 60 mph

Commercial-based customer rural trip length changed from 6.6 miles to 30 miles

3/5/2009 3:26:37 PM

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt C.urb924

Project Name: Cloverdale alt C

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (lbs/day unmitigated)	26.32	30.24	62.72	0.07	62.64	1.75	64.14	13.09	1.60	14.47	8,726.22
2011 TOTALS (lbs/day unmitigated)	25.87	26.81	58.51	0.07	0.31	1.65	1.97	0.11	1.52	1.63	8,730.42

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	2.39	2.69	9.90	0.00	0.03	0.03	3,117.40

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	189.46	266.77	3,142.38	1.93	317.41	60.32	192,438.08

3/5/2009 3:26:37 PM

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	191.85	269.46	3,152.28	1.93	317.44	60.35	195,555.48

3/6/2009 10:43:33 AM

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt C.urb924

Project Name: Cloverdale alt C

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	0.69	3.62	2.61	0.00	6.14	0.20	6.34	1.28	0.18	1.47	447.82
2011 TOTALS (tons/year unmitigated)	3.36	3.49	7.61	0.01	0.04	0.22	0.26	0.01	0.20	0.21	1,134.96

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.38	0.48	1.10	0.00	0.00	0.00	567.62

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	37.70	56.86	607.36	0.33	57.93	11.01	33,477.26

3/6/2009 10:43:33 AM

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	38.08	57.34	608.46	0.33	57.93	11.01	34,044.88

3/5/2009 3:27:06 PM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt C.urb924

Project Name: Cloverdale alt C

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 1/1/2010-7/30/2010 Active Days: 151	3.41	**30.24**	16.22	0.01	**62.64**	1.50	**64.14**	**13.09**	1.38	**14.47**	3,210.92
Mass Grading 01/01/2010-08/01/2010	3.41	30.24	16.22	0.01	62.64	1.50	64.14	13.09	1.38	14.47	3,210.92
Mass Grading Dust	0.00	0.00	0.00	0.00	62.60	0.00	62.60	13.07	0.00	13.07	0.00
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Mass Grading On Road Diesel	0.33	5.05	1.16	0.01	0.03	0.25	0.27	0.01	0.23	0.24	660.11
Mass Grading Worker Trips	0.08	0.20	2.60	0.00	0.01	0.01	0.02	0.01	0.01	0.01	303.49
Time Slice 8/2/2010-10/1/2010 Active Days: 45	3.08	25.19	15.06	0.00	62.61	1.26	63.87	13.08	1.15	14.23	2,550.80
Fine Grading 08/02/2010-10/01/2010	3.08	25.19	15.06	0.00	62.61	1.26	63.87	13.08	1.15	14.23	2,550.80
Fine Grading Dust	0.00	0.00	0.00	0.00	62.60	0.00	62.60	13.07	0.00	13.07	0.00
Fine Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.08	0.20	2.60	0.00	0.01	0.01	0.02	0.01	0.01	0.01	303.49

3/5/2009 3:27:06 PM

Time Slice 10/4/2010-12/1/2010 Active Days: 43	3.50	20.89	16.69	0.01	0.04	1.70	1.74	0.02	1.56	1.58	2,419.05
Asphalt 10/02/2010-12/01/2010	3.50	20.89	16.69	0.01	0.04	1.70	1.74	0.02	1.56	1.58	2,419.05
Paving Off-Gas	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.98	18.01	10.28	0.00	0.00	1.57	1.57	0.00	1.44	1.44	1,418.44
Paving On Road Diesel	0.16	2.43	0.56	0.00	0.01	0.12	0.13	0.00	0.11	0.11	317.77
Paving Worker Trips	0.17	0.45	5.85	0.01	0.03	0.01	0.05	0.01	0.01	0.02	682.84
Time Slice 12/2/2010-12/31/2010 Active Days: 22	26.32	29.02	62.72	**0.07**	0.31	**1.75**	2.06	0.11	**1.60**	1.72	8,726.22
Building 12/02/2010-01/01/2012	5.62	28.97	62.09	0.07	0.31	1.75	2.06	0.11	1.60	1.71	8,652.98
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	0.65	8.98	5.56	0.02	0.07	0.44	0.51	0.02	0.40	0.43	1,744.61
Building Worker Trips	1.32	3.45	45.33	0.05	0.24	0.12	0.36	0.09	0.10	0.19	5,287.17
Coating 12/02/2010-01/01/2012	20.70	0.05	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.24
Architectural Coating	20.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.05	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.24
Time Slice 1/3/2011-12/30/2011 Active Days: 260	25.87	26.81	58.51	**0.07**	0.31	1.65	1.97	0.11	1.52	1.63	**8,730.42**
Building 12/02/2010-01/01/2012	5.17	26.77	57.93	0.07	0.31	1.65	1.96	0.11	1.52	1.63	8,657.13
Building Off Road Diesel	3.39	15.67	10.85	0.00	0.00	1.14	1.14	0.00	1.05	1.05	1,621.20
Building Vendor Trips	0.59	7.96	5.24	0.02	0.07	0.40	0.47	0.02	0.37	0.39	1,744.89
Building Worker Trips	1.20	3.14	41.85	0.05	0.24	0.12	0.36	0.09	0.10	0.19	5,291.05
Coating 12/02/2010-01/01/2012	20.69	0.04	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.29
Architectural Coating	20.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.29

Phase Assumptions

Phase: Fine Grading 8/2/2010 - 10/1/2010 - Fine Site Grading

Total Acres Disturbed: 12.51

Maximum Daily Acreage Disturbed: 3.13

Fugitive Dust Level of Detail: Default

3/5/2009 3:27:06 PM

20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2010 - 8/1/2010 - Mass Site Grading
Total Acres Disturbed: 12.51
Maximum Daily Acreage Disturbed: 3.13
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 178.81
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 10/2/2010 - 12/1/2010 - Paving
Acres to be Paved: 3.13
Off-Road Equipment:
4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day
1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 12/2/2010 - 1/1/2012 - Building Construction
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3/5/2009 3:27:06 PM

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 12/2/2010 - 1/1/2012 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

3/5/2009 3:27:31 PM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Operational Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt C.urb924

Project Name: Cloverdale alt C

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
High turnover (sit-down) rest.	48.15	68.69	809.42	0.50	81.72	15.53	49,550.61
Hotel	14.28	17.95	211.55	0.13	21.36	4.06	12,950.55
casino	69.07	98.53	1,160.42	0.71	117.24	22.28	71,075.92
specialty retail	35.32	49.48	582.68	0.36	58.87	11.19	35,689.46
entertainment center	22.64	32.12	378.31	0.23	38.22	7.26	23,171.54
TOTALS (lbs/day, unmitigated)	189.46	266.77	3,142.38	1.93	317.41	60.32	192,438.08

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
High turnover (sit-down) rest.		41.96	1000 sq ft	37.80	1,586.09	47,582.64
Hotel		2.94	rooms	141.00	414.54	12,436.20

3/5/2009 3:27:31 PM

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
casino		39.43	1000 sq ft	57.71	2,275.51	68,265.16
specialty retail		14.63	1000 sq ft	78.10	1,142.60	34,278.09
entertainment center		26.40	1000 sq ft	28.10	741.84	22,255.20
					6,160.58	184,817.29

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	44.8	2.0	97.3	0.7
Light Truck < 3750 lbs	18.3	2.7	90.7	6.6
Light Truck 3751-5750 lbs	19.8	1.5	98.0	0.5
Med Truck 5751-8500 lbs	7.2	1.4	97.2	1.4
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	66.7	33.3
Lite-Heavy Truck 10,001-14,000 lbs	1.0	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.2	8.3	16.7	75.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.2	0.0	0.0	100.0
Other Bus	0.1	0.0	100.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.5	66.7	33.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

3/5/2009 3:27:31 PM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	30.0	30.0	30.0	30.0	30.0	30.0
Trip speeds (mph)	60.0	60.0	60.0	60.0	60.0	60.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
High turnover (sit-down) rest.				5.0	2.5	92.5
Hotel				5.0	2.5	92.5
casino				2.0	1.0	97.0
specialty retail				2.0	1.0	97.0
entertainment center				2.0	1.0	97.0

Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Home-based work average speed changed from 35 mph to 60 mph

Home-based work rural trip length changed from 16.8 miles to 30 miles

Home-based shop average speed changed from 35 mph to 60 mph

Home-based shop rural trip length changed from 7.1 miles to 30 miles

Home-based other average speed changed from 35 mph to 60 mph

Home-based other rural trip length changed from 7.9 miles to 30 miles

Commercial-based commute average speed changed from 35 mph to 60 mph

3/5/2009 3:27:31 PM

Operational Changes to Defaults

Commercial-based commute rural trip length changed from 14.7 miles to 30 miles

Commercial-based non-work average speed changed from 35 mph to 60 mph

Commercial-based non-work rural trip length changed from 6.6 miles to 30 miles

Commercial-based customer average speed changed from 35 mph to 60 mph

Commercial-based customer rural trip length changed from 6.6 miles to 30 miles

2/8/2012 10:41:09 AM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\mxm\Desktop\Current Project Shortcuts\Cloverdale\Feb 2012\Cloverdale alt D.urb924

Project Name: Cloverdale alt D

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

2/8/2012 10:41:09 AM

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	0.96	3.23	2.53	0.00	2.53	0.19	2.72	0.53	0.17	0.70	428.35
2011 TOTALS (tons/year unmitigated)	1.53	1.22	2.20	0.00	0.01	0.08	0.09	0.00	0.07	0.08	327.70

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.23	0.24	0.61	0.00	0.00	0.00	272.04

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	30.02	45.54	486.39	0.27	46.38	8.82	26,809.59

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	30.25	45.78	487.00	0.27	46.38	8.82	27,081.63

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010	0.96	3.23	2.53	0.00	2.53	0.19	2.72	0.53	0.17	0.70	428.35

2/8/2012 10:41:09 AM

Mass Grading 01/01/2010-06/01/2010	0.20	1.84	0.92	0.00	2.10	0.09	2.19	0.44	0.08	0.52	200.50
Mass Grading Dust	0.00	0.00	0.00	0.00	2.10	0.00	2.10	0.44	0.00	0.44	0.00
Mass Grading Off Road Diesel	0.16	1.35	0.67	0.00	0.00	0.07	0.07	0.00	0.06	0.06	121.36
Mass Grading On Road Diesel	0.03	0.48	0.11	0.00	0.00	0.02	0.03	0.00	0.02	0.02	62.76
Mass Grading Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.39
Fine Grading 06/02/2010-07/01/2010	0.03	0.28	0.17	0.00	0.43	0.01	0.44	0.09	0.01	0.10	28.06
Fine Grading Dust	0.00	0.00	0.00	0.00	0.43	0.00	0.43	0.09	0.00	0.09	0.00
Fine Grading Off Road Diesel	0.03	0.27	0.14	0.00	0.00	0.01	0.01	0.00	0.01	0.01	24.72
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.34
Asphalt 07/02/2010-10/02/2010	0.10	0.57	0.48	0.00	0.00	0.05	0.05	0.00	0.04	0.04	66.34
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.09	0.53	0.30	0.00	0.00	0.05	0.05	0.00	0.04	0.04	41.98
Paving On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.33
Paving Worker Trips	0.00	0.01	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.03
Building 11/02/2010-06/01/2011	0.11	0.53	0.94	0.00	0.00	0.03	0.04	0.00	0.03	0.03	131.60
Building Off Road Diesel	0.08	0.36	0.25	0.00	0.00	0.03	0.03	0.00	0.02	0.02	35.67
Building Vendor Trips	0.01	0.12	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	23.80
Building Worker Trips	0.02	0.05	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.13
Coating 11/02/2010-06/01/2011	0.52	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.85
Architectural Coating	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.85

2/8/2012 10:41:09 AM

2011	1.53	1.22	2.20	0.00	0.01	0.08	0.09	0.00	0.07	0.08	327.70
Building 11/02/2010-06/01/2011	0.24	1.22	2.16	0.00	0.01	0.08	0.09	0.00	0.07	0.08	323.15
Building Off Road Diesel	0.18	0.85	0.59	0.00	0.00	0.06	0.06	0.00	0.06	0.06	87.54
Building Vendor Trips	0.02	0.27	0.18	0.00	0.00	0.01	0.02	0.00	0.01	0.01	58.43
Building Worker Trips	0.04	0.11	1.40	0.00	0.01	0.00	0.01	0.00	0.00	0.01	177.18
Coating 11/02/2010-06/01/2011	1.29	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.55
Architectural Coating	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.55

Phase Assumptions

Phase: Fine Grading 6/2/2010 - 7/1/2010 - Fine Site Grading

Total Acres Disturbed: 7.76

Maximum Daily Acreage Disturbed: 1.94

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2010 - 6/1/2010 - Mass Site Grading

Total Acres Disturbed: 7.76

Maximum Daily Acreage Disturbed: 1.94

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 314.81

2/8/2012 10:41:09 AM

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/2/2010 - 10/2/2010 - Paving

Acres to be Paved: 1.94

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 11/2/2010 - 6/1/2011 - Building Construction

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 11/2/2010 - 6/1/2011 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

2/8/2012 10:41:09 AM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.02	0.23	0.19	0.00	0.00	0.00	271.28
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.03	0.01	0.42	0.00	0.00	0.00	0.76
Consumer Products	0.00						
Architectural Coatings	0.18						
TOTALS (tons/year, unmitigated)	0.23	0.24	0.61	0.00	0.00	0.00	272.04

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
High turnover (sit-down) rest.	9.63	14.64	156.43	0.09	14.91	2.83	8,620.06
casino	13.81	21.00	224.26	0.12	21.39	4.07	12,362.46
specialty retail	6.58	9.90	105.70	0.06	10.08	1.92	5,827.07
TOTALS (tons/year, unmitigated)	30.02	45.54	486.39	0.27	46.38	8.82	26,809.59

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

2/8/2012 10:41:09 AM

Analysis Year: 2010 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
High turnover (sit-down) rest.		41.96	1000 sq ft	37.80	1,586.09	47,582.64
casino		39.43	1000 sq ft	57.70	2,275.11	68,253.33
specialty retail		14.63	1000 sq ft	73.30	1,072.38	32,171.37
					4,933.58	148,007.34

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	44.8	2.0	97.3	0.7
Light Truck < 3750 lbs	18.3	2.7	90.7	6.6
Light Truck 3751-5750 lbs	19.8	1.5	98.0	0.5
Med Truck 5751-8500 lbs	7.2	1.4	97.2	1.4
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	66.7	33.3
Lite-Heavy Truck 10,001-14,000 lbs	1.0	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.2	8.3	16.7	75.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.2	0.0	0.0	100.0
Other Bus	0.1	0.0	100.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.5	66.7	33.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

2/8/2012 10:41:09 AM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	30.0	30.0	30.0	30.0	30.0	30.0
Trip speeds (mph)	60.0	60.0	60.0	60.0	60.0	60.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
High turnover (sit-down) rest.				5.0	2.5	92.5
casino				2.0	1.0	97.0
specialty retail				2.0	1.0	97.0

3/5/2009 3:43:23 PM

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt E.urb924

Project Name: cloverdale alt E

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (lbs/day unmitigated)	60.67	74.04	108.60	0.17	83.62	3.92	84.93	17.47	3.60	18.67	19,209.76
2011 TOTALS (lbs/day unmitigated)	59.87	66.76	101.31	0.17	0.73	3.64	4.37	0.26	3.34	3.60	19,216.64

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	3.04	2.53	11.29	0.00	0.03	0.03	2,907.69

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	256.96	362.96	4,284.36	2.63	431.61	82.06	261,852.36

3/5/2009 3:43:23 PM

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	260.00	365.49	4,295.65	2.63	431.64	82.09	264,760.05

3/5/2009 3:44:44 PM

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt E.urb924

Project Name: cloverdale alt E

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	1.65	4.00	3.93	0.00	5.45	0.23	5.68	1.14	0.21	1.35	674.48
2011 TOTALS (tons/year unmitigated)	3.23	3.61	5.47	0.01	0.04	0.20	0.24	0.01	0.18	0.19	1,037.70

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.49	0.45	1.20	0.00	0.00	0.00	529.10

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	51.20	77.36	827.73	0.46	78.77	14.98	45,554.29

3/5/2009 3:44:44 PM

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	51.69	77.81	828.93	0.46	78.77	14.98	46,083.39

3/5/2009 3:44:06 PM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Operational Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt E.urb924

Project Name: cloverdale alt E

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
High turnover (sit-down) rest.	14.67	21.01	247.56	0.15	24.99	4.75	15,154.90
Fast food rest. w/ drive thru	56.96	81.97	965.91	0.59	97.52	18.54	59,130.35
Free-standing discount store	61.90	88.43	1,041.39	0.64	105.21	20.00	63,785.45
General office building	49.54	68.69	814.03	0.50	81.60	15.52	49,565.46
Industrial park	33.58	45.29	537.43	0.33	53.79	10.23	32,685.85
specialty retail	40.31	57.57	678.04	0.42	68.50	13.02	41,530.35
TOTALS (lbs/day, unmitigated)	256.96	362.96	4,284.36	2.63	431.61	82.06	261,852.36

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
High turnover (sit-down) rest.		69.30	1000 sq ft	7.00	485.10	14,553.00

3/5/2009 3:44:07 PM

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Fast food rest. w/ drive thru		270.39	1000 sq ft	7.00	1,892.73	56,781.90
Free-standing discount store		45.38	1000 sq ft	45.00	2,042.10	61,263.00
General office building		12.67	1000 sq ft	125.00	1,583.75	47,512.50
Industrial park		6.96	1000 sq ft	150.00	1,044.00	31,320.00
specialty retail		44.32	1000 sq ft	30.00	1,329.60	39,888.00
					8,377.28	251,318.40

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	44.8	2.0	97.3	0.7
Light Truck < 3750 lbs	18.3	2.7	90.7	6.6
Light Truck 3751-5750 lbs	19.8	1.5	98.0	0.5
Med Truck 5751-8500 lbs	7.2	1.4	97.2	1.4
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	66.7	33.3
Lite-Heavy Truck 10,001-14,000 lbs	1.0	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.2	8.3	16.7	75.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.2	0.0	0.0	100.0
Other Bus	0.1	0.0	100.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.5	66.7	33.3	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

3/5/2009 3:44:07 PM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	30.0	30.0	30.0	30.0	30.0	30.0
Trip speeds (mph)	60.0	60.0	60.0	60.0	60.0	60.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
High turnover (sit-down) rest.				5.0	2.5	92.5
Fast food rest. w/ drive thru				5.0	2.5	92.5
Free-standing discount store				2.0	1.0	97.0
General office building				35.0	17.5	47.5
Industrial park				41.5	20.8	37.8
specialty retail				2.0	1.0	97.0

Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Home-based work average speed changed from 35 mph to 60 mph

Home-based work rural trip length changed from 16.8 miles to 30 miles

Home-based shop average speed changed from 35 mph to 60 mph

Home-based shop rural trip length changed from 7.1 miles to 30 miles

Home-based other average speed changed from 35 mph to 60 mph

Home-based other rural trip length changed from 7.9 miles to 30 miles

3/5/2009 3:44:07 PM

Operational Changes to Defaults

Commercial-based commute average speed changed from 35 mph to 60 mph

Commercial-based commute rural trip length changed from 14.7 miles to 30 miles

Commercial-based non-work average speed changed from 35 mph to 60 mph

Commercial-based non-work rural trip length changed from 6.6 miles to 30 miles

Commercial-based customer average speed changed from 35 mph to 60 mph

Commercial-based customer rural trip length changed from 6.6 miles to 30 miles

3/5/2009 3:43:47 PM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt E.urb924

Project Name: cloverdale alt E

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 1/1/2010-6/1/2010 Active Days: 108	3.15	26.23	15.30	0.00	**83.62**	1.31	**84.93**	**17.47**	1.20	**18.67**	2,687.54
Mass Grading 01/01/2010-06/01/2010	3.15	26.23	15.30	0.00	83.62	1.31	84.93	17.47	1.20	18.67	2,687.54
Mass Grading Dust	0.00	0.00	0.00	0.00	83.60	0.00	83.60	17.46	0.00	17.46	0.00
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Mass Grading On Road Diesel	0.07	1.05	0.24	0.00	0.01	0.05	0.06	0.00	0.05	0.05	136.73
Mass Grading Worker Trips	0.08	0.20	2.60	0.00	0.01	0.01	0.02	0.01	0.01	0.01	303.49
Time Slice 6/2/2010-7/1/2010 Active Days: 22	3.08	25.19	15.06	0.00	83.61	1.26	84.87	17.46	1.15	18.62	2,550.80
Fine Grading 06/02/2010-07/01/2010	3.08	25.19	15.06	0.00	83.61	1.26	84.87	17.46	1.15	18.62	2,550.80
Fine Grading Dust	0.00	0.00	0.00	0.00	83.60	0.00	83.60	17.46	0.00	17.46	0.00
Fine Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.08	0.20	2.60	0.00	0.01	0.01	0.02	0.01	0.01	0.01	303.49

3/5/2009 3:43:47 PM

Time Slice 7/2/2010-10/1/2010 Active Days: 66	3.46	20.62	16.63	0.01	0.04	1.69	1.73	0.01	1.55	1.57	2,384.20
Asphalt 07/02/2010-10/02/2010	3.46	20.62	16.63	0.01	0.04	1.69	1.73	0.01	1.55	1.57	2,384.20
Paving Off-Gas	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.98	18.01	10.28	0.00	0.00	1.57	1.57	0.00	1.44	1.44	1,418.44
Paving On Road Diesel	0.14	2.17	0.50	0.00	0.01	0.11	0.12	0.00	0.10	0.10	282.91
Paving Worker Trips	0.17	0.45	5.85	0.01	0.03	0.01	0.05	0.01	0.01	0.02	682.84
Time Slice 11/2/2010-12/31/2010 Active Days: 44	**60.67**	**74.04**	**108.60**	**0.17**	0.73	**3.92**	4.65	0.26	**3.60**	3.86	19,209.76
Building 11/02/2010-06/01/2011	9.32	73.92	107.04	0.17	0.72	3.92	4.64	0.25	3.60	3.85	19,028.07
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	3.68	52.17	27.41	0.09	0.36	2.55	2.91	0.12	2.35	2.47	9,426.39
Building Worker Trips	1.99	5.21	68.43	0.08	0.36	0.17	0.54	0.13	0.15	0.28	7,980.48
Coating 11/02/2010-06/01/2011	51.34	0.12	1.56	0.00	0.01	0.00	0.01	0.00	0.00	0.01	181.69
Architectural Coating	51.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.05	0.12	1.56	0.00	0.01	0.00	0.01	0.00	0.00	0.01	181.69
Time Slice 1/3/2011-6/1/2011 Active Days: 108	59.87	66.76	101.31	**0.17**	0.73	3.64	4.37	0.26	3.34	3.60	**19,216.64**
Building 11/02/2010-06/01/2011	8.53	66.65	99.87	0.17	0.72	3.64	4.36	0.25	3.34	3.59	19,034.81
Building Off Road Diesel	3.39	15.67	10.85	0.00	0.00	1.14	1.14	0.00	1.05	1.05	1,621.20
Building Vendor Trips	3.33	46.25	25.86	0.09	0.36	2.33	2.68	0.12	2.14	2.26	9,427.28
Building Worker Trips	1.81	4.73	63.17	0.08	0.36	0.17	0.54	0.13	0.15	0.28	7,986.33
Coating 11/02/2010-06/01/2011	51.34	0.11	1.44	0.00	0.01	0.00	0.01	0.00	0.00	0.01	181.83
Architectural Coating	51.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.04	0.11	1.44	0.00	0.01	0.00	0.01	0.00	0.00	0.01	181.83

Phase Assumptions

Phase: Fine Grading 6/2/2010 - 7/1/2010 - Fine Site Grading

Total Acres Disturbed: 16.72

Maximum Daily Acreage Disturbed: 4.18

Fugitive Dust Level of Detail: Default

3/5/2009 3:43:47 PM

20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2010 - 6/1/2010 - Mass Site Grading
Total Acres Disturbed: 16.72
Maximum Daily Acreage Disturbed: 4.18
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 37.04
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/2/2010 - 10/2/2010 - Paving
Acres to be Paved: 4.18
Off-Road Equipment:
4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day
1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 11/2/2010 - 6/1/2011 - Building Construction
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3/5/2009 3:43:47 PM

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 11/2/2010 - 6/1/2011 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

1/27/2009 11:19:58 AM

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name:

Project Name: cloverdale wastewater

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	0.30	1.85	1.85	0.00	0.65	0.11	0.76	0.14	0.10	0.24	239.18

1/27/2009 11:20:17 AM

Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name:

Project Name: cloverdale wastewater

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2

1/27/2009 11:20:17 AM

2010	0.30	1.85	1.85	0.00	0.65	0.11	0.76	0.14	0.10	0.24	239.18
Mass Grading 01/01/2010-03/01/2010	0.06	0.53	0.29	0.00	0.42	0.03	0.45	0.09	0.02	0.11	49.33
Mass Grading Dust	0.00	0.00	0.00	0.00	0.42	0.00	0.42	0.09	0.00	0.09	0.00
Mass Grading Off Road Diesel	0.06	0.52	0.26	0.00	0.00	0.03	0.03	0.00	0.02	0.02	47.19
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.14
Trenching 01/01/2010-02/01/2010	0.02	0.20	0.10	0.00	0.00	0.01	0.01	0.00	0.01	0.01	19.98
Trenching Off Road Diesel	0.02	0.19	0.09	0.00	0.00	0.01	0.01	0.00	0.01	0.01	18.86
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.12
Fine Grading 03/02/2010-04/01/2010	0.04	0.29	0.16	0.00	0.23	0.01	0.24	0.05	0.01	0.06	27.02
Fine Grading Dust	0.00	0.00	0.00	0.00	0.23	0.00	0.23	0.05	0.00	0.05	0.00
Fine Grading Off Road Diesel	0.03	0.29	0.14	0.00	0.00	0.01	0.01	0.00	0.01	0.01	25.84
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17
Asphalt 04/02/2010-05/02/2010	0.03	0.18	0.13	0.00	0.00	0.01	0.01	0.00	0.01	0.01	16.33
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.03	0.17	0.10	0.00	0.00	0.01	0.01	0.00	0.01	0.01	13.36
Paving On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84
Paving Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.14
Building 04/02/2010-07/02/2010	0.15	0.66	1.17	0.00	0.00	0.04	0.05	0.00	0.04	0.04	126.52
Building Off Road Diesel	0.12	0.55	0.37	0.00	0.00	0.04	0.04	0.00	0.04	0.04	53.50
Building Vendor Trips	0.01	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.49
Building Worker Trips	0.02	0.04	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	58.53

Phase Assumptions

Phase: Fine Grading 3/2/2010 - 4/1/2010 - Fine Site Grading

Total Acres Disturbed: 7

Maximum Daily Acreage Disturbed: 1

1/27/2009 11:20:17 AM

Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2010 - 3/1/2010 - Mass Site Grading
Total Acres Disturbed: 7
Maximum Daily Acreage Disturbed: 1
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 1/1/2010 - 2/1/2010 - Trenching
Off-Road Equipment:
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 4/2/2010 - 5/2/2010 - Paving
Acres to be Paved: 1.4
Off-Road Equipment:
4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1/27/2009 11:20:17 AM

Phase: Building Construction 4/2/2010 - 7/2/2010 - Building Construction

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Cloverdale (ESA Project #207737)

				MCAPCD		NSCAPCD		BAAQMD	
		Trip Length	Trip miles	% miles in MCAPCD	Miles in MCAPCD	% miles in NSCAPCD	Miles in NSCAPCD	% miles in BAAQMD	Miles in BAAQMD
Trips North	7	30	210	0.84	176.4	0.16	33.6	0	0
Trips South	90	30	2700	0	0	0.64	1728	0.36	972
Other Trips	3	30	90	0	0	1	90	0	0
Total Trips	100		3000		176.4		1851.6		972
% of total URBEMIS emissions					**6%**		**62%**		**32%**

Check totals

3000

100%

Cloverdale Operational Emissions Split Into 3 Air Districts
62% = Northern Sonoma 32% = BAAQMD 6% = Mendocino County

		Alt A			Alt B			Alt C			Alt D			Alt E		
		62%	32%	6%	62%	32%	6%	62%	32%	6%	62%	32%	6%	62%	32%	6%
ROG	lbs/day	182	94	18	127	66	12	117	61	11	153	79	15	159	82	15
	tons/yr	37	19	4	25	13	2	23	12	2	31	16	3	32	16	3
NOx	lbs/day	256	132	25	180	93	17	165	85	16	219	113	21	225	116	22
	tons/yr	55	28	5	38	20	4	35	18	3	47	24	5	48	25	5
CO	lbs/day	3020	1559	292	2116	1092	205	1948	1005	189	2579	1331	250	2656	1371	257
	tons/yr	585	302	57	409	211	40	377	194	36	498	257	48	513	265	50
PM10	lbs/day	305	157	30	214	110	21	197	101	19	260	134	25	268	138	26
	tons/yr	56	29	5	39	20	4	36	19	3	48	25	5	49	25	5
PM2.5	lbs/day	58	30	6	41	21	4	37	19	4	50	26	5	51	26	5
	tons/yr	11	5	1	7	4	1	7	4	1	9	5	1	9	5	1
CO2	lbs/day	184963	95465	17900	129587	66884	12541	119312	61580	11546	157921	81508	15283	162348	83793	15711
	tons/yr	32743	16900	3169	22543	11635	2182	20756	10713	2009	27473	1457	273	2824	1457	273

Urbemios Output lbs/day

	ROG	NOx	CO	PM10	PM2.5	CO2
Alt A	293.98	413.57	4871	492.05	93.52	298328
Alt B	205.64	289.74	3413	344.75	65.51	209011
Alt C	189.46	266.77	3142	317	60	192438
Alt D	247	353.1	4160	420.1	79.85	254711
Alt E	256.96	362.96	4284	431.61	82.06	261852

Urbemis Output tons/year

	ROG	NOx	CO	PM10	PM2.5	CO2
Alt A	59	88.9	943	89.8	17.08	52812
Alt B	40.93	61.76	659.66	62.92	11.96	36360
Alt C	37.7	56.86	607.36	57.93	11	33477
Alt D	49.45	75.26	804	76.66	14.58	44311
Alt E	51.2	77.36	827.73	78.77	14.98	4554.3

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Cloverdale Northern Sonoma County
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 4 (D) VS= .0 CM/S
MIXH= 1000. M AMB= 1.7 PPM
SIGTH= 30. DEGREES TEMP= 28.0 DEGREE (C)

II. LINK VARIABLES

```
    LINK      *  LINK COORDINATES (M)   *            EF     H     W
  DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
A. Link A       *  1500  1200  1500     0 *  AG   1800   6.6     .0  22.2
```

III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

```
          *                        * PRED
          *    COORDINATES (M)    *  BRG  * CONC
  RECEPTOR  *    X      Y      Z    * (DEG) * (PPM)
------------*-----------------------*-------*-------
1. Recpt 1  *   1560    600    1.8 *  207. *   1.9
```

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Cloverdale Northern Sonoma County
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 4 (D) VS= .0 CM/S
MIXH= 1000. M AMB= 1.7 PPM
SIGTH= 30. DEGREES TEMP= 28.0 DEGREE (C)

II. LINK VARIABLES

```
    LINK      *  LINK COORDINATES (M)   *            EF     H     W
  DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
A. Link A       *  1500  1200  1500     0 *  AG   1970   6.6     .0  22.2
```

III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

```
          *                        * PRED
          *    COORDINATES (M)    *  BRG  * CONC
  RECEPTOR  *    X      Y      Z    * (DEG) * (PPM)
------------*-----------------------*-------*-------
1. Recpt 1  *   1560    600    1.8 *  207. *   1.9
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   1

           JOB: Cloverdale Northern Sonoma County
           RUN: Hour 1          (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

       U=   1.0 M/S            Z0= 100. CM           ALT=     0. (M)
     BRG= WORST CASE           VD=   .0 CM/S
    CLAS=     4 (D)            VS=   .0 CM/S
    MIXH= 1000. M              AMB=  1.7 PPM
   SIGTH=   30. DEGREES       TEMP= 28.0 DEGREE (C)


 II.  LINK VARIABLES

    LINK      *  LINK COORDINATES (M)   *             EF     H     W
  DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
A. Link A       *  1500  1200  1500     0 *  AG   2788   6.6     .0  22.2


III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

          *                        * PRED
          *    COORDINATES (M)    *  BRG  * CONC
  RECEPTOR  *    X      Y      Z    * (DEG) * (PPM)
------------*-----------------------*-------*-------
1. Recpt 1  *   1560    600    1.8 *  225. *   2.0
```

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Cloverdale Northern Sonoma County
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 4 (D) VS= .0 CM/S
MIXH= 1000. M AMB= 1.7 PPM
SIGTH= 30. DEGREES TEMP= 28.0 DEGREE (C)

II. LINK VARIABLES

```
    LINK      *  LINK COORDINATES (M)   *            EF     H     W
  DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
A. Link A       *  1500  1200  1500     0 *  AG   2588   6.6     .0  22.2
```

III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

```
          *                        * PRED
          *    COORDINATES (M)    *  BRG  * CONC
  RECEPTOR  *    X      Y      Z    * (DEG) * (PPM)
------------*-----------------------*-------*-------
1. Recpt 1  *   1560    600    1.8 *  225. *   2.0
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
              JUNE 1989 VERSION
              PAGE   1

           JOB: Cloverdale Northern Sonoma County
           RUN: Hour 1          (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=   1.0 M/S            Z0= 100. CM           ALT=     0. (M)
      BRG= WORST CASE           VD=   .0 CM/S
     CLAS=     4 (D)            VS=   .0 CM/S
     MIXH= 1000. M              AMB=  1.7 PPM
    SIGTH=   30. DEGREES       TEMP= 28.0 DEGREE (C)


 II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *            EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
A. Link A       *  1500  1200  1500     0 *  AG   2554   6.6     .0  22.2


III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

          *                        * PRED
          *    COORDINATES (M)    *  BRG  * CONC
  RECEPTOR  *    X      Y      Z    * (DEG) * (PPM)
------------*-----------------------*-------*-------
1. Recpt 1  *   1560    600    1.8 *  224. *   1.9
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   1

           JOB: Cloverdale Northern Sonoma County
           RUN: Hour 1          (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

       U=   1.0 M/S            Z0= 100. CM           ALT=     0. (M)
     BRG= WORST CASE           VD=   .0 CM/S
    CLAS=     4 (D)            VS=   .0 CM/S
    MIXH= 1000. M              AMB=  1.7 PPM
   SIGTH=   30. DEGREES       TEMP= 28.0 DEGREE (C)


 II.  LINK VARIABLES

    LINK      *  LINK COORDINATES (M)   *             EF     H     W
  DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
A. Link A       *  1500  1200  1500     0 *  AG   2468   6.6     .0  22.2


III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

          *                          * PRED
          *    COORDINATES (M)    *  BRG  * CONC
  RECEPTOR  *    X      Y      Z    * (DEG) * (PPM)
------------*-----------------------*-------*-------
1. Recpt 1  *   1560    600    1.8 *  222. *   1.9
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   1

           JOB: Cloverdale Northern Sonoma County
           RUN: Hour 1          (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=   1.0 M/S            Z0= 100. CM           ALT=     0. (M)
      BRG= WORST CASE           VD=   .0 CM/S
     CLAS=     4 (D)            VS=   .0 CM/S
     MIXH= 1000. M              AMB=  1.7 PPM
    SIGTH=   30. DEGREES       TEMP= 28.0 DEGREE (C)


 II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *             EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
A. Link A       *  1500  1200  1500     0 *  AG   2272   6.6     .0  22.2


III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

          *                        * PRED
          *    COORDINATES (M)    *  BRG  * CONC
  RECEPTOR  *    X      Y      Z    * (DEG) * (PPM)
------------*-----------------------*-------*-------
1. Recpt 1  *   1560    600    1.8 *  221. *   1.9
```

Greenhouse Gas (GHG) Emissions Calculations ALT A

Project Name: cloverdale
ESA Proj. Number: 207737

Greenhouse Gas (GHG) Emissions from Area Sources and Vehicles

	Annual Emissions		
	pounds (lbs.)	Tons	Metric Tons
URBEMIS2007 Area Emissions	1,827,900	914	829
URBEMIS2007 Vehicle Emissions	103,796,000	51,898	47,081
Total Emissions (area sources + vehicles)	**105,623,900**	**52,812**	**47,910**

Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use: 11,766,259 kWh (kilowatt hours)/year
11,766 mWh (megawatt hours)/year

		Annual		CO2	Annual
Indirect GHG gases	Emission Factor lb/mWh	Project Electricity mWh	GHGs metric tons	Equivalent Factor	CO2 Equivalent Emissions (metric tons)
Carbon Dioxide (CO2)	804.54	11,766	4,294	1	4294
Nitrous Oxide (N2O)	0.0037	11,766	0.0	296	6
Methane (CH4)	0.0067	11,766	0.0	23	1
		Total Indirect GHG Emissions from Project Electricity Use=			**4301**

Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

Area Sources	**829**
Vehicles	**47,081**
Electrical Use	**4301**
Total=	**52,211**

Notes and References:

Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Regiustry Report Protocol 2006

Pg. 32 (CCARRP) gives Equations

Pg. 35 (CCARRP) gives CO2 output emission rate (lbs/mWh)
804.54 (lbs/mWh)

Pg. 85 (CCARRP) gives CO2 equivalency factors

Pg. 87 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

lbs/metric ton = 2204.62

Percentage of 25,000 208.8%
Percentage of 174 Million 0.030%

	Tons from URBEMIS	Metric Tons
Construction	1578	1432

Greenhouse Gas (GHG) Emissions Calculations ALT B

Project Name: cloverdale
ESA Proj. Number: 207737

Greenhouse Gas (GHG) Emissions from Area Sources and Vehicles

	Annual Emissions		
	pounds (lbs.)	Tons	Metric Tons
URBEMIS2007 Area Emissions	1,192,000	596	541
URBEMIS2007 Vehicle Emissions	72,720,000	36,360	32,985
Total Emissions (area sources + vehicles)	**73,912,000**	**36,956**	**33,526**

Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use: 8,814,561 kWh (kilowatt hours)/year
8,815 mWh (megawatt hours)/year

		Annual		CO2	Annual
Indirect GHG gases	Emission Factor lb/mWh	Project Electricity mWh	GHGs metric tons	Equivalent Factor	CO2 Equivalent Emissions (metric tons)
Carbon Dioxide (CO2)	804.54	8,815	3,217	1	3217
Nitrous Oxide (N2O)	0.0037	8,815	0.0	296	4
Methane (CH4)	0.0067	8,815	0.0	23	1
		Total Indirect GHG Emissions from Project Electricity Use=			**3222**

Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

Area Sources	**541**
Vehicles	**32,985**
Electrical Use	**3222**
Total=	**36,748**

Notes and References:

Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Regiustry Report Protocol 2006

Pg. 32 (CCARRP) gives Equations

Pg. 35 (CCARRP) gives CO2 output emission rate (lbs/mWh)
804.54 (lbs/mWh)

Pg. 85 (CCARRP) gives CO2 equivalency factors

Pg. 87 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

lbs/metric ton = 2204.62

Percentage of 25,000 147.0%
Percentage of 174 Million 0.021%

	Tons from URBEMIS	Metric Tons
Construction	1202	1090

Greenhouse Gas (GHG) Emissions Calculations ALT C

Project Name: cloverdale
ESA Proj. Number: 207737

Greenhouse Gas (GHG) Emissions from Area Sources and Vehicles

	Annual Emissions		
	pounds (lbs.)	Tons	Metric Tons
URBEMIS2007 Area Emissions	1,135,240	568	515
URBEMIS2007 Vehicle Emissions	66,954,000	33,477	30,370
Total Emissions (area sources + vehicles)	**68,089,240**	**34,045**	**30,885**

Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use: 8,325,941 kWh (kilowatt hours)/year
8,326 mWh (megawatt hours)/year

		Annual		CO2	Annual
Indirect GHG gases	Emission Factor lb/mWh	Project Electricity mWh	GHGs metric tons	Equivalent Factor	CO2 Equivalent Emissions (metric tons)
Carbon Dioxide (CO2)	804.54	8,326	3,038	1	3038
Nitrous Oxide (N2O)	0.0037	8,326	0.0	296	4
Methane (CH4)	0.0067	8,326	0.0	23	1
		Total Indirect GHG Emissions from Project Electricity Use=			**3043**

Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

Area Sources	**515**
Vehicles	**30,370**
Electrical Use	**3043**
Total=	**33,928**

Notes and References:

Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Regiustry Report Protocol 2006

Pg. 32 (CCARRP) gives Equations

Pg. 35 (CCARRP) gives CO2 output emission rate (lbs/mWh)
804.54 (lbs/mWh)

Pg. 85 (CCARRP) gives CO2 equivalency factors

Pg. 87 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

lbs/metric ton = 2204.62

Percentage of 25,000 135.7%
Percentage of 174 Million 0.019%

	Tons from URBEMIS	Metric Tons
Construction	1135	1030

Greenhouse Gas (GHG) Emissions Calculations ALT D

Project Name: cloverdale
ESA Proj. Number: 207737

Greenhouse Gas (GHG) Emissions from Area Sources and Vehicles

	Annual Emissions		
	pounds (lbs.)	Tons	Metric Tons
URBEMIS2007 Area Emissions	544,000	272	247
URBEMIS2007 Vehicle Emissions	53,619,180	26,810	24,321
Total Emissions (area sources + vehicles)	**54,163,180**	**27,082**	**24,568**

Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use: 5,094,287 kWh (kilowatt hours)/year
5,094 mWh (megawatt hours)/year

Indirect GHG gases	Emission Factor lb/mWh	Annual Project Electricity mWh	Annual GHGs metric tons	CO2 Equivalent Factor	Annual CO2 Equivalent Emissions (metric tons)
Carbon Dioxide (CO2)	804.54	5,094	1,859	1	1859
Nitrous Oxide (N2O)	0.0037	5,094	0.0	296	3
Methane (CH4)	0.0067	5,094	0.0	23	0
		Total Indirect GHG Emissions from Project Electricity Use=			**1862**

Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

Area Sources	**247**
Vehicles	**24,321**
Electrical Use	**1862**
Total=	**26,430**

Notes and References:

Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Regiustry Report Protocol 2006

Pg. 32 (CCARRP) gives Equations

Pg. 35 (CCARRP) gives CO2 output emission rate (lbs/mWh)
804.54 (lbs/mWh)

Pg. 85 (CCARRP) gives CO2 equivalency factors

Pg. 87 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

lbs/metric ton = 2204.62

Percentage of 25,000 105.7%
Percentage of 174 Million 0.015%

	Tons from URBEMIS	Metric Tons
Construction	424.39	385

Greenhouse Gas (GHG) Emissions Calculations ALT E

Project Name: cloverdale
ESA Proj. Number: 207737

Greenhouse Gas (GHG) Emissions from Area Sources and Vehicles

	Annual Emissions		
	pounds (lbs.)	Tons	Metric Tons
URBEMIS2007 Area Emissions	1,058,000	529	480
URBEMIS2007 Vehicle Emissions	91,108,000	45,554	41,326
Total Emissions (area sources + vehicles)	**92,166,000**	**46,083**	**41,806**

Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use: 5,341,600 kWh (kilowatt hours)/year
5,342 mWh (megawatt hours)/year

Indirect GHG gases	Emission Factor lb/mWh	Annual Project Electricity mWh	Annual GHGs metric tons	CO2 Equivalent Factor	Annual CO2 Equivalent Emissions (metric tons)
Carbon Dioxide (CO2)	804.54	5,342	1,949	1	1949
Nitrous Oxide (N2O)	0.0037	5,342	0.0	296	3
Methane (CH4)	0.0067	5,342	0.0	23	0
		Total Indirect GHG Emissions from Project Electricity Use=			**1952**

Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

Area Sources	**480**
Vehicles	**41,326**
Electrical Use	**1952**
Total=	**43,758**

Notes and References:

Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Regiustry Report Protocol 2006

Pg. 32 (CCARRP) gives Equations

Pg. 35 (CCARRP) gives CO2 output emission rate (lbs/mWh)
804.54 (lbs/mWh)

Pg. 85 (CCARRP) gives CO2 equivalency factors

Pg. 87 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

lbs/metric ton = 2204.62

Percentage of 25,000 175.0%
Percentage of 174 Million 0.025%

	Tons from URBEMIS	Metric Tons
Construction	1038	942

Greenhouse Gas (GHG) Emissions Calculations

Project Name: Cloverdale WWTP
ESA Proj. Number: 207737

Greenhouse Gas (GHG) Emissions from Area Sources and Vehicles

	Annual Emissions		
	pounds (lbs.)	Tons	Metric Tons
URBEMIS2007 Area Emissions	0	0	0
URBEMIS2007 Vehicle Emissions	0	0	0
Total Emissions (area sources + vehicles)	**0**	**0**	**0**

Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use: 1,275,000 kWh (kilowatt hours)/year
1,275 mWh (megawatt hours)/year

Indirect GHG gases	Emission Factor lb/mWh	Annual Project Electricity mWh	Annual GHGs metric tons	CO2 Equivalent Factor	Annual CO2 Equivalent Emissions (metric to
Carbon Dioxide (CO2)	804.54	1,275	465	1	465
Nitrous Oxide (N2O)	0.0037	1,275	0.0	296	1
Methane (CH4)	0.0067	1,275	0.0	23	0
			Total Indirect GHG Emissions from Project Electricity Use=		**466**

Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

Area Sources	**0**
Vehicles	**0**
Electrical Use	**466**
Total=	**466**

Notes and References:
Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Regiustry Report Protocol 2006

Pg. 32 (CCARRP) gives Equations

Pg. 35 (CCARRP) gives CO2 output emission rate (lbs/mWh)
804.54 (lbs/mWh)

Pg. 85 (CCARRP) gives CO2 equivalency factors

Pg. 87 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

lbs/metric ton = 2204.62

Percentage of 25,000 1.9%
Percentage of 174 Milli 0.0003%

	Tons from URBEMIS	Metric Tons
Construction	239.18	217

Appendix D
Biological Assessment

ESA

CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT

Biological Assessment

Prepared for
U.S. Department of Interior
United States Bureau of Indian Affairs
Pacific Region
2800 Cottage Way, Sacramento CA
95825

March 2009

CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT

Biological Assessment

Prepared for
U.S. Department of Interior
United States Bureau of Indian Affairs
Pacific Region
2800 Cottage Way, Sacramento CA
95825

March 2009

2600 Capitol Avenue
Suite 200
Sacramento, CA 95816
916.564.4500
www.esassoc.com

Los Angeles

Oakland

Olympia

Petaluma

Portland

San Diego

San Francisco

Seattle

Tampa

Woodland Hills

207737

ESA

TABLE OF CONTENTS

Cloverdale Rancheria Fee to Trust and Resort Casino Project Biological Assessment

		Page
A.	**Executive Summary**	**A-1**
B.	**Project Description**	**B-1**
	Project Location	B-1
	Action Area	B-1
	Proposed Action	B-3
C.	**Existing Environment**	**C-1**
	Methodology	C-1
	Regional Setting	C-1
	Project Site Setting	C-2
	Potentially Affected Species	C-11
	Critical Habitat	C-14
	Essential Fish Habitat	C-15
D.	**Effects of the Action**	**D-1**
	Overview of Potential Effects	D-1
	Effects Summary	D-2
E.	**Determination of Effect**	**E-1**
F.	**References**	**F-1**

Appendices

A.	Drainage Study	A-1
B.	USFWS Species List	B-1

List of Figures

B-1	Regional Location	B-2
B-2	Aerial Photograph	B-4
B-3	Proposed Action Site Plan	B-5
C-1	Habitat and Water Features	C-3
D-1	Proposed Action Habitat Impacts	D-3

List of Tables

A-1	List of Potentially Affected Species	A-1
B-1	Proposed Trust Parcels	B-1
B-2	Proposed Action Facilities	B-3
C-1	Wildlife Habitats within the Project Study Area	C-2
C-2	Potential Corps Jurisdictional Features within the Project Study Area	C-8
D-1	Potential Effects to Upland Wildlife Habitat Types – Alternative A	D-4
D-2	Potential Direct Effects to Waters of the U.S. – Proposed Action	D-4

SECTION A
Executive Summary

The Cloverdale Rancheria of Pomo Indians have proposed an application to have the Bureau of Indian Affairs take 69.77± acres into federal trust for the subsequent development of a destination resort and casino (Proposed Action). The project site is located in northern Sonoma County, California within the sphere of influence of the City of Cloverdale. This Biological Assessment (BA) has been prepared pursuant to Section 7(c) of the Endangered Species Act (16 U.S.C. 1536(c) and 50 CFR 402) to identify federally listed species, designated critical habitat, and Essential Fish Habitat (EFH) within the Action Area that could be affected by the Proposed Action. Federally listed species and habitats that have the potential to be affected by this proposed project are listed in **Table A-1**.

TABLE A-1
LIST OF POTENTIALLY AFFECTED SPECIES

Species	Federal Status	Suitable Habitat	Potential for Project to Effect
Invertebrates			
Syncaris pacifica California freshwater shrimp	Endangered	Occurs in 17 stream segments within Marin, Napa and Sonoma counties. Nearest documented occurrence in Franz Creek (Russian River tributary) east of Healdsburg. Low-gradient stream pool areas of low-elevation, living among exposed live tree roots.	No effect. No suitable habitat within Action Area.
Fish			
Eucyclogobius newberryi Tidewater goby	Endangered	Brackish lagoons formed by sandbars where streams feed into the ocean.	No effect. No suitable habitat within the Action Area.
Hypomesus transpacificus Delta smelt	Threatened	Only in the Sacramento-San Joaquin Delta.	No effect. Action Area is not within the range of species.
Oncorhynchus mykiss Central Valley steelhead	Threatened	Spawning in the Sacramento and San Joaquin Rivers and associated tributaries.	No effect. Action Area is not within the range of species.
Oncorhynchus tshawytscha California Coastal chinook salmon	Threatened/ Designated Critical Habitat	Northern California coastal streams where suitable spawning and rearing habitat occurs.	**May effect**. Within ESU for species. Only hatchery stock with no recent accounts of wild stock occurrences in the watershed. Most likely extirpated from Russian River.
Oncorhynchus mykiss Central California Coastal steelhead	Threatened/ Designated Critical Habitat	Northern California coastal streams where suitable spawning and rearing habitat occurs.	**May effect**. Within ESU for species. Lower reaches of Porterfield Creek may provide suitable rearing habitat.

TABLE A-1
LIST OF POTENTIALLY AFFECTED SPECIES

Species	Federal Status	Suitable Habitat	Potential for Project to Effect
Oncorhynchus kisutch Central California Coast coho salmon	Endangered/ Designated Critical Habitat	Northern California coastal streams where suitable spawning and rearing habitat occurs from Punta Gorda south to the San Lorenza River.	**May effec**t. Within ESU for species. Lower reaches of Porterfield Creek may provide suitable rearing habitat. Potential downstream water quality effects.
Amphibians			
Rana aurora draytonii California red-legged frog	Threatened	Occurs in a broad range of freshwater and associated upland habitats throughout the Coast Range from Marin County south, often found in perennial to seasonal drainages with dense vegetation.	No effect. Outside of known range of species.
Birds			
Brachyramphus marmoratus Marbled murrelet	Threatened	Open ocean near rocky coasts. Potentially nesting up to 45 miles inland on the ground or trees.	No effect. No suitable nesting habitat within Action Area. Site experiences a high level of human disturbance.
Strix occidentalis caurina Northern spotted owl	Threatened	Nests in dense old growth and multi-layered mixed conifer habitats in Northern California.	No effect. No suitable nesting habitat within Action Area.
Plants			
Cordylanthus tenius ssp. capillaris Pennell's bird's-beak	Endangered	Closed cone coniferous forest and chaparral in serpentine soils.	No effect. No suitable habitat exists in the Action Area.
Essential Fish Habitat			
Pacific Coast Chinook Salmon	Designated	Pacific Ocean, and unimpeded drainages through out Western U.S. coastal, valley, and foothill ranges.	**May effect**. Lower reaches of Porterfield Creek may provide suitable rearing habitat. Potential downstream water quality effects.

SOURCE: California Natural Diversity Database (2009), USFWS (2008)

As shown in Table A-1, up three federally listed salmonids may be affected by the Proposed Action, as well as Essential Fish Habitat for Pacific Coast Chinook salmon. The potential effects include indirect effects associated with storm water discharges to the Russian River during construction and operation. Mitigation measures have been proposed to minimize these potential indirect effects. Based on this evaluation, we have determined that the Proposed Action will have no effect upon the following species:

- California freshwater shrimp, V *Syncaris pacifica* (E)
- Tidewater goby, *Eucyclogobius newberryi* (E)
- Delta smelt, *Hypomesus transpacificus* (T)
- Central Valley steelhead, *Oncorhynchus mykiss* (T)
- California red-legged fro*g, Rana aurora draytonii* (T)
- Marbled murrelet, *Brachyramphus marmoratus* (T)

- Northern spotted owl, *Strix occidentalis caurina* (T)
- Pennell's bird's-beak , *Cordylanthus tenius* ssp. *Capillaries* (E)

We have determined that the Proposed Action may effect, but is not likely to adversely affect, the following species and their associated critical habitat:

- California Coastal chinook salmon, *Oncorhynchus tshawytscha* (T)
- Central California Coastal steelhead, *Oncorhynchus mykiss* (T)
- Central California Coast coho salmon, *Oncorhynchus kisutch* (E)

We have determined that the Proposed Action may effect, but is not likely to adversely affect, the following Essential Fish Habitat:

- Pacific Coast Chinook Salmon

SECTION B
Project Description

Project Location

The Project Site is located in the northern end of unincorporated Sonoma County, with a small portion located within the City of Cloverdale limits. The proposed fee-to-trust transfer includes the six contiguous parcels listed in **Table B-1**. These parcels contain a gross acreage of approximately 69.77-acres. Although a majority of the Project Site is located outside of the limits of the City of Cloverdale, it is within the City's sphere of influence for the purposes of General Plan compliance. The location corresponds to Township 11 North, Range 10 West, Sections 19 and 20 of the Cloverdale USGS 7.5-minute topographic quadrangle map (USGS, 1980). The Project Site is situated immediately east of Highway 101, and is bordered by Asti Road to the west and Lile Lane to the north and east. Santana Drive runs parallel to the southern boundary of the Project Site (**Figure B-1**). The gross acreage includes right-of-way and easements which will remain on title. The term Project Site throughout the EIS refers to the acreage of 69.77 where Tribal development and thus environmental impacts may occur.

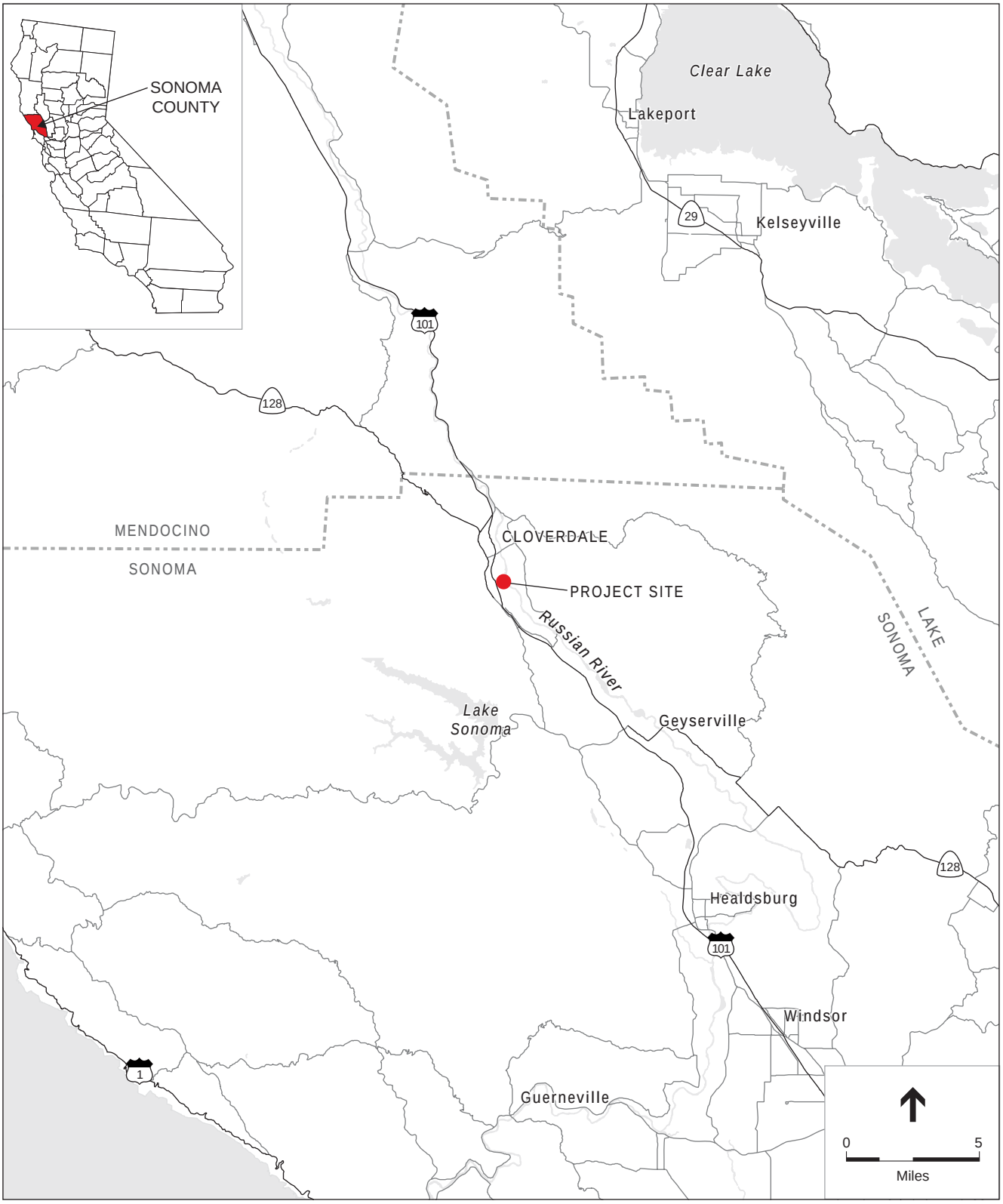
TABLE B-1
PROPOSED TRUST PARCELS

Assessor's Parcel Number	Acreage	Jurisdiction
116-310-020	2.05	City of Cloverdale
116-310-005	12.22	Sonoma County
116-310-035	16.44	Sonoma County
116-310-039	5.00	Sonoma County
116-310-040	8.53	Sonoma County
116-310-044	25.53	Sonoma County
Total	**69.77**	

Source: Adobe Associates, Inc., 2009 and ESA, 2009

Action Area

The Action Area is defined as all areas that may be affected directly or indirectly by the Federal Action, and not merely defined by the limit of disturbance. The Action Area for this BA is defined as the reasonable extent of potential effects of the Proposed Action, and includes the Project Site, areas immediately adjacent to the Project Site, and downstream areas, including downstream areas of Coyote Creek, Porterfield Creek, and the Russian River that may be affected by pollutant discharges to these features from actions on the Project Site.



SOURCE: ESRI, 2006; and ESA, 2008

Cloverdale Rancheria Resort Casino Project Biological Assessment . 207737

Figure B-1
Regional Location

Proposed Action

The Proposed Action consists of the placement of 6 parcels of land totaling 69.77± acres into federal trust for the Tribe and the subsequent development of a casino, hotel, convention center, entertainment center and other ancillary facilities (**Figures B-2** and **B-3**).

Land Trust Action

The Proposed Action would occur as the result of the proposed land trust action that would be made in accordance with the procedures set forth in 25 C.F.R. Part 151 for the six parcels of land that makes up the Project Site. The fee-to-trust process includes an application which provides detailed information on the land being taken into trust, an effects analysis which details the potential effects on the surrounding community, and consultation to determine the costs and benefits the fee-to-trust transfer would have for the Tribal Government and the affected local jurisdiction(s). If the BIA finds that the fee-to-trust proposal meets all statutory requirements and the benefits outweigh any potential negative effects, the BIA may approve the Tribal Government's application and take the proposed lands into trust for the Tribal Government.

Gaming Management Contract Approval

That National Indian Gaming Regulatory Commission (NIGC), established in 1988 by the Indian Gaming Regulatory Act (IGRA), is the federal agency charged with the oversight of tribal gaming enterprises. The Tribe and its management partners have entered into a development and management contract for the construction and operation of the Proposed Action. This management agreement will be reviewed by the NIGC to ensure consistency with IGRA, NIGC regulations, and other Tribal ordinances and policies.

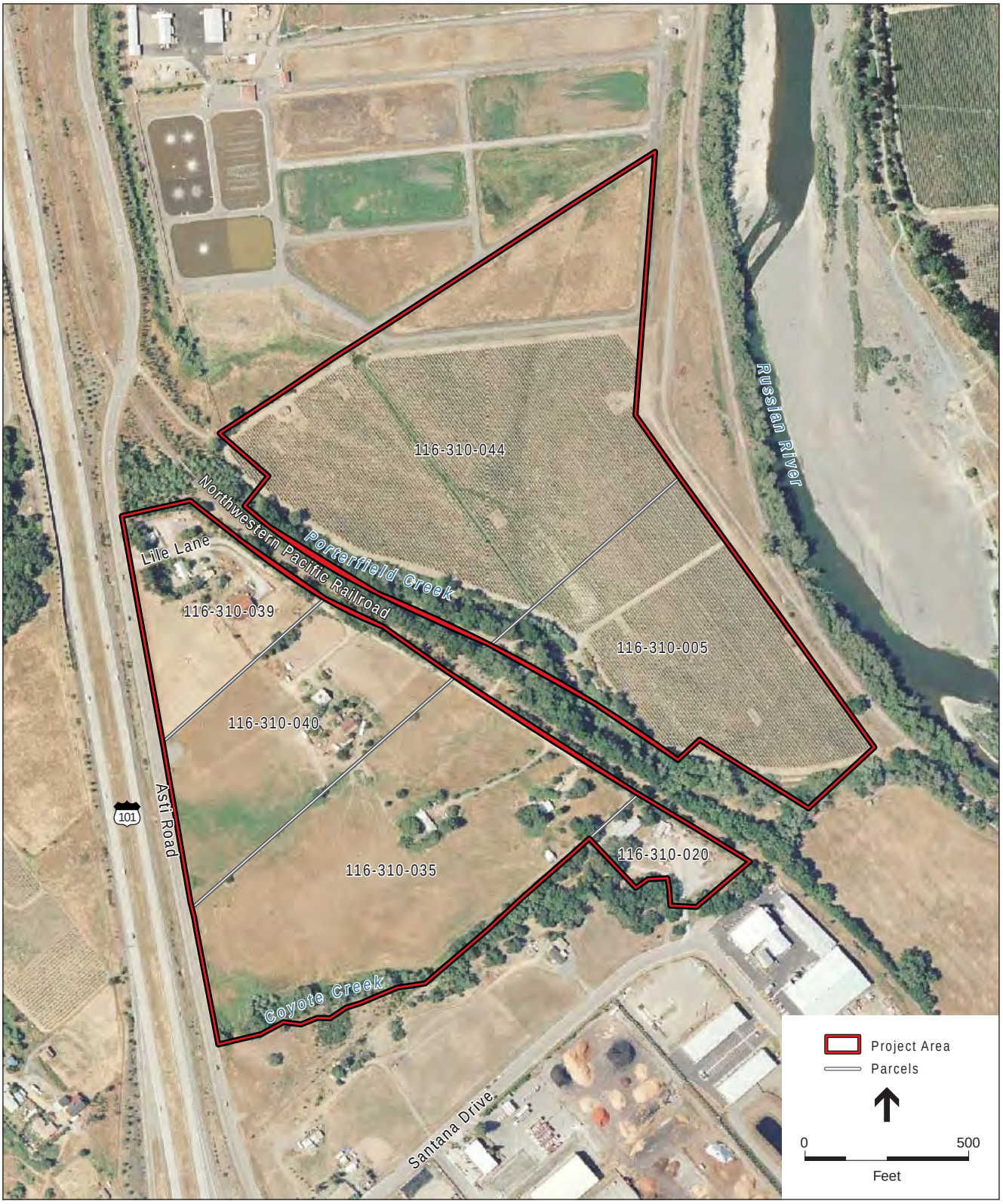
Project Site Development

The proposed facilities under Proposed Action are summarized in **Table B-2**. Figure B-3 shows a detailed site plan for proposed development.

TABLE B-2
PROPOSED ACTION FACILITIES

Facility Component		Number	Size (Sq Ft)
Casino (2,000 slots, 45 tables)		2,270 Positions	80,000
Hotel		244 Rooms	287,000
Convention Center		984 Seats	48,600
Entertainment Center		1,300 Seats	28,100
Food & Beverage		984 Seats	52,445
Resort Support Facilities			79,455
Tribal Government Building			20,000
	Total		***595,600***
Parking Spaces			
Surface Parking		+/- 100 Spaces	
Garage Parking		+/- 3,300 Spaces	
	Total	***3,400 Spaces***	

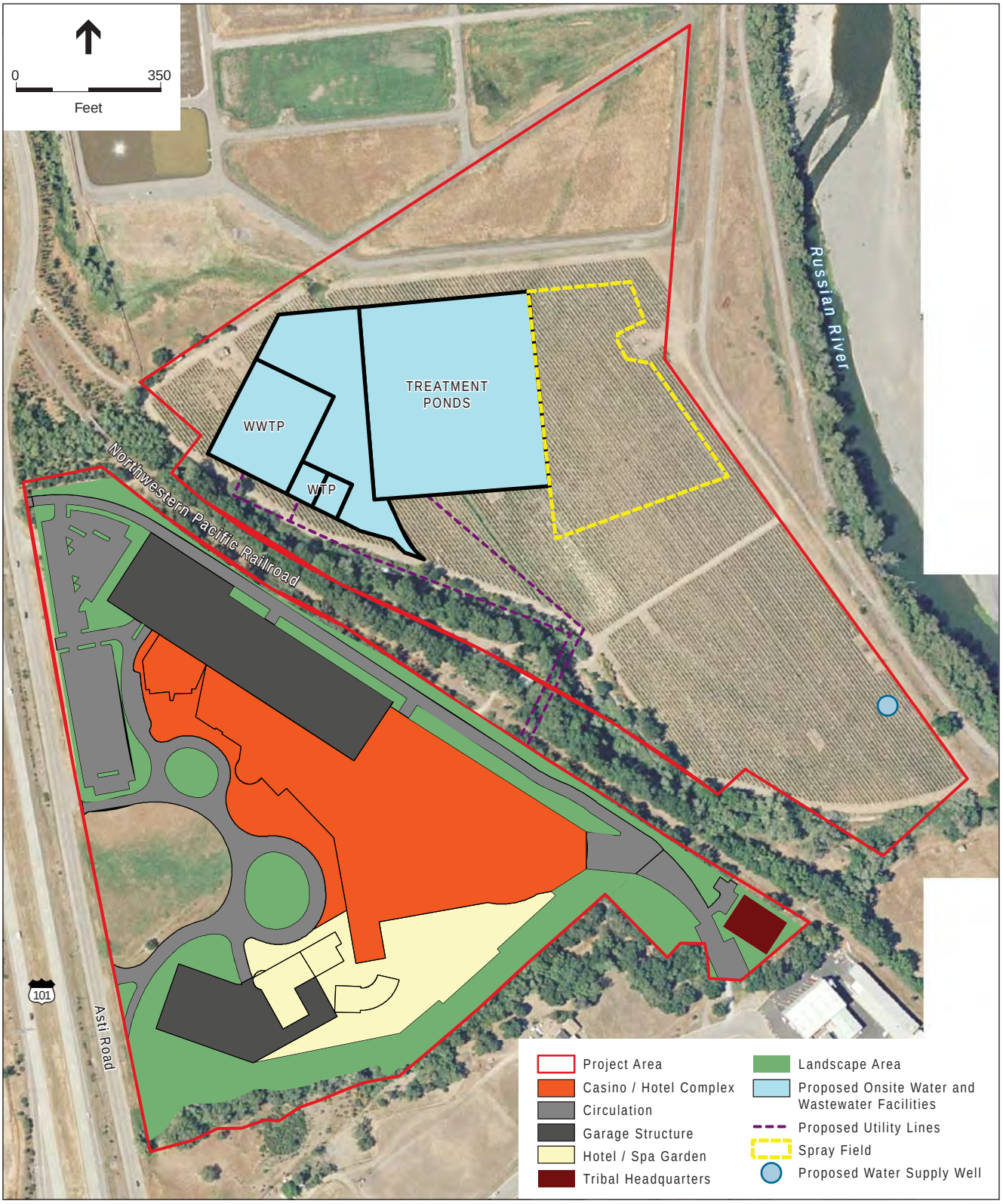
Source: JCJ Architecture, 2008; ESA, 2009



SOURCE: NAIP, 2006; GlobeXplorer, 2007; and ESA, 2008

Cloverdale Rancheria Resort Casino Project Biological Assessment . 207737

Figure B-2
Aerial Photograph



SOURCE: JCJ Architects, 2008; Adobe Associates, Inc., 2009; and ESA, 2009

Cloverdale Rancheria Resort Casino Project Biological Assessment . 207737

Figure B-3
Proposed Action Site Plan

Casino

The proposed two-story casino would consist of a mixture of uses including a gaming area, food and beverage facilities, retail shopping, administrative space and secure back-of-house facilities. The gaming area would include 80,000 square-feet of gaming with approximately 2,000 slot machines and 45 gaming tables. A non-smoking area is included within the main gaming hall. Food and beverage facilities would compose 52,445 square feet of the casino area and include a casual dining restaurant, noodle restaurant, pub/sports bar, buffet, food court, casino lounge, casino bar, and VIP lounge. The combined dining areas could accommodate up to 984 seats. Support facilities compose 79,455 square feet; the main components of this area include building support, casino support, administrative offices, public spaces, security, surveillance and employee dining and services. The casino would be open 24 hours a day.

The Tribe would obtain a license to serve alcohol from the State of California Department of Alcoholic Beverage Control. Casino patrons would be required to be 21 years of age or older in areas where alcohol is served and a "Responsible Alcoholic Beverage Policy" would be adopted to include provisions related to I.D. verification and refusal of service to individuals who are visibly intoxicated.

Hotel

The 287,000 square-foot hotel would be located south of the casino. The hotel would be up to four stories tall and provide for 244 guest rooms distributed between floors. The hotel area also includes food and beverage facilities, reception and lobby areas, retail, recreation, back-of-house and building support. Food and beverage facilities include a coffee shop, wine-experience restaurant, and lobby lounge. The recreation areas include a spa, salon, health club, pool and kids' entertainment area. The hotel would be open 24 hours a day.

Convention Center

The proposed 48,600 square-foot convention center would be located east of the casino and food and beverage facilities. The two-story convention center would provide space for both large events and smaller meetings. The facility could accommodate up to 984 seats in the events hall for large events. Four meeting rooms provide space for smaller meetings. Each meeting room could accommodate up to 60 seats or 240 seats total. The meeting rooms are not intended to be in use during use of the events hall for larger events.

Entertainment Center

The 28,100 square-foot entertainment center would be located northwest of the casino. The two-story entertainment center would feature a showroom and stage for non-gaming related activities such as local and regional theatre and musical performances. The facility could accommodate up to 1,300 seats.

Parking and Circulation

The Proposed Action would include approximately 3,400 parking spaces for patrons and employees through garage and surface parking. A breakdown of the spaces is provided in **Table B-1**. The parking garage structure would be four to five stories above grade. The proposed parking garage is adjacent to and north of the casino. On-site roads would be constructed to provide access from site entrances to proposed parking areas.

Tribal Government Building

An approximately 20,000 square-foot building on the eastern end of the project site would be dedicated to a tribal government workspace and offices.

Ancillary Components

The major ancillary components include the drainage system, water supply, wastewater service, fire protection, and law enforcement for the project site.

Drainage

A preliminary drainage study was prepared and is included in **Appendix A**. The development includes features to reduce the level of stormwater runoff to pre-construction flows for up to a 10-year storm event.

Stormwater drainage west of the railroad tracks, exits the project site from four culvert outfall locations. The existing culvert locations and sizes will be maintained. On-site improvements include subterranean detention systems, upland drainage release systems and a 30-inch storm drain pipe to collect flows near the wetland mitigation area. An 18-inch culvert along the northeast boundary will be extended and energy dissipation will be provided at the end of the culvert, which drains to Porterfield Creek. Water lines will be removed from the 30-inch culvert along the northeast boundary. The development would route concentrated flows to the southern project boundary where existing sheet flow discharges occur. Upland drainage release systems are proposed at a minimum of two locations along the southern boundary. The upland drainage release system would consist of a field of large diameter rocks placed near the existing grade surface to spread concentrated flows to a sheet flow condition prior to being discharges on the surface to the unnamed creek. Stormwater drainage east of the railroad tracks exits the property at two locations. These drainage systems will be left in their natural condition.

To improve drainage conditions, pervious concrete surfaces are proposed for most driveway and surface parking areas. A subterranean detention system is proposed under surface parking areas to further mitigate for high-intensity rain events. The subterranean detention system would include a network of large diameter pipes for storage and an outlet structure which restricts discharge from the detention system to pre-development flow rates or less. The system would be designed to accommodate flows from at least the 10-year storm event which requires a volume of 60,100 cubic feet. Excess flows from greater storm events would bypass, via culverts, the detention facility and discharge into the upland drainage release system. Sump pumps would be located on the bottom

floors of the garage structure to provide drainage for seepage and garage floor cleaning. Sump pump discharges will be treated with a sand/oil separator and discharged to the sanitary sewer system.

Water Facilities

The annual water demand for the project is estimated to be 74.6 acre-feet or 24.3 million gallons. The average daily demand is estimated to be 66,639 gallons with a constant withdrawal rate of 46 gallons per minute (gpm). The peak daily flow is estimated to be 126,147 gallons with a required pump rate of 88 gpm. A water supply report was prepared for the project and is included as (Adobe Associates Inc., 2009a).

Use of reclaimed water would be dependent on whether the private or municipal wastewater option is selected. If wastewater service is provided privately, the project would use tertiary –level treated wastewater for fire protection and irrigation uses. Fire protection uses include fire sprinkler systems and fire hydrants on the project site. Reclaimed water would be supplied through a 12-inch pipe originating at the pump house at the wastewater treatment storage pond. An estimated volume of 500,000 gallons of reclaimed water will be retained in an above ground storage pond. Fire pumps would be used to elevate pressure in the reclaimed water main during actual fire events. When pressure in the reclaimed water main exceeds 70 pounds per square inch, pressure-reducing devices on irrigation lines will be utilized. Irrigation use includes landscape plantings and water features. Reclaimed water for irrigation purposes would be stored near wastewater facilities in an above-ground storage tank with a volume of approximately 40,000 gallons. Anticipated peak landscape irrigation demand is 20,000 gallons per day.

Treated wastewater for toilet flushing purposes would be initially stored with landscape irrigation water. A separate and redundant pumping and plumbing system would be required to allow the use of recycled wastewater for toilet flushing.

Private Option

Under the private option, the Tribe would construct and maintain water supply facilities on the project site. Facilities would include a groundwater well, water treatment plant, water storage tanks, a pumping system (including pressurized storage) and a piped delivery system. A separate and redundant pump and piping system would be required for emergency fire flows (fire sprinklers and fire hydrants). The water facilities would be constructed above anticipated flood elevations. The distribution lines would cross the railroad easement between the project parcels.

An on-site well would be constructed on the project site, east of the railroad tracks. The proposed location of private water facilities are shown on **Figure B-3**. The distribution system would provide domestic water demands while irrigation and fire flows would be provided by the reclaimed water supply. The distribution system would include approximately 2,500 lineal feet of 6-inch water main. A suspended domestic water pipe crossing over Porterfield Creek is proposed with support structures built outside of the creek banks.

Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for water service. Under this option the 8-inch onsite water line would also be relocated along the southern project boundary. A 12-inch or 16-inch public water main would need to be constructed along Asti Road to connect the project to the City's water supply. Use of reclaimed water would be dependent on whether the private or municipal wastewater option is selected.

Wastewater Facilities

Wastewater service would be provided either by facilities on the project site (private option) or by the City of Cloverdale (municipal option). The annual wastewater flow for the project is estimated to be 33.6 million gallons with a daily average of 92,023 gallons (Adobe Associates Inc., 2009b).

Private Option

Under this option, wastewater services for the Proposed Action would be privately provided by a new on-site collection system, wastewater treatment plant (WWTP) and sprayfields. The proposed location of private wastewater facilities are shown on **Figure B-3**.

The collection system would include the construction of approximately 2,500 lineal feet of 8-inch pipe. Flows would be conveyed from the project facilities through the railroad easement to the WWTP located east of the railroad tracks. The sewer crossing would require an encroachment permit from the railroad to install pipe within the railroad right-of-way and under the tracks. Pipe construction under the tracks would utilized directional drilling or jack and bore drilling for installation. Crossing over Porterfield Creek is proposed via a suspended pipe over the creek, with support structures constructed outside of the creek banks.

The WWTP would treat wastewater to a tertiary level for reuse and disposal. The WWTP would consist of initial screening and transfer to an equalization tank, treatment in a constant flow membrane bioreactor, chlorination and transfer to an effluent pump station. Treated effluent would be transferred to either the aerated storage pond or recycling storage for landscape irrigation and fire suppression. Sludge would be collected in the bioreactor periodically and removed and stored prior to off-site transfer to an approved disposal facility.

Treated wastewater would be stored in an above ground storage pond sized to accommodate peak project wastewater flows. The wastewater storage pond is sized to account for project wastewater generation, 100-year rainfall event, evaporation and discharge of treated wastewater onsite. The storage pond will be enclosed by an earthen embankment, the top of which will be at least 2 feet above anticipated flood levels. The pond will be lined to prevent infiltration into the ground with either a natural soil liner or artificial welded seam plastic liner. The pond will be fitted with an aeration system designed to maintain an aerobic condition in the pond. A wet well and fire pump system would be located at the pond for fire flows. A floating intake system will be installed to permit withdrawal of stored water to be filtered and discharged to the wastewater disposal field.

Treated effluent would be filtered and discharged to a spray irrigation disposal field on the eastern portion of the project site and landscape area on the western portion of the project site. The spray irrigation disposal field is located outside of the 600 foot radius for the proposed well site, South Cloverdale Water System well, and Six-Acre Water System well. The disposal field will be designed using soil absorption rates and irrigation absorption capacity for the selected non-food crop vegetation and landscaping. Assuming a soil absorption rate of 0.8 gallons per square foot per day for the disposal field and 0.6 gallons per square foot per day for the landscape area, approximately 4 acres of disposal field and 2.5 acres of landscape area would be required. No discharge of treated wastewater would occur from October 1 to May 14.

Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for wastewater service. The City of Cloverdale has an existing 18-inch sewer main which runs along the southern and northeastern project boundary.

Fire Protection and Emergency Medical Services

The Tribe would contract with local service providers for fire protection and emergency medical services. It is anticipated that the Tribe would contract with the Cloverdale Fire Protection District (CFPD) and Cloverdale Health Care District for fire protection and emergency medical services, including ambulance transport. On-site defibrillators would be located onsite and staff would be trained to operate defibrillator equipment prior to emergency service provider arrival.

Security and Law Enforcement

The Tribe would provide 24-hour security surveillance of proposed facilities and parking areas through the use of private security guard patrols and security surveillance equipment typical of casino gaming facilities. The Tribe would also work cooperatively with area law enforcement agencies such as the Sonoma County Sheriff, City of Cloverdale Police Department, and the California Highway Patrol. Either the City of Cloverdale Police Department or Sonoma County Sheriff’s Department would provide primary law enforcement services.

Construction Techniques

The Tribal Government will adopt the development standards prescribed by the California Building Code (CBC) including all fire, plumbing, electrical, mechanical, and seismic standards. All electrical systems and equipment will be grounded in compliance with the National Electric Code (NEC) and lighting will be at levels suggested in the Illumination Engineering Society handbook and in accordance with the California Title 24 Energy Code. In addition, the Proposed Action will comply with the Federal Americans with Disabilities Act (ADA), P.L. 101-336, as amended, 42 U.S.C Section 12101 et seq.

The project will be constructed in a single phase, beginning in the spring of 2010. Project construction is expected to be completed late spring to early summer 2012 for a total construction length of 24-28 months. Infrastructure improvements would be constructed first, followed by construction of the

main gaming hall, parking structure, hotel, convention center, entertainment center and tribal administration building. Construction would occur daily between 7 a.m. and 6 p.m. The construction period may vary slightly depending on the weather. Construction and related activities would directly employ 75 to 85 people continuously over the 24 to 28 month construction period. On-site construction storage space for equipment and materials will be required during the construction period. Staging areas for construction activities will be appropriately designated onsite. Project construction involves grading and excavation for building pads, parking lots, and utility lines.

Typical construction activities would include:

- Site preparation – tree and brush removal, structure demolition, and off-site disposal and recycling of non-reusable demolished material.
- Earthwork – grading, excavation, soils processing, backfill, import of additional fill material (if necessary), off-site disposal of excess or unsuitable materials.
- Paving – Delivery, placement, and compaction of base material. Asphalt material delivery, placement, and paving.
- Concrete – forming, rebar placement, finishing, concrete delivery, and placement
- Pipelines – on-site (and potentially offsite) trenching and field welding
- Structural steel work – assembly and welding
- Mechanical equipment and piping installation
- Electrical/instrumentation work
- Steel and/or wood framing
- Stucco and/or fiber cement siding
- Masonry construction

Construction Equipment may include, but is not limited to the following:

- Earthmovers
- Fork lifts
- Cranes
- Concrete trucks and pumping equipment
- Dump trucks and flat bed delivery trucks
- Water trucks
- Paving, stucco, and concrete equipment
- Equipment necessary for wood and steel construction
- Power generators

In addition to project development, an area for potential wetland mitigation has been designated on the project site. As shown on the site plan this area is located on the west side of the project site adjacent to the project boundary and Asti Road.

Avoidance and Minimization Measures

In order to minimize effects of the Proposed Action and to provide mitigation for anticipated impacts, a number of Best Management Practices (BMPs) and avoidance measures have been incorporated into the project design.

Water Quality and Aquatic Habitat

Proposed source treatment controls for the project site include the following (design locations and examples included in **Appendix A**):

- Implementation of BMPs during construction as detailed within a Storm Water Pollution Prevention Plan and erosion and sediment control plan
- Use of slope protection practices, including hydro-seeding, planting, soil reinforcement mats, and retaining walls to prevent erosion and sediment transport
- Design landscaping to prevent sediment transport to storm drain systems
- Design landscaping to mosquito vector control requirements, thereby avoiding water ponding
- Use of porous concrete surfacing in driveways and parking areas
- Treat runoff in landscaping or porous concrete prior to storing in stormwater detention facility
- Use of upland drainage release system to release water to existing creeks (instead of a direct discharge into creeks)
- Discharge roof drainage directly to landscape or porous concrete surfaces, thereby allowing treatment prior to entering storm drain system
- Incorporate Integrated Pest Management principles and techniques for design and maintenance of landscaping
- Use of bioswales to channel and treat surface water
- Equipment and soil stock areas shall be placed at least 50 feet away from aquatic water sources.

SECTION C
Existing Environment

Methodology

The information contained in this section is based upon field reconnaissance, agency consultation, literature searches, and database queries. The following sources were reviewed to prepare for field reconnaissance:

- Digital color aerial photographs (Spring 2007);
- *Soil Survey of Sonoma County, California* (NRCS, 2008);
- *National Hydric Soils List for California, Sonoma County* (NRCS, 2008);
- California Natural Diversity Database, Rarefind 3 computer program (CDFG, 2009);
- List of Federal Endangered and Threatened Species that may be Affected by Actions in the Asti and Cloverdale, California 7 ½ Minute Quadrangles (USFWS, 2008); and
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants found in the Asti, Big Foot Mountain, Cloverdale, Geyserville, Highland Springs, Hopland, Jimtown, Keyserville, The Geysers, Tombs Creek, Warm Springs Dam, and Yorkville California 7 ½ Minute Quadrangles (CNPS, 2007).

In addition to these references, ESA biologists reviewed species literature and other reports pertinent to the Action Area. All of the above resources were used to determine the potential for federally listed species to occur in the Action Area.

Field surveys of biological resources included a reconnaissance-level inventory of plants and animals observed in the Action Area, habitat assessments for special status species, and a delineation of jurisdictional wetlands. The delineation has not been verified by the U.S. Army Corps of Engineers (Corps). Surveys were conducted by ESA biologists on March 18 and 19, 2008, and January 14, 2009. Habitats were mapped using a Global Positioning System (GPS) data logger, and field notes were recorded in field notebooks.

Regional Setting

The Action Area is located west of the Russian River and in the northeastern portion of Sonoma County, California. This region is characterized by rolling hills with instances of steep, rugged slopes that are densely vegetated with native grasses, trees, and brush. Regional natural plant communities in the Project Site include those that are common to the Central Franciscan subsection of the Northern California Coast Ranges, such as mixed oak, mixed conifer forest, and needlegrass grassland (Miles and Goudey, 1997). Climate is typically temperate and humid. Typical elevations within this ecological subsection range from 300 feet above sea level up to 6,175 feet at Big Signal

Peak. Mean annual precipitation is approximately 35 to 110 inches. Mean annual temperature ranges from 40 to 58 degrees Fahrenheit (Miles and Goudey, 1997).

Project Site Setting

The Project Site covers approximately 69.77 rural acres located in unincorporated Sonoma County. A small south portion of the Project Site is within the City of Cloverdale's boundaries. The Project Site is composed of six parcels: Assessor Parcel Numbers (APN) 116-310-039, 116-310-040, 116-310-035, 116-310-020, 116-310-044, and 116-310-005. Although a majority of the Project Site is located outside of the limits of the City of Cloverdale, it is within the City's sphere of influence for the purposes of General Plan compliance. The Project Site is situated immediately east of Highway 101, and is bordered by Asti Road to the west. Santana Drive runs parallel to the southern boundary of the Project Site. The portion of the Project Site northeast of the railroad tracks currently consists of grape vineyards, which are bordered to the east by Kelly Road and the Russian River. The portion of the Project Site southwest of the railroad tracks currently consists of rural residences and pasture land. Surrounding land uses include the City of Cloverdale's wastewater treatment facility to the north, industrial warehouses and storage to the south, Highway 101, residential neighborhoods, and vineyards to the west, and open space (consisting of the Russian River corridor) to the east.

Elevation at the Project Site ranges from 302 to 332 feet above mean sea level (msl), sloping very gently in a southeasterly direction. Portions of Coyote Creek (channel I-2), a relatively permanent surface tributary, crosses the southern portion of the Project Site; the channel is a tributary to Porterfield Creek (channel I-1), which flows generally south between the parcels along the railroad and the Russian River.

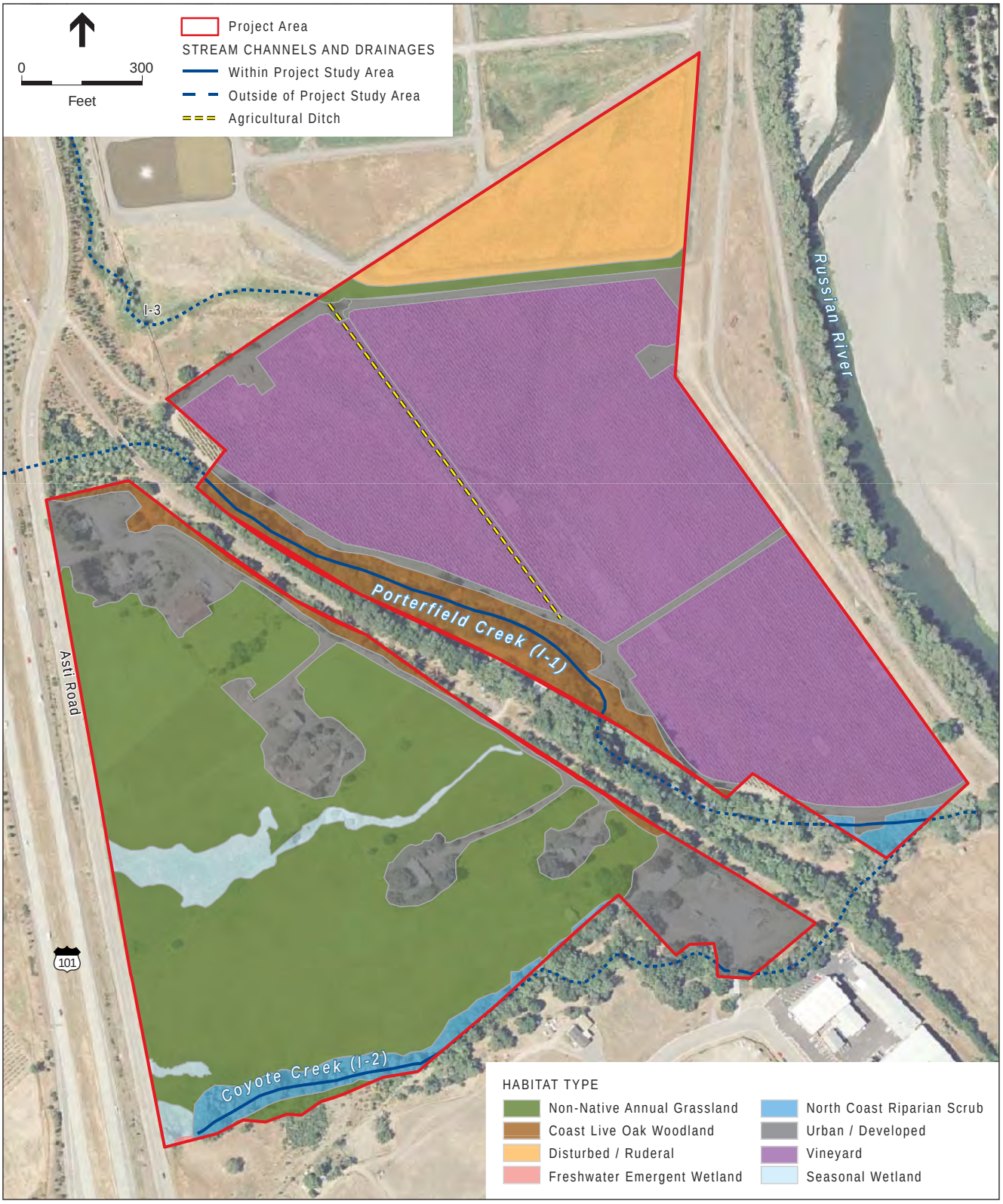
Vegetative Communities and Wildlife Habitats

Vegetative communities are assemblages of plant species that occur together in the same area. They are defined by species composition and relative abundance. The vegetative community descriptions and nomenclature described in this section generally follow the classification system provided in Sawyer and Keeler-Wolf's *A Manual of California Vegetation* (1995) and Mayer and Laudenslayer's *A Guide to Wildlife Habitats of California* (1988). Non-native annual grassland and vineyard are the dominant upland habitat types in the Project Site (**Figure C-1** and **Table C-1**).

TABLE C-1
WILDLIFE HABITATS WITHIN THE PROJECT STUDY AREA

Habitat Type	Acres in PSA	Percent Composition of PSA
Urban/Developed	9.93	14.2%
Disturbed (Ruderal)	4.05	5.8%
Agricultural Lands: Vineyards	26.10	37.4%
Coast Live Oak Woodland	4.10	5.9%
Non-native Annual Grassland	22.75	32.6%
North Coast Riparian Scrub	1.37	2.0%
Seasonal Wetland	1.47	2.1%
Total	**69.77**	

SOURCE: ESA, 2009



SOURCE: GlobeXplorer, 2007; and ESA, 2009

Cloverdale Rancheria Resort Casino Project Biological Assessment . 207737

Figure C-1

Habitat and Water Features

Upland Habitats

Urban/Developed

Urban habitats are those dominated by plant species introduced by humans and established or maintained by human disturbances or activities (Holland and Keil, 1990). Some are entirely artificial, such as areas influenced by urban or suburban landscaping or plantings. On such sites, the native vegetation has typically been removed by clearing in preparation for landscaping or development. Cleared areas that are planted with or colonized by non-indigenous plant species can create distinct communities dominated by annual grasses and forbs, shrubs, or trees. Some of these communities are only perpetuated with direct human intervention such as irrigation, weed control, or application of fertilizers, while others are capable of becoming naturalized. In some situations, introduced non-indigenous species invade native habitats, altering the composition of the native understory or canopy, or both. Within the Project Site, urban habitats include roadways, buildings, and the areas around the residences, barns, horse paddocks, and corrals. There are six rural residences within the Project Site.

Planted trees around the residences include tulip tree (*Liriodendron tulipifera*), coast redwood (*Sequoia sempervirens*), Monterey pine (*Pinus radiata*), English walnut (*Juglans regia*), flowering cherry (*Prunus cerasifera*), pear (*Pyrus communis*), peach (*Prunus persica*), persimmon (*Diospyros kaki*), olive (*Olea europaea*), and apple (*Malus* sp.). Ornamental shrubs include spiraea (*Spiraea* sp.), oleander (*Nerium oleander*), and rose (*Rosa* sp.). Ruderal non-native species present in disturbed areas around the horse paddocks and corrals include Italian thistle (*Carduus pycnocephalus*), rough pigweed (*Amaranthus retroflexus*), yellow star thistle, spiny cocklebur (*Xanthium spinosum*), horehound (*Marrubium vulgare*), and teasel (*Dipsacus sativus*).

Native and introduced wildlife species that are tolerant of human activities often thrive in urban habitats. Urban land use components such as buildings and domestic landscaping provide habitat for some wildlife species. For example, common birds such as house finch (*Carpodacus mexicanus*) build their nests on structures, and less abundant species like black phoebe (*Sayornis nigricans*), cliff swallow (*Hirundo pyrrhonota*), and barn swallow (*Hirundo rustica*), also use buildings, especially near water. Common wildlife such as killdeer (*Charadrius vociferus*), American robin (*Turdus migratorius*), and American pipit (*Anthus rubescens*) are likely to use urban habitat. Mammals such as raccoon (*Procyon lotor*), Botta's pocket gopher (*Thomomys bottae*), Norway rat (*Rattus norvegicus*), and house mouse (*Mus musculus*) are common in urban habitats. Older farm structures, such as barns and stables, may also provide suitable roosting and maternity sites for bats, including pallid bat (*Antrozous pallidus*), Mexican free-tailed bat (*Tadarida brasiliensis*), and yuma myotis (*Myotis yumanensis*).

Disturbed (Ruderal)

Disturbed (ruderal) communities occur in areas of disturbances such as along roadsides, trails, parking lots, disked fields, etc. These communities are subjected to ongoing or past disturbances (e.g., vehicle activities, mountain bikes, mowing). A distinguishing characteristic of ruderal habitats is the mixture of native and exotic plant species. Exotic plant species may provide valuable habitat elements such as cover for nesting and roosting, as well as food sources such as nuts or berries. Ruderal habitat

in these disturbed areas supports a diverse weedy flora. Within the Project Site, disturbed (ruderal) habitat includes the wastewater treatment settling pond at the northeast corner.

Dominant species found within ruderal habitat include introduced grasses such as: bromes (i.e. *Bromus hordeaceus*), Italian wildrye (*Lolium multiflorum*), and wild oat (*Avena fatua*). Common forbs associated with annual grassland include clover (*Medicago sp.*), filaree (*Erodium sp.*), wild radish (*Raphanus sativus*), mustards (i.e. *Brassica nigra*), winter vetch (*Vicia villosa*), field bindweed (*Convolvulus arvensis*), and milk thistle (*Silybum marianum*). Wildlife species that inhabit urban habitats are likely to be found in disturbed habitats as well.

Agricultural Lands: Vineyards

Vineyards are composed of a grapes planted in rows usually supported on wood and wire trellises. Vines are normally intertwined in the rows but open between rows. The understory in vineyards are usually sprayed with herbicides to prevent growth of herbaceous plants, but may contain a diverse weedy flora consisting of Bermuda grass (*Cynodon dactylon*), wild oats (*Avena fatuca*), Johnson grass, annual ryegrass (*Lolium multiflorum*), barnyard grass (*Echinochloa crusgalli*), field mustard (*Brassica rapa*), fiddleneck (*Amsinckia menziesii var. intermedia*), and filaree. Vineyards have been planted on deep fertile soils which once supported productive and diverse natural habitats. Vineyards occur within the eastern section of the Project Site adjacent to the Russian River.

Vineyards and other agricultural lands generally occur in areas that once supported productive and diverse biological communities. The conversion of native vegetation to agricultural lands has greatly reduced the wildlife species diversity and habitat value. However, some common and agricultural “pest” species forage in these habitats, and cultivated vegetation can provide benefits such as cover, shade, and moisture for these and other species during hot summer months. Wildlife such as deer and rabbits may browse on the vines and other wildlife such as squirrels and numerous birds may feed on the fruit. Some wildlife may use the vines as nesting habitat such as mourning dove (*Zenaida macroura*). Vineyards are not considered suitable foraging habitat for most raptors. Typical species found in agricultural lands include American crow (*Corvus brachyrhynchos*), Brewer’s blackbird (*Euphagus cyanocephalus*), house finch, California ground squirrel (*Spermophilus beecheyi*), and western harvest mouse (*Reithrodontomys megalotis*), among others.

Coast Live Oak Woodland

Coast live oak woodland is typically found on north-facing slopes and shaded ravines in the southern and inland portions of the state and on more exposed, mesic sites in the north. This community is dominated by coast live oak, which frequently occurs in pure, dense stands with a closed canopy. Coast live oak woodland is restricted primarily to the coast side of the state and is distributed from Sonoma County to Baja California. It occurs throughout the outer South Coast ranges and coastal slopes of the Transverse and Peninsular ranges, usually below 4,000 feet in elevation. Coastal live oak woodlands are extremely variable. The overstory consists of deciduous and evergreen hardwoods. From Sonoma County south, the coastal oak woodlands are usually dominated by coast live oak (*Quercus agrifolia*). In many coastal regions, coast live oak is the only overstory

species. In mesic sites, trees characteristic of mixed evergreen forests mix with coast live oak, such as California bay (*Umbellularia californica*), madrone (*Arbutus menziesii*), tanbark oak (*Lithocarpus densiflorus*), and canyon live oak (*Quercus chrysolepis*). Typical plants in dense coast live oak woodlands are shade tolerant shrubs such as California blackberry (*Rubus ursinus*), common snowberry (*Symphoricarpos albus*), toyon (*Heteromeles arbutifolia*), and herbaceous plants such as bracken fern (*Pteridium aquilinum*), California polypody (Polypodium californicum), fiesta flower (*Pholistoma auritum*), and miner's lettuce (*Claytonia perfoliata*). Within the Project Site, coast live oak woodland is present in a narrow band along the northern and eastern boundary of the Project Site. This habitat is dominated by coast live oak, with scattered California bay and California buckeye (*Aesculus californica*). Native shrub species commonly found include toyon, poison oak (*Toxicodendron diversilobum*), among others.

Coastal oak woodlands provide habitat for a variety of wildlife species. California quail (*Callipepla californica*), wild turkeys (*Meleagris gallopavo*), squirrels, and deer may be so dependent on acorns in fall and early winter that poor acorn year can result in significant declines in their populations. The vegetation within coastal oak woodland represents suitable nesting habitat for raptors, including red-shouldered hawk (*Buteo lineatus*) and Cooper's hawk (*Accipiter cooperii*), and migratory birds that may forage in adjacent annual grasslands.

Non-Native Annual Grassland

Non-native annual grassland is generally found in open areas in valleys and foothills throughout coastal and interior California. It typically occurs on soils consisting of fine-textured loams or clays that are somewhat poorly drained. This vegetation type is dominated by non-native annual grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, that have replaced native perennial grasslands, scrub and woodland as a result of human disturbance. Scattered native wildflowers and grasses, representing remnants of the original vegetation may also be common.

Within the Project Site, non-native annual grassland is present in the pastures that are used for livestock grazing (e.g., horses). Barbed wire fences and gates surround and bisect these pastures. Characteristic non-native annual grasses commonly found within the Project Site include wild oats (*Avena fatua*), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), Mediterranean barley (*Hordeum marinum* ssp.*gussoneanum*), hare barley (*Hordeum murinum* ssp. *leporinum*), big quaking grass (*Briza maxima*), Italian ryegrass (*Lolium multiflorum*), medusa-head (*Taeniatherum caput-medusae*), hedgehog dogtail (*Cynosurus echinatus*), nit grass (*Gastridium ventricosum*), and rattail fescue (*Vulpia myuros*), among others. Common nonnative forbs include English plantain (*Plantago lanceolata*), field bindweed (*Convolvulus arvensis*), fiddle dock (*Rumex pulcher*), Italian thistle (*Carduus pycnocephalus*), yellow star thistle (*Centauria solstitialis*), bristly ox-tongue (*Picris echioides*), little hop clover (*Trifolium dubium*), birdfoot trefoil (*Lotus corniculatus*), and red-stemmed filaree (*Erodium cicutarium*), among others. Non-native Himalayan blackberry (*Rubus discolor*) is also present within the Project Site. Despite the dominance of non-native annual grasses and forbs, native plant species are also present in the grasslands. These native species include Fitch's spikeweed (*Centromadia fitchii*), hayfield tarweed (*Hemizonia congesta* ssp. *luzulifolia*), and Spanish-clover (*Lotus purshianus*), among others. Native shrubs, including coyote brush (*Baccharis pilularis*) and poison oak, are scattered throughout the non-

native grassland but not in sufficient densities to be considered a distinct vegetation community. As described previously, the majority of the non-native grassland within the Project Site is subject to livestock grazing.

Many wildlife species use grasslands for foraging, but some require special habitat features such as cliffs, caves, ponds, fence posts, or habitats with woody plants for breeding, resting, and cover. Characteristic reptiles that breed in grasslands include the western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*) and western rattlesnake (*Crotalus viridis helleri*). Mammals typically found in this habitat include the black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher, western harvest mouse, California vole (*Microtus californicus*), and coyote (*Canis latrans*). Birds known to breed in annual grasslands include western burrowing owl (*Athene cunicularia hypugaea*), horned lark (*Eremophila alpestris*), and western meadowlark (*Sturnella neglecta*). This habitat also provides important foraging habitat for turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), white-tailed kite (*Elanus leucurus*), and American kestrel (*Falco sparverius*).

North Coast Riparian Scrub

North coast riparian scrub is typically comprised of several species of willow (*Salix* spp.) and other fast-growing shrubs and vines that form open to impenetrable thickets along stream banks. This plant community occurs on sand and gravel bars along streams within the coastal fog incursion zone from Sonoma County into Oregon, usually below 1,000 feet in elevation. North coast riparian scrub is generally considered early "seral," meaning that it typically precedes the development of other riparian woodland or forest communities in the absence of severe flooding. This broad-leafed deciduous riparian community is typically dominated by California blackberry (*Rubus ursinus*), coyote brush (*Baccharis pilularis*), golden yarrow (*Eriophyllum confertiflorum*), toyon, and arroyo willow (*Salix lasiolepis*).

Within the Project Site, North Coast riparian scrub is present along Coyote Creek (channel I-2). Dominant overstory species include red willow (*Salix laevigata*), arroyo willow, shining willow (*Salix lucida* ssp. *lasiandra*), valley oak (*Quercus lobata*), coast live oak, California buckeye, box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*) and California bay. The understory consists of native species such as mugwort (*Artemisia douglasiana*), willow-herb (*Epilobium ciliatum* ssp. *ciliatum*), poison oak, and coyote brush, among others. Non-native understory species include klamathweed (*Hypericum perforatum*) and Himalayan blackberry, among others.

Riparian habitat is generally of high value for wildlife. Birds that are typical inhabit these areas include Anna's (*Calypte anna*) and Allen's (*Selasphorus sasin*) hummingbirds, western kingbird (*Tyrannus verticalis*), Bewick's wren (*Thryomanes bewickii*), California quail, Nuttall's white-crowned sparrow (*Zonotrichia leucophrys nuttalli*), wild turkey (*Meleagris gallopavo*), screech owl (*Megascops kennicottii*), and red-tailed hawk. Mammals that occur in these areas typically include white-tailed deer (*Odocoileus virginianus*), coyote, opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), beaver (*Castor canadensis*), and western gray squirrel (*Sciurus carolinensis*). Other wildlife species may include, western fence lizard, California slender salamander (*Batrachoseps attenuatus*), and western alligator lizard (*Elgaria coerulea*).

Wetlands and Other Waters of the U.S.

Regulated wetlands and other waters of the U.S. are subject to jurisdiction under Section 404 of the Clean Water Act. Wetlands are ecologically complex habitats that support a variety of both plant and animal life. The federal government defines wetlands in Section 404 of the Clean Water Act as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[b] and 40 CFR 230.3). The Corps is the agency responsible for regulating wetlands under Section 404 of the Clean Water Act, while the EPA has overall responsibility for the Act. Under normal circumstances, the federal definition of wetlands requires three wetland parameters be present: wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of jurisdictional wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes that have a significant ecological link to navigable waterways. "Other waters of the U.S." refer to those hydric features that are regulated by the Clean Water Act but are not wetlands (33 CFR 328.4). To be considered jurisdictional, these features must exhibit a defined bed and bank, an ordinary high-water mark, and are tributary to a navigable waterway. Examples of other waters of the U.S. may include rivers, creeks, intermittent channels, ponds, and lakes that meet the jurisdictional criteria.

The potential Corps jurisdictional features that are located within the Project Site include relatively permanent waters, freshwater emergent wetland, and seasonal wetland. They are described in greater detail below.

TABLE C-2
POTENTIAL CORPS JURISDICTIONAL FEATURES WITHIN THE PROJECT STUDY AREA

Map ID	Type of Jurisdictional Feature	Average Width (feet)	Linear Feet	Acres
Relatively Permanent Waters				
	Porterfield Creek (I-1)	11.2	1,462	0.45
	Coyote Creek (I-2)	4.6	545	0.05
Wetlands				
	Seasonal Wetland			1.47
Total area of potential jurisdictional features:				**1.97**

Source: ESA, 2009

Riverine (Relatively Permanent Waters)

There are two intermittent stream channels that flow through the Project Site. Both channels meet the definition of being "relatively permanent waters" by the Corps and EPA; that is, they have continuous seasonal flow for at least three months per year. Porterfield Creek (I-1) flows south between the proposed trust parcels and along the railroad; it then meanders east along the southern boundary of the eastern portion of the Project Site. Porterfield Creek has an average width of 11.2

feet. Immediately south of the Project Site at the downstream portion, and prior to its' terminus at the Russian River approximately 500 feet south east of the Project Site, Porterfield Creek it is characterized by a mature riparian corridor.

Coyote Creek (I-2), a tributary to Porterfield Creek, flows along the southern boundary of the western portion of the Project Site. Channel I-2has an average width of 7.6-feet and is comprised of well-developed over- and understory growth with infrequent openings. The stream banks vary from gently sloping to steeply incised with dense bank vegetation, exposed roots, and areas of active erosion. The main channel is comprised of a low-grade riffle, run, and pool complexes with a limited number of shallow to moderately deep pools up to one foot in depth. The main channel contains root wads, small woody debris, and overhanging vegetation. Overall the substrate is silty with scattered gravel to cobble-sized rocks. This reach of creek provides moderate quality habitat for aquatic flora and fauna, and exhibits few adverse effects due to human activities.

Heron Creek (channel I-3) enters the eastern portion of the Project Site from the north. Channel I-3 is strongly influenced by storm drain flows from Highway 101. Due to recent off-site road work associated with Highway 101 and Asti Road, the drainage patterns associated with I-3 have been altered approximately 500-feet north west of the Project Site before entering the project at the northern boundary (**Figure C-1**).

Upon entering the Project Site, water from this channel flows into a north-to-south excavated channel (agricultural ditch) located centrally in the vineyard. When the agricultural ditch fills with water, it then spreads across the Project Site through sheet flow. Near the southern boundary of the vineyard, the channel begins to diminish with no apparent surface connection to Porterfield Creek. This agricultural ditch is an upland ditch that is ephemeral in nature. The ditch is maintained for agricultural purposes and no aquatic vegetation was present during the Winter 2009 site visit.

The channels on the site provide riverine habitat for wildlife. The Russian River also provides riverine habitat as it flows south, immediately east of the Project Site. The open water zones of large rivers provide resting and escape cover for many species of waterfowl. Gulls (*Larus* spp.), terns (*Sterna* spp.), osprey (*Pandion haliaetus*) and bald eagle (*Haliaeetus leucocaphalus*) hunt in open water. Near-shore waters provide food for waterfowl, herons, shorebirds, belted kingfisher (*Megaceryle alcyon*) and American dipper (*Cinclus mexicanus*). Many species of insectivorous birds (swallows, swifts, flycatchers) hawk their prey over water. Some of the more common mammals found in riverine habitats include Northern river otter (*Lontra canadensis*), mink (*Mustela vison*), common muskrat (*Ondatra zibethicus*), and beaver. Native anadromous salmonids, including steehead (*Oncorhynchus mykiss)*, spawn and rear in the Russian River and its' associated tributaries.

Freshwater Emergent Wetland

Freshwater emergent wetland typically occurs in low-lying sites that are permanently flooded with fresh water and lacking significant current. This plant community is found on nutrient-rich mineral soils that are saturated for all or most of the year. Freshwater marsh is most extensive where surface flow is slow or stagnant or where a shallow water table saturates the soil from below. Freshwater emergent wetland is distributed along the coast and in coastal valleys near river mouths and around

the margins of lakes, springs, and streams (Holland 1986). This vegetation community characteristically forms a dense vegetative cover dominated by perennial, emergent monocots one to 15-feet high that reproduce by underground rhizomes. The vegetation may vary in size from small clumps to vast areas covering several kilometers. On the upper margins of this habitat, saturated or periodically flooded soils support several moist soil plant species including big-leaf sedge, Baltic rush, redroot nutgrass, and on more alkali sites, saltgrass (*Distichlis spicata*). On wetter sites, common cattail (*Typha latifolia*), tule bulrush (*Scirpus acutus*), river bulrush (*Scirpus fluviatilis*), and arrowhead (*Sagittaria* spp.) are potential dominant species. The upland limit of fresh emergent wetlands and deep water habitats is the deep water edge of the emergent vegetation. It is generally accepted that the demarcation is at or above the 2 meter (6.6 ft) depth to which emergent wetland plants normally grow.

Freshwater emergent wetland habitat is not located within the PSA, but is located immediately south of the PSA adjacent with channel I-2. Freshwater emergent wetland is restricted to an opening in the North Coast riparian scrub canopy at the upstream end of channel I-2. Aquatic plant species recorded here include umbrella sedge (*Cyperus eragrostis*), narrow-leaved cattail (*Typha angustifolia*), low bulrush (*Scirpus cernuus*), punctuate smartweed (*Polygonum punctatum*), watercress (*Nasturtium officinale*), whorled dock (*Rumex conglomeratus*), dallis grass (*Paspalum dilatatum*), and pennyroyal (*Mentha pulegium*), among others.

Freshwater emergent wetlands are among the most productive wildlife habitats in California. They provide food, cover, and water for more than 160 species of birds, and numerous mammals, reptiles and amphibians. Many species rely on fresh emergent wetlands for their entire life cycle. Many wildlife species are dependent on wetland habitats for foraging, nesting, and cover. Slow-moving waters provide important resting and foraging habitats for migratory water birds such as the Canada goose, mallard, and cinnamon teal. The bald eagle and peregrine falcon (*Falco peregrinus*) use freshwater emergent wetlands as feeding areas and roost sites. Wetlands also provide habitat for the American coot (*Fulica americana*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), and black phoebe.

Seasonal Wetland

Seasonal wetlands are relatively shallow topographic depressions that pond for a short duration, support a fairly low diversity of plant species, and tend to support species with a high tolerance for disturbance. Seasonal wetlands are freshwater wetlands that support ponded or saturated soil conditions during winter and spring and are dry through the summer and fall. Seasonal wetlands are defined by a hydrologic regime that is dominated by saturation, rather than inundation. Seasonal wetlands inundate for short periods of time following a storm event but the primary hydrologic regime is one of saturation. Vegetation is characterized by species of annual and perennial, native and non-native grasses and forbs that begin their growth as aquatic or semi-aquatic plants, typically resembling a wetland community, that make a transition to a dry-land environment as the pool dries. Wetland plant species that are either low-growing, tenacious perennials that tolerate disturbance or annuals that tolerate seasonal wetness often colonize seasonal wetlands. Upland grasses and forbs can become established while wetland species desiccate. Although seasonal wetlands and vernal pools share similar hydrologic characteristics, species composition of seasonal wetlands

is typically more ruderal in nature. Therefore, seasonal wetlands are not considered vernal pools, which support a more specialized and less common native flora.

Within the Project Site, seasonal wetlands are distributed in topographic depressions throughout the non-native annual grasslands (pastures). Plant species found within seasonal wetlands are adapted to withstand short periods of inundation, but will not withstand long periods of inundation. Herbaceous plant species present in seasonal wetlands within the Project Site include pennyroyal, fiddle dock (*Rumex pulcher*), birdfoot trefoil (*Lotus corniculatus*), rabbitsfoot grass (*Polypogon monspeliensis*), and Mediterranean barley.

Potentially Affected Species

Pursuant to Section 7(c) of the Endangered Species Act, the USFWS provided a list of species potentially found within the Action Area (**Appendix B**). **Table A-1** lists the species with the potential to occur in the Action Area and the determination of the potential effects the Proposed Action may have upon them. This determination was made based upon the several factors, including presence of suitable habitat, species distribution data, and the types of potential effects (including direct, indirect, and cumulative effects). A “no effect” determination was made if there was no suitable habitat present in or around the Action Area and/or if the Action Area was outside of the known range of the species. A “may effect” determination was made if suitable habitat was identified within the Action Area and if it was determined that the Proposed Action may affect that habitat. Detailed descriptions of the species determined to be potentially affected by the Proposed Action are presented below.

Fish

Central California Coast Coho Salmon

Coho salmon are highly adaptive to local or regional environments. Coho salmon have thousands of semi-isolated populations in coastal streams over a wide range of North America. The likelihood of coho salmon potentially mixing with separate regional fish while in the Pacific Ocean exists, as individuals may spawn in non-natal streams. This occurs within the Central California Coastal ESU (Moyle, 2002). Interbreeding populations from Punta Gorda south to the San Lorenzo River contribute to the adaptive characteristic of this species.

Coho salmon once supported a commercial fishery on the Russian River, and once inhabited nearly all of the tributaries to the lower Russian including the Guerneville and Austin Creek sub- basins. The Coyote Valley Steelhead Facility (CVSF) recorded no returns in 2000 and 2001, while the Warm Springs Salmon and Steelhead Hatchery (WSH) recorded eight returns in 1999 and one return in 2000. Spawning at the hatcheries has ceased due to the low return numbers (CDFG, 2002).

Wild coho returning to WSH are currently relocated to tributaries of Dry Creek, where suitable habitat occurs. Recent non-hatchery coho distribution in the Russian River is much reduced from the historic range. Limited CDFG sampling efforts conducted in 2001 found coho in only three of

the 32 historic streams. Russian River Watershed Hydrologic Sub-Areas, including Austin Creek, Warm Springs, Geyserville, Guerneville and Mark West, all have had occurrences since 1993 (CDFG, 2002).

There have been no sightings or historic documentation of coho within the Project Site. However, stream channel conditions within the lower reaches of Porterfield Creek provide potential rearing or holding habitat within and immediately downstream of the Project Site.

Habitat Requirements

Timing for upstream migration by adult coho is primarily dependent upon flows and temperature which are dependent upon rainfall and local temperatures. The Russian River has a later run timing than many Northern California streams with coho entering the system from November through January with most spawning taking place in December (CDFG, 2002). Like the chinook salmon, a steady deposition of coarse rock substrates within the channel, proper temperature (Coho prefer temperatures from 40° to 49° F), and minimal sedimentation (less than 5% sand and silt) provides for suitable spawning habitat. Coho salmon generally prefer substrate sizes of 0.5 to 6 inches dominated by 2- to 3-inch gravel (CDFG, 1997). Eggs hatch in 50 to 60 days from the time the female deposits her eggs into a redd, depending on water temperature.

Unlike most Chinook, coho salmon have a more extended freshwater stage in their life history. Juvenile coho prefer deep cool pools with plenty of overhead cover, but are known to use a variety of habitats. During the high flows of spring, juvenile coho are equally disturbed throughout stream riffle, run and pool habitat. As stream flows diminish into the summer, higher occurrences of juvenile coho are found within pools and deeper runs. During winter, juvenile coho seek refuge from high flow velocities within off-channel pools or spring-fed tributary systems (Moyle, 2002). Overwintering habitat is an important resource for coho, as they spread their first year of life in the riverine environment prior to emigrating to the ocean. Successful coho rearing streams must be very clear, as silt loads can reduce growth rates. Juveniles prefer water temperatures of 53° to 57° F, and cannot survive within streams with temperatures exceeding 77° F (Moyle, 2002).

Central California Coastal Steelhead

NOAA Fisheries classified six distinct ESU's of steelhead in California based on genetic and life history data. The Central California coast steelhead ESU comprises coastal populations from the Russian River south to Aptos Creek in Santa Cruz County. Along with the Klamath and Sacramento rivers, the Russian River steelhead runs have been historically prolific. Steelhead use all perennial and intermittent streams within the Russian River basin, and their distribution has not changed much, with the exception to areas upstream of created channel impediments (CDFG, 2002). CDFG operates two anadromous fish hatcheries within the Russian River Watershed; the WSH, located on Dry Creek at the base of Lake Sonoma, and the CVSF, located in Ukiah at the base of Lake Mendocino. The WSH and CVSF have managed a successful production of hatchery steelhead. As with all wild anadromous stocks entering the hatcheries, the WSH and CVSF relocate wild steelhead to local watershed tributaries.

The lower reaches of Porterfield Creek near the confluence with the Russian River provide suitable holding and rearing habitat for steelhead, as it contains adequate riparian canopy, stream substrate, water temperature, and channel morphology.

Habitat Requirements

Steelhead may enter the Russian River between December and April, with most spawning taking place from January through March (CDFG, 2002). The life history patterns of California steelhead are both variable and flexible, but they can be generally categorized into two patterns (winter and summer). Winter steelheads enter the system during winter wet weather events that provide cold temperatures for migration and spawning. Summer steelhead generally enter the system during high flows associated with the spring run-off, and ascend to the headwaters to hold out and mature in cold deep pools and spawn the following winter or spring (Moyle, 2002). Steelhead prefers temperatures from 46° to 52° (Rich, 1997). Inadequate flows and low water levels also contribute to water quality problems during the hot summer months.

Generally, spawning habitat is not thought to limit steelhead production. Steelhead prefer temperatures from 46° to 52° F for spawning. During the 50 to 60 days from the time the female deposits eggs, gravels must be well oxygenated and free of silt and fine sediments. Juvenile steelhead generally rear within the stream habitat for two years but may emigrate after only one year. Steelhead are generally found in relatively shallow areas, with cobble or boulder bottoms at the tails of pools, or in riffles less than 24 inches deep (CDFG, 2002). Surface turbulence is a very important habitat component in many of these areas. In winter, steelheads utilize large cover or backwater areas for protection from extreme currents.

California Coastal Chinook Salmon

Information or existing data on the historic use of the Russian River by chinook salmon is inconclusive, but given the suitable habitat conditions prior to anthropogenic disturbances of the drainage system, it is likely to have supported a run. A native endemic stock of chinook salmon (i.e., California Coastal) currently utilizing the Russian River watershed is highly unlikely. Chinook salmon disappeared with the advent of agriculture and water projects in the basin (Moyle, 2002). However, suitable spawning habitat still exists today in the upper mainstem of the river and in the larger low gradient tributaries. The WSH and CVSF hatchery fish have been of multiple origin including Sacramento and Klamath River stocks. Currently, CDFG has halted hatchery spawning due to potential genetic bottlenecking. Hatchery attempts to potentially revive a run utilizing the Russian River has been relatively unsuccessful, although some spawning has been observed in the watershed (Moyle, 2002).

The lower reaches of Porterfield Creek near the confluence with the Russian River provide suitable holding and rearing habitat for Chinook salmon, as it contains adequate riparian canopy, stream substrate, water temperature, and channel morphology.

Habitat Requirements

Chinook salmon enter the Russian River between August and January with a majority of the spawning occurring in November and December. Gravel and cobble, ranging from 0.5 to 10 inches and dominated by 1- to 3-inch cobble, are essential in successful spawning ranging from 0.5 to 10 inches dominated by l- to 3-inch cobble (CDFG, 1997). These substrates must be clean and the gravels must be free of silt and fine sediments to allow the permeation of flowing water. This will help prevent mortality by keeping eggs well oxygenated while they incubate in redds. Ideally, gravel and cobble should contain less than 5% sand and silt (McEwan et. al., 1996). Chinook salmon generally spawn in water from one to three feet deep, but have spawned in depths from 0.5 to greater than 20 feet deep (CDFG, 2002). Stream flow velocities must range from 1 to 3 feet per second. Chinook eggs hatch in 50 to 60 days, depending on water temperature.

Most chinook smolts migrate to the estuary or ocean in the spring. Once juvenile salmon emerge from gravel, they initially seek areas of shallow water and low velocities while absorbing the yolk sac. The next stage of juvenile development requires rearing within the stream channel. Optimal temperatures for chinook fry to grow are 55–64° F (CDFG, 2002). Chinook salmon need a variety of habitat types such as pools, riffles and flat waters to accommodate different life stages. Stream bank and channel cover is essential for rearing salmonid survival. Natural features such as large and small woody debris, undercut banks, root wads, overhanging terrestrial vegetation, aquatic vegetation, boulders, and bedrock ledges provide cover from predators. Deep pools provide depth for cool refugia especially where general water and air temperatures are high. In general, chinook salmon shifts to deeper and faster water as they grow larger (Moyle, 2002). Some juveniles may remain in large pools with complex cover until they emigrate to the ocean in the fall, but most are likely to emigrate in the Spring.

Critical Habitat

The USFWS designates critical habitat for federally listed species to ensure habitat that is critical to species long-term survival is conserved. Within the region, critical habitat has been identified for Central California Coast Coho salmon, California Coastal Chinook salmon, and Central California Coastal steelhead.

Central California Coast Coho Salmon Critical Habitat

The Central California Coast Coho Salmon Evolutionarily Significant Unit (ESU) was listed as threatened on October 31, 1996 (61 FR 56138), and later downgraded to endangered status on June 28, 2005. On May 5, 1999, NOAA Fisheries designated critical habitat for the California Coast Coho Salmon ESU. Designated critical habitat consists of all river reaches accessible to listed coho salmon from Punta Gorda in northern California south to the San Lorenzo River in central California, including Mill Valley (Arroyo Corte Madera Del Presidio) and Corte Madera Creeks tributaries to San Francisco Bay. Areas above specific dams or above longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years) are excluded. The Action Area is located within designated critical habitat for the Central California Coast Coho Salmon ESU.

California Coastal Chinook Salmon Critical Habitat

The California Coastal Chinook Salmon ESU was listed as threatened on September 16, 1999, and reconfirmed on June 28th, 2005. Critical habitat was designated for this population on September 2, 2005, with an effective date of January 2, 2006. The ESU includes all naturally spawned populations of chinook salmon from rivers and streams south of the Klamath River to the Russian River in California. The Action Area is located within designated critical habitat for the California Coastal Chinook Salmon ESU.

Central California Coastal Steelhead Critical Habitat

The Central California Coastal Steelhead Salmon ESU was listed as threatened on August 18, 1997, with threatened status reaffirmed on January 5, 2006. A final designation for critical habitat was published on September 2, 2005, with an effective date of January 2, 2006. The ESU includes all naturally spawned populations of steelhead (and their progeny) in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo Bays eastward to the Napa River (inclusive), excluding the Sacramento-San Joaquin River Basin. The Action Area is located within designated critical habitat for the Central California Coastal Steelhead ESU.

Essential Fish Habitat

Public Law 104-297, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to establish new requirements for Essential Fish Habitat (EFH) descriptions in federal Fisheries Management Plans and to require federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH. The Magnuson-Stevens Act requires all fishery management councils to amend their Fishery Management Plans (FMPS) to describe and identify EFH for each managed fishery. The Act also requires consultation for all federal agency actions that may adversely affect EFH (i.e., direct and indirect effects). It does not distinguish between actions in EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside of EFH, such as upstream and upslope activities that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of the activity's location. Under section 305(b)(4) of the Magnuson-Stevens Act, NOAA Fisheries is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. However, state agencies and private parties are not required to consult with NOAA Fisheries unless state or private actions require a federal permit or receive federal funding. EFH is managed under the FMPs as directed under the Magnuson-Stevens Fishery Conservation and Management Act. Based on the proposed project location, the Pacific Coast Chinook Salmon EFH will be analyzed for potential effects.

SECTION D
Effects of the Action

Overview of Potential Effects

Approach to Analysis

The purpose of this section is to analyze the potential effects of the Proposed Action on biological resources including wildlife, habitats, and federally listed species. This section describes the potential direct, indirect, and cumulative effects the Proposed Action may have to those species identified in Section C. Possible interrelated and interdependent actions to the Proposed Action are also considered. Categories for types of effects are defined in the Code of Federal Regulations (CFR) as follows:

- **Direct Effect:** Effects generated directly from the Proposed Action. Examples of direct effects to listed species include incidental take during construction, elimination of suitable habitat due to project construction, and degradation of habitats due to construction-related activities. (50 CFR 402.02).
- **Indirect Effect:** Effects that are caused by the Proposed Action and are later in time. Examples of these types of effects to biological resources include increased runoff or sedimentation that adversely affect water quality downstream of the project site, an increase in human activity during project operations, and potential growth-inducement effects. (50 CFR 402.02).
- **Cumulative Effect:** Effects of future State or private activities that are reasonably certain to occur within the Service Area, and which may cumulatively increase the magnitude of direct and indirect effects described previously. Examples of these types of effects to biological resources include the effects of a cumulative loss of habitat for a special status species due to other planned projects in the area (50 CFR 402.02).
- **Interrelated Actions:** Those actions that are part of, and dependent upon, a larger action, such as the need for utilities for project development (50 CFR 402.02).
- **Interdependent Actions:** Actions that have no independent utility apart from the proposed action, such as future actions that are dependent upon the proposed action taking place (50 CFR 402.02).

The Proposed Action would be implemented to avoid listed species and sensitive habitats to the greatest extent possible. Avoidance and minimization measures were developed to decrease potential effects. These avoidance and minimization measures are based on widely applied and proven measures for the protection of listed species and their habitats.

Effects Summary

General Discussion

Implementation of Proposed Action would have several potential effects to biological resources in the Project Site. This includes an increase in human activity, reduction in habitat, and potential effects to aquatic habitats within the Action Area. Each of these potential effects is described in greater detail below.

Increase in Human Activity

Implementation of Proposed Action would cause an increase in human activity within the Action Area. Many species of wildlife will avoid areas that have a high degree of human activity, thereby causing them to forage over greater distances and reducing the number of breeding and resting sites that are available to them. Large terrestrial mammals, such as deer, mountain lion, and coyote would likely be most affected by an increase in human presence. Other species, such as scrub jay, American crow, and Brewer's blackbird may actually increase in numbers within the Action Area. This may in turn have an adverse effect upon other, smaller passerines, such as warblers and vireos, due to increased interspecific competition for resources.

Reduction in Habitat

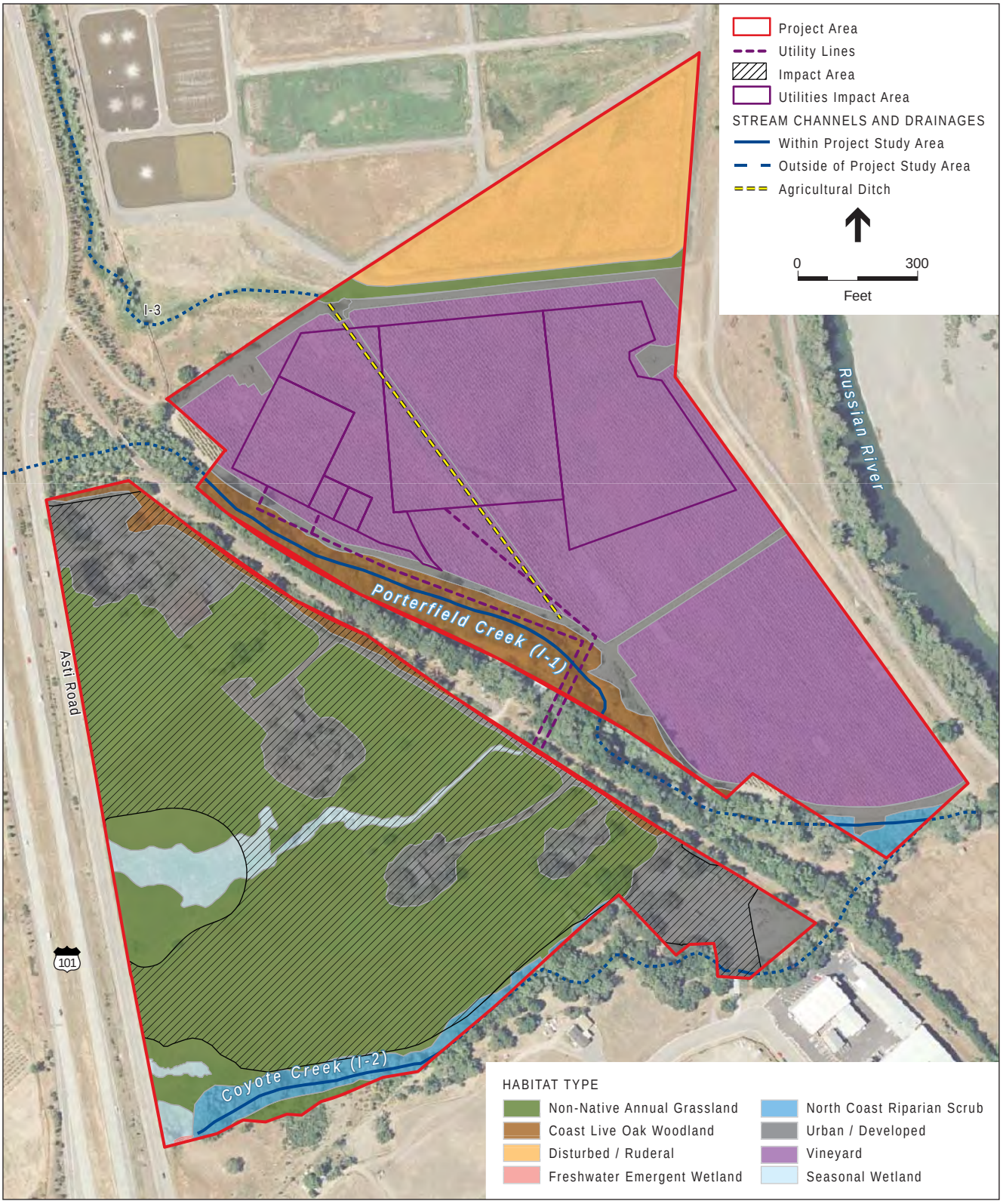
Implementation of Proposed Action would require the removal of habitats that are relied upon by many species of wildlife (refer to the general habitat descriptions in Section C). Based upon preliminary design drawings, implementation of Proposed Action would directly affect approximately 11.9 acres of the 26.10 total acres of vineyard, 0.58 acres of the 4.10 total acres of Coast live oak woodland, 20.18 acres of the 22.75 total acres of non-native annual grassland, and 0.11 acres of the 1.37 total acres of North Coast riparian. In addition, approximately 0.48 acres of the 1.47 total acres of seasonal wetland would be permanently impacted as a result of the Proposed Action (**Figure D-1**).

Effects to Water Quality and Local Hydrology

The Proposed Action may generate adverse impacts to water quality and downstream hydrology (flooding). These impacts may be generated through the construction of new impervious surfaces, including parking lots and buildings, as well as through introducing additional sources of pollutants, including vehicle fluids and trash. These impacts could adversely affect aquatic life in habitats located within the Action Area.

Effects to Upland Habitats

Development of Proposed Action would affect upland habitats that are used by a variety of plant and wildlife species. **Table D-1** provides a summary of the acreage of each upland habitat type that would be directly affected by the Proposed Action.



SOURCE: GlobeXplorer, 2007; and ESA, 2009

Cloverdale Rancheria Resort Casino Project Biological Assessment . 207737

Figure D-1

Proposed Action Habitat Impacts

TABLE D-1
POTENTIAL EFFECTS TO UPLAND WILDLIFE HABITAT TYPES

Habitat Type	Acres Affected	Percent Affected[1]
Urban/Developed	6.46	65.0%
Agricultural Lands: Vineyards	11.90	45.6%
Coast Live Oak Woodland	0.58	14.1%
Non-native Annual Grassland	20.18	88.7%
North Coast Riparian Scrub	0.11	8.0%
Total	**39.23**	**56.2%**

[1]Based upon amount of habitat available within PSA for each type as reflected in Table 3.5-1

SOURCE: ESA, 2009

Most of the above communities, including urban/developed, vineyards, and non-native annual grassland, are either regionally abundant (grasslands and vineyards) or are of little value to native plants and wildlife (urban). However, two of the communities, coast live oak woodland and north coast riparian scrub, are considered important biological communities (in terms of providing habitat) and are less regionally abundant.

Effects to Wetlands and Other Waters of the U.S.

Development of the Proposed Action would fill approximately 0.48 acres of wetlands. **Table D-2** provides a summary of the acreage for each wetland type that would be directly affected under the Proposed Action. There would be no direct effects to stream channels or freshwater emergent wetlands.

TABLE D-2
POTENTIAL DIRECT EFFECTS TO WATERS OF THE U.S.- PROPOSED ACTION

Type of Jurisdictional Feature	Acres Affected	Percent Affected[1]
Wetlands		
Seasonal Wetland	0.48	32.6%

[1]Based upon amount of habitat available within Project Site for each type as reflected in Table C-2

Source: ESA, 2009

Wetlands are ecologically important features that provide habitat for a variety of fish and wildlife, in addition to providing important water quality and hydrological functions.

Effects on Federally Listed Species

The Proposed Action has the potential to affect California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead and their associated critical and EFH habitats.

Direct Effects

Implementation of Proposed Action would not directly remove or degrade any riparian habitat or in-channel substrate within areas that are suitable for rearing or holding of native salmonids. Stream channels within the Project Site do not likely provide suitable spawning opportunities for anadromous species, as existing culverts likely block upstream migration. In addition, beyond the lower reaches of the Porterfield Creek (channel I-1) confluence with the Russian River, channel substrate lacks suitable cobble/gravel complexes, and exhibits increased sedimentation and lack of gravels and cobbles within the bed and bank. Proposed construction will occur within upland habitat not associated with suitable aquatic habitat, and no direct effects associated with the construction of these facilities are anticipated.

Indirect Effects

Indirect effects are defined as effects that may be caused by the Proposed Action, but would occur later in time. Long-term effects on listed species, designated critical habitat, and EFH may occur as result of the Proposed Action.

Construction and placement of storm drain outfall structures along Porterfield Creek and the upland drainage release system located along channel I-2 may result in a discharge of sediments downstream of these sites. Increased sedimentation may cause reduced survival of eggs or alevins, reduce primary and secondary creek/river productivity, interfere with feedings, and cause behavioral avoidance to native fish species downstream of the discharge area. However, by incorporating bioswales, a subterranean stormwater detention system, and porous concrete into the project design (see Drainage Study, **Appendix A**), along with implementing appropriate BMPs and erosion control measures, potential effects to emigrating juveniles or migrating adult California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead would be minimized.

Water quality may also be impacted if a spill or discharge of sediment-laden stormwater were to occur during construction of these improvements. The introduction of pollutants into these water bodies by a spill or discharge may result in the introduction of heavy metals, nutrients, hydrocarbons, or synthetic compounds, which may cause increased temperatures, disease susceptibility, or algal blooming. Sediment-laden stormwater may impact these species as described above. These potential effects would adversely affect native fish populations within Porterfield Creek and the Russian River. Application of the avoidance and minimization measures listed in Section B would reduce the magnitude of these potential effects.

Cumulative, Interrelated, and Interdependent Effects

With population increases and the subsequent development of the region, as well as the advent of agriculture and mining activities within the Russian River Basin, the deterioration of salmonid habitat within the Russian River and associated tributaries has led to the decline of native anadromous salmonid populations. The general transformation of the mainstem Russian River from deep cool pools and gravel riffle complexes into slower meandering, shallow warm water habitat with high sediment loading, has had a cumulative effect on the decline of these native fish populations.

The need for comprehensive water quality planning in the Russian River Basin and other coastal watersheds led to the development and adoption of the North Coast Region Water Quality Control Plan for the North Coast Region (NCRWQCB, 1993). The plan provides specific guidance on factors which must be considered in adoption of water quality objectives and implementation measures for the basin. The planning process considered past, existing, and future population and land uses based on recent population trends and projections contained in county general plans. With these projections, as well as current land-use practices, guidelines associated with surface water and groundwater use and discharge are adopted in order to benefit future water resources in the region.

As described previously, the Proposed Action avoids directly affecting suitable aquatic habitat for salmonids. In addition, the Proposed Action proposes several project features that would minimize potential effects to downstream water quality and hydrology during operations. Based on these factors, and because regional development is guided by the requirements of the North Coast Region Water Quality Control Plan, it is unlikely that the Proposed Action would have a significant, cumulative impact to salmonid habitat in the region.

Potential interrelated effects, such as water and wastewater service have been addressed in the project description and analyzed within this document. As previously stated under the private option, these services will be developed within the Project Site and the Tribe would construct and maintain water supply facilities on the project site. Facilities would include a groundwater well, water treatment plant, water storage tanks, a pumping system (including pressurized storage) and a piped delivery system. The WWTP would treat wastewater to a tertiary level for reuse and onsite disposal. Disposal of wastewater would only occur during the dry season at rates that would avoid any runoff, thereby reducing the potential of an incidental discharge into surface waters. Under the municipal option, these services would provided by the City of Cloverdale through existing facilities.

Off-site road improvements required to mitigate potential effects to traffic, would require the project sponsor to pay their fair share contribution towards the installation of traffic signals at the intersection of U.S. 101 Northbound Ramps/South Interchange. The project sponsor would pay their fair share contribution towards the construction of a roundabout that encompasses the intersections of U.S. 101 Northbound Ramps/South Interchange and Asti Road/South Interchange. The project sponsor would install traffic signals at one central main entrance to the project site on Asti Road, and construct a northbound right-turn lane and southbound left-turn lane on Asti Road at the site entrance. Supplementary driveways to the north and south of this signalized access would be configured to limit access to right-turn in/right-turn out only. These offsite improvements would occur in uplands and areas outside of suitable habitat for federally listed anadromous salmonids. In order to minimize water quality effects to local waterways from construction related run-off, a number of Best Management Practices (BMPs) would be required and incorporated in the proposed construction, thereby reducing potential effects.

SECTION E
Determination of Effect

We have determined that the Proposed Action will have no effect upon the following species:

- California freshwater shrimp, V *Syncaris pacifica* (E)
- Tidewater goby, *Eucyclogobius newberryi* (E)
- Delta smelt, *Hypomesus transpacificus* (T)
- Central Valley steelhead, *Oncorhynchus mykiss* (T)
- California red-legged fro*g, Rana aurora draytonii* (T)
- Marbled murrelet, *Brachyramphus marmoratus* (T)
- Northern spotted owl, *Strix occidentalis caurina* (T)
- Pennell's bird's-beak , *Cordylanthus tenius* ssp. *Capillaries* (E)

We have determined that the Proposed Action may affect, but is not likely to adversely affect, the following species and their associated critical habitats:

- California Coastal chinook salmon, *Oncorhynchus tshawytscha* (T)
- Central California Coastal steelhead, *Oncorhynchus mykiss* (T)
- Central California Coast coho salmon, *Oncorhynchus kisutch* (E)

We have determined that the Proposed Action may affect, but is not likely to adversely affect, the following Essential Fish Habitat:

- Pacific Coast Chinook Salmon

SECTION F
References

Adobe Associates Inc. 2009a. Water Supply Report for the Cloverdale Rancheria Casino Project Sonoma, California. Santa Rosa, Califorina.

Adobe Associates Inc. 2009b. Wastewater Treatment and Disposal Report for the Cloverdale Rancheria Casino Project Sonoma, California. Santa Rosa, Califorina.

California Department of Fish and Game (CDFG), 2002. Russian River Basin Fisheries Restoration Plan (Draft). Sacramento, CA.

California Department of Fish and Game (CDFG). 2008a. California Natural Diversity Database (CNDDB) Rarefind computer program (Version 3.1.0). California Department of Fish and Game, Biogeographic Data Branch. Sacramento, CA. Commercial Version dated: March 30, 2008.

Environmental Science Associates (ESA). 2008. Draft Wetland Delineation Report. Sacramento, CA.

Hickman, J. C., 1993. The Jepson Manual: Higher Plants of California. University of California Press. Berkeley, California.

Mayer, K. E., and W.F. Laudenslayer, Jr. 1988. A Guide to Wildlife Habitats of California. State of California Resources Agency, California Department of Fish and Game. Sacramento, CA. Accessed online May 2008: http://www.dfg.ca.gov/whdab/html/wildlife_habitats.html.

Moyle, Peter B., 2002. Inland Fishes of California. University of California Press, Ltd. Berkeley, CA.

North Coast Regional Water Quality Control Board (NCRWQCB), 1993. Water Quality Control Plan for the North Coast Region. Santa Rosa, CA.

Sawyer, J. O., Keeler-Wolf, T., 1995. A Manual of California Vegetation. California. Native Plant Society Press. Sacramento, CA.

Skinner, M. W. and B. M. Pavlik, eds., 1994. California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California. California Native Plant Society. Sacramento, CA.

U.S. Fish and Wildlife Service. 1998. Recovery Plan for the California Freshwater Shrimp. Portland, Oregon

U.S. Fish and Wildlife Service (USFWS). 2008a. Critical Habitat Portal. Accessed online June 6, 2008 at http://criticalhabitat.fws.gov/

U.S. Fish and Wildlife Service (USFWS). 2008b. Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the *Cloverdale and Asti, California* USGS 7.5-minute Topographic Quadrangles. Sacramento Fish and Wildlife Service, Endangered Species Division. Document Number: 080410042611. Accessed online April 10, 2008 at: http://www.fws.gov/sacramento/es/spp_list.htm

Yoshiyama, R, F. Fisher, and P. Moyle, 1998. Historical Abundance and Decline of Chinook Salmon in the Central Valley. North American Journal of Fisheries Management. Vol. 18. pp 487-521.

Appendix A
Drainage Study

ESA

PRELIMINARY DRAINAGE STUDY

For

CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

January 2009

Prepared for:

ESA
8950 Cal Center Drive
Building 3, Suite 300
Sacramento, CA 95826

Prepared by:

Adobe Associates, Inc.
1220 North Dutton Avenue
Santa Rosa, California 95401
Phone: (707) 541-2300

TABLE OF CONTENTS

Preliminary Drainage Study

	Page Number
Existing Terrain and Topography	1
Sensitive Areas	1
Storm Water Run-On	2
Wetlands	3
Drainage System Discharge Outfalls	3-4
Storm Water Runoff	4-5
Storm Water Quality	5-6

Exhibits

Preliminary Overall Site Plan
Preliminary Drainage Plan – Alternative A
Preliminary Drainage Plan – Alternative B
Preliminary Drainage Plan – Alternative C
Preliminary Drainage Plan – Alternative D
Preliminary Drainage Plan – Alternative E

Preliminary Drainage

Existing Terrain and Topography:
The proposed 69.8-acre project site is a trapezoidal shaped site bounded by the Russian River on the east side, the City of Cloverdale Wastewater Treatment Plant on the north side, Coyote Creek on the southern boundary, and State Highway 101 along the western boundary. Refer to the exhibit herein titled, "Preliminary Overall Site Plan".

Porterfield Creek flows from the northwest corner of the project site to the southeast corner parallel to and along the east side of the railroad tracks which bisects the project.

Surface drainage from the western 32-acre portion of the site flows across a gently sloping existing ground surface from the west to the east to Porterfield Creek, and then to the Russian River. Typical ground slopes range from one and a half percent to three percent. Presently, this area is primarily pasture land with several residential and barn structures.

The eastern 37.8-acre portion of the site is currently used as a vineyard and surface drainage flows from the north to the south. Surface runoff from the northern half of the vineyard flows to Porterfield Creek near the middle of the site. The southern half of the vineyard flows to Porterfield Creek near the southeast corner of the vineyard.

Sensitive Areas:
The Russian River is the receiving water body for drainage in the vicinity of the City of Cloverdale. Considered a sensitive water body, the Russian River is listed on the State 303(d) list of impaired water bodies. Listed impairments include nutrients, pathogens, and sedimentation/siltation.

The Environmental Protection Agency (EPA) Region 9 is the Federal agency responsible for compliance with the Federal Clean Water Act (CWA). Considerations for storm water quality mitigations during construction and post-construction will be required. The proposed construction activities and post-construction improvements require compliance with the CWA regulations through the National Pollutant Discharge Elimination System (NPDES) permits and requirements.

NDPES requirements include the filing of an application for permit coverage and the preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is a document in which pollutants from construction activities and ultimate development uses are identified and specific best management practices (BMPs) are specified to mitigate and eliminate pollutant runoff from the project site. BMPs will consist of a combination of physical improvements (i.e. silt fences, fiber rolls, hydro-seed, etc.) and practices (i.e. water sampling, subcontractor training, BMP inspection and maintenance, etc).

Preliminary wetland delineations have been conducted for the project site and are discussed further in the wetlands section herein.

Storm Water Run-On:
Drainage from offsite areas run on to the project site at several locations along the project's north and west boundaries. Refer to the exhibit titled, "Preliminary Overall Site Plan."

Significant storm water run-on occurs at the north end of the project from Heron Creek which has a watershed area of over 1,000 acres. Prior to the construction of Highway 101 in the early 1990's, Heron Creek flowed along the west side of the City's wastewater treatment plant (WWTP) and became tributary to Porterfield Creek near the northwest corner of the project. During the construction of Highway 101, Asti Road was re-aligned causing Porterfield Creek to be altered. Drainage problems arose subsequent to highway construction and the Asti Road realignment and have become a subject of litigation between locals and the City, and between the City and Caltrans.

The project is awaiting the outcome of this litigation to determine the improvements to be made by the City, necessary to address Heron Creek drainage problems. The City intends to explore solutions for mitigating the litigated drainage issues. It is presently unknown what impacts the City's ultimate drainage solution may have on the project.

In the absence of information about future mitigation impacts, the project has planned for the existing condition, where surface water from an approximate 1,000 acre watershed enters the project site. To address this existing condition, a surface drainage channel is proposed to be constructed to the east along the north boundary to the east boundary and then to the south to Porterfield Creek, replacing the existing surface ditch through the vineyard. The constructed drainage channel would move storm water around the proposed wastewater treatment facilities and spray fields.

Porterfield Creek is a defined water course originating from offsite areas to the west. Porterfield Creek appears to have diminished flow capacity from near the middle of the project site to its confluence with the Russian River. The agricultural diversion channel characteristics give way to a shallow, wider and more natural appearing creek in this section. Large storm events appear to breach the low-lying constructed berm along the creek's east bank and spill into the vineyard. Storm water which breeches the east bank of Porterfield Creek returns to the creek near the southeast corner of the project.

Another source of storm water run-on to the project site is Highway 101 and the area immediately west of the highway. Two existing 30-inch diameter culverts discharge storm water at the west boundary of the project. Evidence of potential wetlands exists near the discharge end of both of these culverts. The tributary area to each of these culverts is approximately 20 acres. Preliminary wetland delineations have been conducted at each location of run-on drainage and are shown on the drainage exhibits for Alternatives A-E herein.

Wetlands:
A wetland mitigation area has been planned on the project site and is located at the east side of Asti Road between the project entrances. Site improvements in the vicinity of both preliminary wetland delineation areas will be designed and constructed to avoid the wetlands areas. Alternatives A through D propose the use of retaining walls to protect proposed fill locations from impacting both wetland areas. Alternative E proposes the use of retaining walls to protect the wetland area between the project entrances on Asti Road. Wetlands are impacted by the south entrance location proposed in Alternative E and will require additional mitigation. Mitigation options include: a.) wetlands creation/replacement adjacent to the wetlands between the two project entrances leading to the retail use areas, b.) the creation of a wetlands replacement area elsewhere on the project site, or c.) a site plan modification to relocate the southern access road on Alternative E.

Drainage System Discharge Outfalls:

Site portion west of railroad tracks:
Presently concentrated storm water drainage on the portion of the site west of the railroad tracks exits the site from four culvert outfall locations. Pre-development sheet flow runoff occurs at the northwest end of the site, at the easterly most portions of the site, and along the southern boundary adjacent to the Coyote Creek.

Existing culvert locations and sizes are proposed to be maintained for the developed site alternatives. Project improvements are proposed to mitigate post-construction storm water runoff to pre-construction run-off rates, reducing potential development impacts to the pre-development (existing) conditions. Improvements proposed include subterranean detention systems and upland drainage release systems.

Two storm drain outfalls exist along the northeast boundary, passing under the railroad track and discharging indirectly to Porterfield Creek. The northern culvert is an 18-inch pipe which discharges upstream to an area showing highly erodible soil conditions. Proposed site improvements would extend the 18-inch culvert through the erodible areas and discharge to the existing drainage course downstream. Energy dissipation would be provided at the discharge end of the culvert.

Slope protection practices such as hydro-seeding, planting, and soil reinforcement mats are proposed during construction to prevent erosion and sediment transport to Porterfield Creek. This would mitigate pollutants from being transported from this area to Porterfield Creek.

The southern culvert crossing the railroad tracks is a 24-inch culvert. Field inspection of this culvert revealed the existence of two water lines within the culvert, which appear to be used as a way to move well water from Porterfield Creek to locations on the west side of the railroad track. These water lines will be removed or relocated during construction of site utilities, to provide full capacity of the drainage culvert.

Proposed building improvements for alternatives A-E require concentrated flows to be directed toward the southern project boundary where existing sheet flow discharges occur. Upland drainage release systems are proposed at a minimum of two locations along the south boundary. Upland drainage release systems consist of a field of large diameter rock placed near the existing grade surface which spreads concentrated flow to a sheet flow condition prior to being discharged over the natural ground surface to Coyote Creek. Upland drainage release systems are an increasingly common and effective way to discharge to creeks and waterways without the construction of pipe outfalls, head walls, and erosion protection within the flow areas of the waterway.

Site portion east of railroad tracks:
Surface water leaves the east portion of the site at two locations. Natural low points exist at both locations where storm water runoff is discharged over the existing ground surface to Porterfield Creek. One existing outfall location, located near the middle of the project site discharging to the east bank of Porterfield Creek, is proposed be left in its natural condition.

A second outfall location, near the southeast corner of the site, is also proposed to be left in its natural condition. This location will be the downstream end of the constructed drainage ditch conveying the flows from Heron Creek.

Storm Water Runoff:
Storm water runoff from the project site is proposed to be limited to the pre-development runoff conditions. Increased runoff from the developed site would be mitigated by several methods including detention facilities and pervious surfaces.

Pervious concrete surfaces are proposed for a considerable portion of the driveway and parking surfaces. Refer to the exhibits titled, "Preliminary Drainage Plan – Alternative (A-E)" for porous surface locations and for pervious and non-pervious surface areas.

Minimizing the amount of impervious surfacing has the benefit of reducing runoff by allowing more opportunity for infiltration and groundwater recharge. Additional benefits to porous concrete surfaces are surface water filtration, storm water storage, reduced storm drainage piping and structures, and reduced heat surface versus asphalt paving surfaces.

Increased storm water runoff from the project site would be mitigated further by detaining runoff during periods of high intensity rain events and metering the discharge to pre-development discharges. A detention system would provide a reservoir to collect the runoff during the periods of high rainfall.

Subterranean detention systems are proposed under the parking areas in alternatives A-E. A subterranean detention system would be constructed using a network of large diameter pipes for storage and an outlet structure which restricts discharges from the detention system to pre-development flow rates. Storm water detention storage design determines the storage volume required to detain the increased runoff from a 10-year storm event, to discharge the runoff at the pre-development runoff rate or less. Storm events greater than 10-year events will be detained to the storage capacities designed for the 10-year event

and excess flows will bypass, via culverts, the detention facility and discharge into the upland drainage release system.

Subterranean detention system locations and discharge locations are shown on the exhibits titled, "Preliminary Drainage Plan – Alternative (A-E)." Approximate detention storage volumes are shown in Table 1 below and assume that no other means (i.e. porous concrete surfaces) of onsite storm water storage is utilized.

Table 1 – Subterranean Detention System Volume Requirements

Alternative	10-year Storm Volume (cf)	10-year Storm Volume (ac-ft)
A-D	60,100	1.38
E	31,800	0.73

Storm Water Quality:
Cloverdale Rancheria site runoff enters Porterfield Creek along the northeast boundary and Coyote Creek along the southern boundary. Both creeks are tributary to the Russian River, the receiving water body, approximately 1/3 of a mile southeast of the project site. Pollutants of concern for the Russian River basin, according to the State of California 303 (d) list, include nutrients, pathogens, and sediment/siltation.

Potential sources for nutrients are agricultural activities. Pathogens are a pollutant associated with urban runoff, while the source of sediment and siltation includes agriculture, construction and land development, and urban runoff. Treatment of runoff is accomplished through a combination of source controls and treatment controls.

Proposed source treatment controls to be used on the project site for storm water quality mitigation include the following:

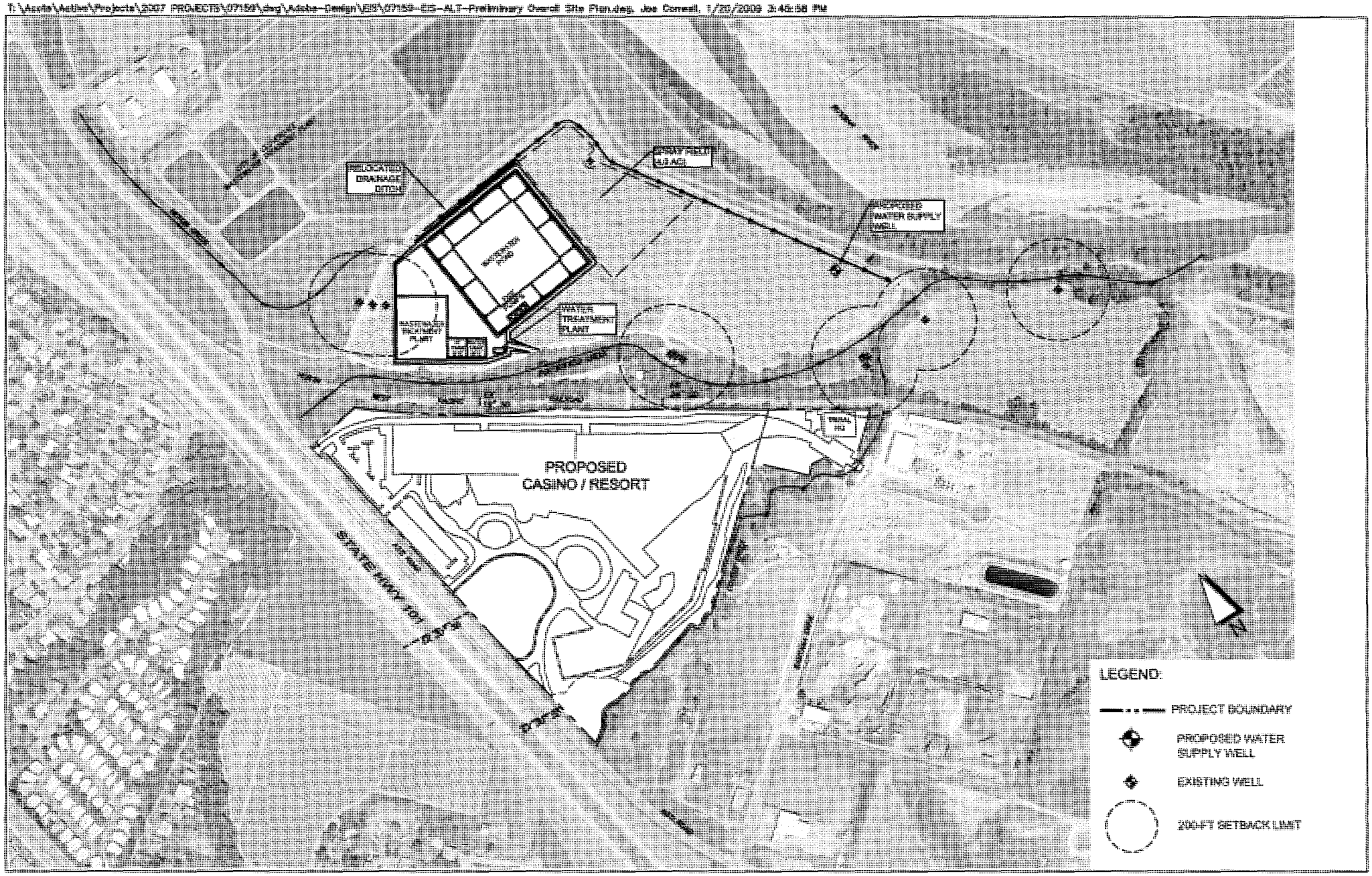
- Landscaping designs to prevent sediment transport to storm drain systems.
- Design landscaping to vector control requirements - avoid water ponding.
- Use porous concrete surfacing in driveways and parking areas – maximizes pervious surfaces and reduces runoff while filtering pollutant particles from runoff, reduces required stormwater detention volumes, reduces storm drain pipe and structure improvements.
- Treat runoff in landscaping or porous concrete surfaces prior to storing in storm water detention facility.
- Use upland drainage release system to release water to existing creeks – avoids the need to place storm drain outfall piping, headwall structures, and energy dissipation improvements within existing creek banks.
- Discharge roof drainage directly to landscape or porous concrete surfaces – allows treatment prior to entering storm drain system.
- Incorporate Integrated Pest Management (IPM) principles and techniques for design and maintenance.

Proposed treatment controls to maintain or improve water quality include the following:

- Use bio-swales to channel and treat surface water
- Proprietary treatment systems maybe used as an alternative to porous concrete surfaces.

In addition to the above source and treatment controls, which are post-construction or permanent controls, best management practices (BMPs) will be implemented during the construction phase. These BMPs control the transport of pollutants from the construction site to the natural water ways. An erosion and sediment control plan will be prepared with the construction design drawings and a Storm Water Pollution Prevention Plan (SWPPP) as required by the EPA Region 9 prior to the start of construction. Both documents will describe the devices and practices to control pollutant runoff during and after construction.

T:\Acots\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-Preliminary Overall Site Plan.dwg, Joe Correll, 1/20/2009 3:45:58 PM



CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

GRAPHIC SCALE: 1" = 500'

0 250 500 1,000

PRELIMINARY OVERALL SITE PLAN

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-A_Drainage.dwg, Joe Conwell, 1/15/2009 9:11:43 AM

SURFACE AREAS			
PERVIOUS (AC)	% OF TOTAL	NON-PERVIOUS (AC)	% OF TOTAL
15	47	17	53

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY DRAINAGE PLAN - ALTERNATIVE A

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-B_Drainage.dwg, Joe Conwell, 1/15/2009 9:15:45 AM

SURFACE AREAS			
PERVIOUS (AC)	% OF TOTAL	NON-PERVIOUS (AC)	% OF TOTAL
17	53	15	47

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY DRAINAGE PLAN - ALTERNATIVE B

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-C_Drainage.dwg, Joe Conwell, 1/15/2009 9:23:02 AM

SURFACE AREAS			
PERVIOUS (AC)	% OF TOTAL	NON-PERVIOUS (AC)	% OF TOTAL
17	53	15	47

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY DRAINAGE PLAN - ALTERNATIVE C

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-D_Drainage.dwg, Joe Conwell, 1/15/2009 9:25:02 AM

SURFACE AREAS			
PERVIOUS (AC)	% OF TOTAL	NON-PERVIOUS (AC)	% OF TOTAL
20	63	12	37

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

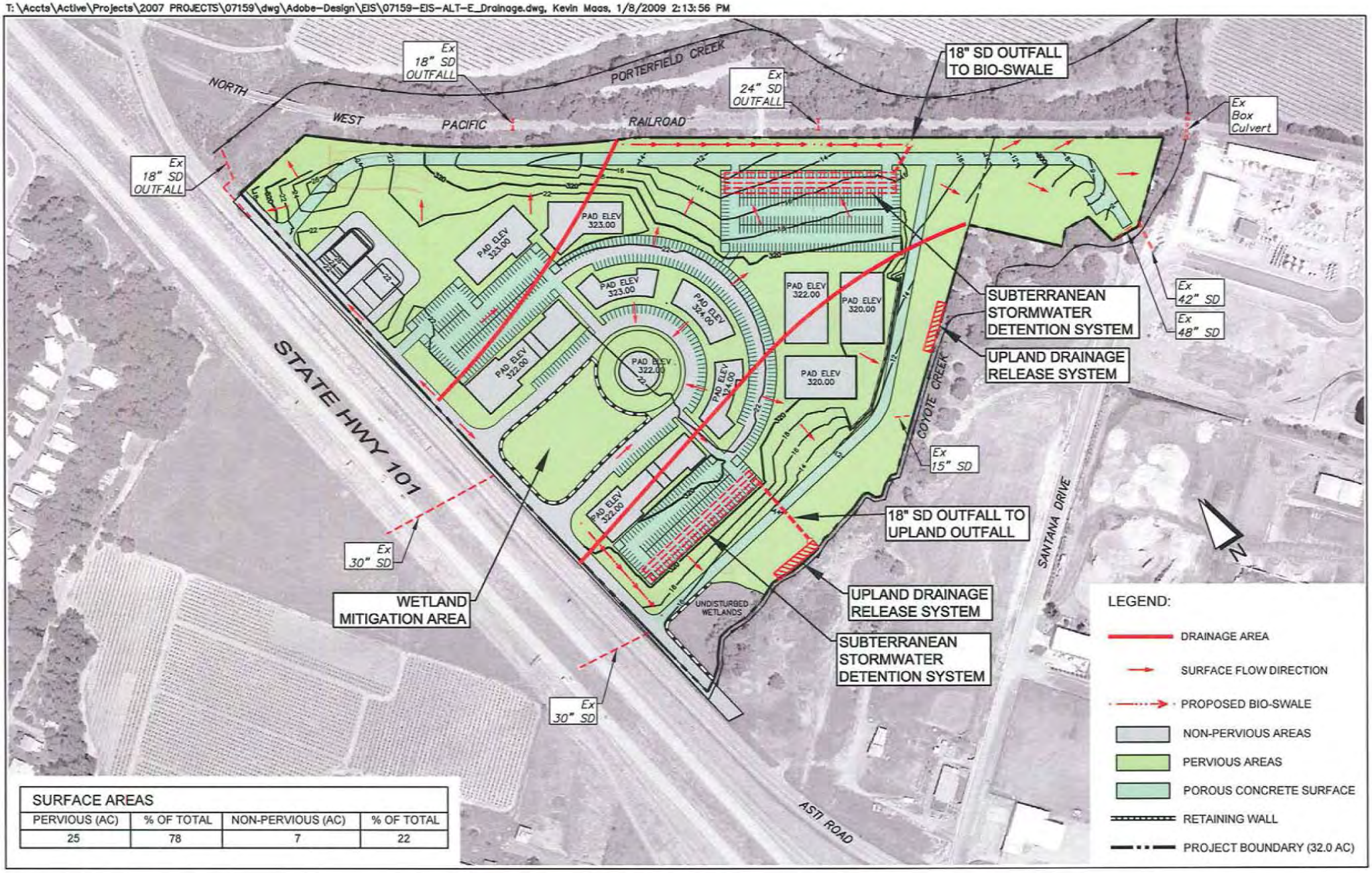
PRELIMINARY DRAINAGE PLAN - ALTERNATIVE D

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-E_Drainage.dwg, Kevin Maas, 1/8/2009 2:13:56 PM



SURFACE AREAS			
PERVIOUS (AC)	% OF TOTAL	NON-PERVIOUS (AC)	% OF TOTAL
25	78	7	22

CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY DRAINAGE PLAN - ALTERNATIVE E

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

Appendix B

USFWS Species List

ESA

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

December 11, 2008

Document Number: 081211032846

Chariss Tweedy
Environmental Science Associates
8950 Cal Center Drive
Building 3, Suite 300
Sacramento, CA 95826

Subject: Species List for Cloverdale EIS

Dear: Ms. Tweedy

We are sending this official species list in response to your December 11, 2008 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be March 11, 2009.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division

TAKE PRIDE IN AMERICA

U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 081211032846

Database Last Updated: September 11, 2008

Quad Lists

Listed Species

Invertebrates

Syncaris pacifica
- California freshwater shrimp (E)

Fish

Eucyclogobius newberryi
- tidewater goby (E)

Hypomesus transpacificus
- delta smelt (T)

Oncorhynchus kisutch
- coho salmon - central CA coast (E) (NMFS)
- Critical habitat, coho salmon - central CA coast (X) (NMFS)

Oncorhynchus mykiss
- Central California Coastal steelhead (T) (NMFS)
- Central Valley steelhead (T) (NMFS)
- Critical habitat, Central California coastal steelhead (X) (NMFS)
- Critical habitat, Northern California steelhead (X) (NMFS)
- Northern California steelhead (T) (NMFS)

Oncorhynchus tshawytscha
- California coastal chinook salmon (T) (NMFS)
- Critical habitat, California coastal chinook salmon (X) (NMFS)

Amphibians

Rana aurora draytonii
- California red-legged frog (T)

Birds

Brachyramphus marmoratus
- marbled murrelet (T)

Strix occidentalis caurina
- northern spotted owl (T)

Plants

Cordylanthus tenuis ssp. capillaris
- Pennell's bird's-beak (E)

Quads Containing Listed, Proposed or Candidate Species:

GEYSERVILLE (518B)

WARM SPRINGS DAM (519A)
TOMBS CREEK (519B)
HIGHLAND SPRINGS (534B)
ASTI (534C)
HOPLAND (535A)
Yorkville (535B)
BIG FOOT MTN. (535C)
CLOVERDALE (535D)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist

and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be March 11, 2009.

Appendix E

CNDDB and USFWS Species List

ESA

Actinemys marmorata marmorata

northwestern pond turtle

Element Code: ARAAD02031

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3G4T3
State: S3

Other Lists
CDFG Status: SC

Habitat Associations
General: ASSOCIATED WITH PERMANENT OR NEARLY PERMANENT WATER IN A WIDE VARIETY OF HABITATS.
Micro: REQUIRES BASKING SITES. NESTS SITES MAY BE FOUND UP TO 0.5 KM FROM WATER.

Occurrence No. 26 **Map Index:** 31353 **EO Index:** 20287

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1995-05-15
Site: 1995-05-15
Record Last Updated: 1996-01-22

Quad Summary: Warm Springs Dam (3812361/519A)
County Summary: Sonoma

Lat/Long: 38.69974º / -123.04806º
UTM: Zone-10 N4283458 E495821
Area:
Elevation: 300 ft

Mapping Precision NON-SPECIFIC
Symbol Type: POLYGON

Township: 10N
Range: 11W
Section: 23 **Qtr:** XX
Meridian: M

Location: WARM SPRINGS ARM OF LAKE SONOMA.
Location Detail: ADULTS FOUND THROUGHOUT THE WARM SPRINGS ARM.
Ecological: HABITAT CONSISTS OF A LARGE, MAN-MADE RESERVOIR, WITH AN ADJACENT EVERGREEN FOREST; LOTS OF DOWN TREES LAYING ON THE BANK AND IN THE WATER. NO GRAZING FOR PAST 10-12 YEARS. SOME STEEP SLOPES WITH EROSION. LARGEMOUTH BASS IN THE LAKE.
General: 11 ADULTS OBSERVED ON 15 MAY 1995. CAS SPECIMEN #23016, DATE UNKNOWN.
Owner/Manager: DOD-COE

Occurrence No. 100 **Map Index:** 38444 **EO Index:** 33452

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1997-05-07
Site: 1997-05-07
Record Last Updated: 1998-03-24

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.93838º / -122.94187º
UTM: Zone-10 N4309940 E505037
Area: 28.5 acres
Elevation: 1,760 ft

Mapping Precision SPECIFIC
Symbol Type: POLYGON

Township: 13N
Range: 10W
Section: 35 **Qtr:** NW
Meridian: M

Location: HIGHLAND CREEK, ON THE NORTH SIDE OF HIGHLAND SPRINGS ROAD, ABOUT 2 MILES UPSTREAM FROM HIGHLAND RESERVOIR.
Ecological: HABITAT CONSISTS A PERENNIAL STREAM WITH RIPARIAN DOMINATED BY SALIX LASIANDRA AND ABUNDANT EMERGENT CAREX NUDATA.
General: A SINGLE ADULT MALE WAS CAPTURED ON 7 MAY 1997 WHILE CROSSING THE DIRT BED OF HIGHLAND SPRINGS ROAD.
Owner/Manager: BLM-CLEAR LAKE RA

Occurrence No. 108 **Map Index:** 41688 **EO Index:** 41688

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-05-21
Site: 1999-05-21
Record Last Updated: 1999-09-27

Quad Summary: Cloverdale (3812371/535D)
County Summary: Mendocino

Lat/Long: 38.87173º / -123.05632º
UTM: Zone-10 N4302544 E495114
Area: 3.0 acres
Elevation: 500 ft

Mapping Precision SPECIFIC
Symbol Type: POLYGON

Township: 12N
Range: 11W
Section: 23 **Qtr:** SW
Meridian: M

Location: 0.6 MILE WEST OF HIGHWAY 101, 4.5 MILES NNW OF CLOVERDALE.
Ecological: HABITAT CONSISTS OF A STOCK POND THAT IS USED FOR VINEYARD IRRIGATION; SURROUNDED BY GRASSLANDS AND VINEYARDS.
General: 1 INDIVIDUAL OBSERVED ON 21 MAY 1999.
Owner/Manager: PVT

Actinemys marmorata marmorata

northwestern pond turtle

Element Code: ARAAD02031

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3G4T3
State: S3

Other Lists
CDFG Status: SC

Habitat Associations
General: ASSOCIATED WITH PERMANENT OR NEARLY PERMANENT WATER IN A WIDE VARIETY OF HABITATS.
Micro: REQUIRES BASKING SITES. NESTS SITES MAY BE FOUND UP TO 0.5 KM FROM WATER.

Occurrence No. 142 **Map Index:** 46847 **EO Index:** 46847
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2001-10-09
Site: 2001-10-09
Record Last Updated: 2001-12-17

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.94001º / -122.90721º
UTM: Zone-10 N4310123 E508041
Area:
Elevation: 1,500 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POLYGON
Township: 13N
Range: 09W
Section: 30 **Qtr:** SW
Meridian: M

Location: SOUTH END OF HIGHLAND SPRINGS RESERVOIR; 0.2 MILES NORTH OF HIGHLAND SPRINGS.
Threat: CHANGE IN WATER REGIME.
General: 9 OCT 2001: 2 INDIVIDUALS OBSERVED BASKING.
Owner/Manager: UNKNOWN

Occurrence No. 168 **Map Index:** 49542 **EO Index:** 49542
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2002-08-13
Site: 2002-08-13
Record Last Updated: 2002-12-03

Quad Summary: Cloverdale (3812371/535D)
County Summary: Sonoma

Lat/Long: 38.82086º / -123.01047º
UTM: Zone-10 N4296898 E499091
Area:
Elevation: 650 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POLYGON
Township: 11N
Range: 10W
Section: 07 **Qtr:** XX
Meridian: M

Location: RUSSIAN RIVER, BETWEEN GEYSERS ROAD BRIDGE AND CROCKER BRIDGE (ON HIGHWAY 101), CLOVERDALE
Location Detail: TURTLES WERE FOUND BASKING ON LARGE, WOODY DEBRIS ALONG THE BANKS IN WATER DEPTHS >3 FEET.
Ecological: HABITAT CONSISTS OF RIVERINE IN A WELL-DEVELOPED RIPARIAN ZONE; PREVIOUS BANKSIDE EROSION CONTROL HAS LIMITED RIPARIAN VEGETATION GROWTH IN SOME AREAS.
General: 6 ADULT POND TURTLES OBSERVED DURING A KAYAK SURVEY ON 13 AUG 2002.
Owner/Manager: UNKNOWN

Occurrence No. 171 **Map Index:** 49546 **EO Index:** 49546
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2002-08-14
Site: 2002-08-14
Record Last Updated: 2002-12-04

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.94367º / -123.08145º
UTM: Zone-10 N4310528 E492941
Area:
Elevation: 650 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POLYGON
Township: 13N
Range: 11W
Section: 33 **Qtr:** XX
Meridian: M

Location: RUSSIAN RIVER, FROM SQUAW ROCK NORTH TO THE HIGHWAY 175 CROSSING, SE OF HOPLAND
Ecological: HABITAT CONSISTS OF RIVERINE IN A WELL-DEVELOPED RIPARIAN ZONE; PREVIOUS BANKSIDE EROSION CONTROL HAS LIMITED RIPARIAN VEGETATION GROWTH IN SOME AREAS. SURROUNDED BY AGGREGATE MINING, OPEN SPACE, AND VINEYARDS.
General: 14 AUG 2002: 4 ADULT WESTERN POND TURLES OBSERVED (1 CAPTURED/RELEASED; CARAPACE = 150MM) BETWEEN THE HIGHWAY 101 OVERPASS AND SQUAW ROCK; 4 ADULT TURTLES OBSERVED BETWEEN HIGHWAY 101 AND HIGHWAY 175.
Owner/Manager: UNKNOWN

Actinemys marmorata marmorata

northwestern pond turtle

Element Code: ARAAD02031

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3G4T3
State: S3

Other Lists
CDFG Status: SC

Habitat Associations
General: ASSOCIATED WITH PERMANENT OR NEARLY PERMANENT WATER IN A WIDE VARIETY OF HABITATS.
Micro: REQUIRES BASKING SITES. NESTS SITES MAY BE FOUND UP TO 0.5 KM FROM WATER.

Occurrence No. 173 **Map Index:** 49556 **EO Index:** 49556
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2002-08-20
Site: 2002-08-20
Record Last Updated: 2002-12-04

Quad Summary: Geyserville (3812268/518B), Asti (3812278/534C)
County Summary: Sonoma

Lat/Long: 38.73620º / -122.93627º
UTM: Zone-10 N4287505 E505538
Area:
Elevation: 600 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POLYGON
Township: 10N
Range: 10W
Section: 11 **Qtr:** XX
Meridian: M

Location: RUSSIAN RIVER, BETWEEN WASHINGTON SCHOOL BRIDGE AND HIGHWAY 128 BRIDGE, IN ALEXANDER VALLEY

Ecological: HABITAT CONSISTS OF RIVERINE IN A WELL-DEVELOPED RIPARIAN ZONE; PREVIOUS BANKSIDE EROSION CONTROL HAS LIMITED RIPARIAN VEGETATION GROWTH IN SOME AREAS. SURROUNDED BY AGGREGATE MINING, OPEN SPACE, AND VINEYARDS.

General: 24 ADULT WESTERN POND TURTLES OBSERVED ON 20 AUG 2002 DURING A KAYAK SURVEY OF THE RIVER.

Owner/Manager: UNKNOWN

Occurrence No. 176 **Map Index:** 51831 **EO Index:** 51831
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-06-XX
Site: 1999-06-XX
Record Last Updated: 2003-07-22

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.93695º / -122.88468º
UTM: Zone-10 N4309786 E509994
Radius: 80 meters
Elevation: 1,460 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 13N
Range: 09W
Section: 32 **Qtr:** NE
Meridian: M

Location: ADOBE CREEK, SW OF HIGHLAND SPRINGS CUTOFF, 1 MILE EAST OF HIGHLAND SPRINGS RESERVOIR

Location Detail: SITE IS LOCATED ~100' WEST OF POLE #3973+80.

General: 1 INDIVIDUAL OBSERVED DURING MAY-JUN 1999.

Owner/Manager: PVT

Occurrence No. 277 **Map Index:** 69851 **EO Index:** 70674
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2005-05-13
Site: 2005-05-13
Record Last Updated: 2007-09-05

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.98127º / -123.11442º
UTM: Zone-10 N4314704 E490089
Area: 23.0 acres
Elevation: 505 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 13N
Range: 11W
Section: 18 **Qtr:** SW
Meridian: M

Location: EAST SIDE OF HIGHWAY 101, 0.5 MILE NORTH OF HOPLAND.

Ecological: HABITAT CONSISTS OF AN INTERMITTENT STREAM IMPOUNDED INTO A SERIES OF LARGE PONDS; SUPPORTS RIPARIAN VEGETATION OF WILLOWS, VALLEY OAKS, OREGON ASH, COTTONWOODS, AND HIMILAYAN BLACKBERRY.

Threat: THREATENED BY THE PROPOSED HOPLAND BYPASS HIGHWAY PROJECT AND VINEYARD MAINTENANCE ACTIVITIES.

General: 2 TURTLES OBSERVED DURING MAY AND JUNE 2004, AND ON 13 MAY 2005.

Owner/Manager: PVT

Actinemys marmorata marmorata

northwestern pond turtle — **Element Code:** ARAAD02031

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3G4T3
State: S3

Other Lists
CDFG Status: SC

Habitat Associations
General: ASSOCIATED WITH PERMANENT OR NEARLY PERMANENT WATER IN A WIDE VARIETY OF HABITATS.
Micro: REQUIRES BASKING SITES. NESTS SITES MAY BE FOUND UP TO 0.5 KM FROM WATER.

Occurrence No. 278 **Map Index:** 69853 **EO Index:** 70676
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2005-05-13
Site: 2005-05-13
Record Last Updated: 2007-09-05

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.99702º / -123.10235º
UTM: Zone-10 N4316450 E491136
Area: 14.0 acres
Elevation: 560 ft
Mapping PrecisionSPECIFIC
Symbol Type:POLYGON
Township: 13N
Range: 11W
Section: 08 **Qtr:** XX
Meridian: M

Location: 0.25 MILE EAST OF RIVER ROAD AND 1 MILE WSW OF THE UC-HOPLAND FIELD STATION, 1.8 MILES NNE OF HOPLAND.

Location Detail: SITE IS LOCATED EAST OF THE FETZER VINEYARD COOPERAGE FACILITY.

Ecological: HABITAT CONSISTS OF A LARGE POND, WITH EMERGENT VEGETATION OF CATTAILS, BULRUSHES, HIMALAYAN BLACKBERRY, AND SEVERAL DEAD TREE SNAGS.

Threat: THREATENED BY THE PROPOSED HOPLAND BYPASS HIGHWAY PROJECT AND VINEYARD MAINTENANCE ACTIVITIES.

General: 3 TURTLES OBSERVED DURING MAY AND JUNE 2004, AND ON 13 MAY 2005.

Owner/Manager: PVT-FETZER VINEYARDS

Occurrence No. 366 **Map Index:** 70720 **EO Index:** 71630
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2006-12-06
Site: 2006-12-06
Record Last Updated: 2008-02-25

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.71312º / -122.98649º
UTM: Zone-10 N4284943 E501173
Radius: 80 meters
Elevation: 190 ft
Mapping PrecisionSPECIFIC
Symbol Type:POINT
Township: 10N
Range: 10W
Section: 17 **Qtr:** XX
Meridian: M

Location: DRY CREEK, 1.3 MILES SE (DOWNSTREAM) OF WARM SPRINGS DAM ON LAKE SONOMA.

Ecological: PERENNIAL DRY CREEK WITH DENSE ALDER/WILLOW RIPARIAN HABITAT. FLATWATER AREAS WITH LARGE WOODY DEBRIS ALONG THE BANKS PROVIDE BASKING HABITAT FOR TURTLES. FLOWS AUGMENTED BY DAM RELEASES.

General: 1 ADULT OBSERVED BASKING ON A LOG. THIS TURTLE OBSERVATION IS FROM LATE FALL WHEN MOST TURTLES ARE LIKELY INACTIVE. CREEK SURVEYED BY KAYAK FROM WARM SPRINGS DAM TO LAMBERT BRIDGE.

Owner/Manager: UNKNOWN

Occurrence No. 369 **Map Index:** 71004 **EO Index:** 71922
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2007-11-22
Site: 2007-11-22
Record Last Updated: 2008-03-07

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.62723º / -122.89775º
UTM: Zone-10 N4275416 E508899
Radius: 80 meters
Elevation: 100 ft
Mapping PrecisionSPECIFIC
Symbol Type:POINT
Township: 09N
Range: 09W
Section: 18 **Qtr:** Ξ
Meridian: M

Location: DRY CREEK, 1.8 MILES UPSTREAM FROM THE WESTSIDE ROAD CROSSING, WEST OF HEALDSBURG.

Ecological: HABITAT CONSISTS OF A CREEK WITH MATURE WILLOW/ALDER RIPARIAN.

General: 2 POND TURTLES OBSERVED BASKING ON A LOG ON 22 NOV 2007. TURTLES SEEN DURING A CHINOOK SALMON KAYAK SURVEY.

Owner/Manager: UNKNOWN

Agelaius tricolor

tricolored blackbird

Element Code: ABPBXB0020

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2G3
State: S2

Other Lists
CDFG Status: SC

Habitat Associations
General: HIGHLY COLONIAL SPECIES, MOST NUMBEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.
Micro: REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, & FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Occurrence No. 173 **Map Index:** 17172 **EO Index:** 12054

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1990-05-20
Site: 1990-05-20
Record Last Updated: 1990-11-26

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.92436º / -123.07772º
UTM: Zone-10 N4308385 E493262
Radius: 80 meters
Elevation: 600 ft

Mapping PrecisionSPECIFIC
Symbol Type:POINT

Township: 12N
Range: 11W
Section: 03 **Qtr:** NW
Meridian: M

Location: SE ARM OF BRADFORD POND, APPROXIMATELY 3 MI SE OF HOPLAND.
Location Detail: 50+ ADULTS NESTING IN CATTAILS IN THE SE ARM OF A 50-ACRE RESERVOIR; THIS PORTION OF RESERVOIR IS FENCED TO EXCLUDE
Ecological: ALTHOUGH A WORKING CATTLE RANCH, THERE ARE NO KNOWN THREATS; AREA IS FENCED TO EXCLUDE CATTLE FROM RANCH HOUSE AREA.
General: BRADFORD POND IS A NEW RESERVOIR, APPROXIMATELY 6 YEARS OLD.
Owner/Manager: PVT

Allium peninsulare var. franciscanum

Franciscan onion

Element Code: PMLIL021R1

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G5T2	**CNPS List:** 1B.2
State: None	**State:** S2.2	

Habitat Associations

General: CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.

Micro: CLAY SOILS; OFTEN ON SERPENTINE. DRY HILLSIDES. 100-300M.

Occurrence No. 13 **Map Index:** 63842 **EO Index:** 63937

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-06-01
Site: 1999-06-01
Record Last Updated: 2006-02-01

Quad Summary: Cloverdale (3812371/535D)
County Summary: Mendocino

Lat/Long: 38.86960º / -123.06581º
UTM: Zone-10 N4302308 E494290
Area:
Elevation: 1,050 ft

Mapping Precision NON-SPECIFIC
Symbol Type: POLYGON

Township: 12N
Range: 11W
Section: 22 **Qtr:** SE
Meridian: M

Location: NORTH OF CONFLUENCE OF EDWARDS CREEK AND RUSSIAN RIVER; WEST OF HWY 101 AT GEYERS RD EXIT; 5.5 AIR MI NNW OF CLOVERDALE.

Location Detail: ON JEEP ROAD ASCENDING RIDGE, IN THE SE 1/4 OF SE 1/4 OF SECTION 22.

Ecological: SERPENTINE BARRENS AND CHAPARRAL WITH SPARSE QUERCUS DURATA THICKETS, PERENNIAL GRASSLAND WITH NASELLA SPP.

General: 1999 TAYLOR COLLECTION IS THE ONLY SOURCE FOR THIS SITE. TAYLOR NOTES "FLOWERS WHITE; ATYPICAL?" ID UNCERTAIN? NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Ammodramus savannarum

grasshopper sparrow

Element Code: ABPBXA0020

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5
State: S2

Other Lists
CDFG Status: SC

Habitat Associations
General: DENSE GRASSLANDS ON ROLLING HILLS, LOWLAND PLAINS, IN VALLEYS & ON HILLSIDES ON LOWER MOUNTAIN SLOPES.
Micro: FAVORS NATIVE GRASSLANDS WITH A MIX OF GRASSES, FORBS & SCATTERED SHRUBS. LOOSELY COLONIAL WHEN NESTING.

Occurrence No. 1 **Map Index:** 47283 **EO Index:** 47283

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1991-06-XX
Site: 1991-06-XX
Record Last Updated: 2002-02-25

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.98529º / -123.08567º
UTM: Zone-10 N4315147 E492580
Radius: 1/10 mile
Elevation: 840 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 13N
Range: 11W
Section: 17 **Qtr:** XX
Meridian: M

Location: NORTH EDGE OF SANEL VALLEY, 0.8 MILES EAST OF RIVER ROAD, 1.8 MILES NE OF HOPLAND.

Ecological: HABITAT CONSISTS OF MODERATELY GRAZED (BY SHEEP AND CATTLE) GRASSLAND DOMINATED BY NON-NATIVE ANNUALS.

Threat: THREAT IS THE PROPOSED HOPLAND BYPASS.

General: JUNE 1991 TO PRESENT DATE (DATE UNKNOWN, BUT RECEIVED IN CNDDB 13 FEB 2002): A BREEDING COLONY CONSISTING OF APPROXIMATELY 10 INDIVIDUALS.

Owner/Manager: UC-HOPLAND FIELD STATION

Amphispiza belli belli

Bell's sage sparrow

Element Code: ABPBX97021

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5T2T4
State: S2?

Other Lists
CDFG Status:

Habitat Associations
General: NESTS IN CHAPARRAL DOMINATED BY FAIRLY DENSE STANDS OF CHAMISE. FOUND IN COASTAL SAGE SCRUB IN SOUTH OF RANGE.
Micro: NEST LOCATED ON THE GROUND BENEATH A SHRUB OR IN A SHRUB 6-18 INCHES ABOVE GROUND. TERRITORIES ABOUT 50 YDS APART.

Occurrence No. 1 **Map Index:** 44020 **EO Index:** 44020
Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2000-06-XX
Site: 2000-06-XX
Record Last Updated: 2000-10-12

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake, Mendocino

Lat/Long: 38.90232º / -122.92051º
UTM: Zone-10 N4305940 E506892
Area: 572.0 acres
Elevation: 2,700 ft
Mapping PrecisionSPECIFIC
Symbol Type:POLYGON
Township: 12N
Range: 10W
Section: 12 **Qtr:** XX
Meridian: M

Location: ROAD TO MONUMENT PEAK, ADOBE CREEK ROAD, AND CUTOFF TO HIGHLAND SPRINGS ROAD, COW GLADE, MAYACMAS MOUNTAINS
Location Detail: SURVEYS TAKEN ALONG THE 3 ROADS, UTM COORDINATES GIVE LOCATIONS TO SUB-METER ACCURACY (POST PROCESSED, DATUM USED NOT GIVEN) AS PER GALEA.
Ecological: CHAPARRAL, SOME RECENTLY BURNED (1999). SURROUNDING LAND USE: SOME CATTLE GRAZING.
General: >50 OBSERVED NESTING, RELATIVELY HIGH DENSITY OF THIS SPECIES, 2000.
Owner/Manager: PVT

Occurrence No. 2 **Map Index:** 17131 **EO Index:** 44022
Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2000-06-XX
Site: 2000-06-XX
Record Last Updated: 2000-10-12

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.93143º / -122.92345º
UTM: Zone-10 N4309170 E506635
Area:
Elevation: 1,525 ft
Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON
Township: 13N
Range: 10W
Section: 36 **Qtr:** S
Meridian: M

Location: HIGHLAND SPRINGS ROAD, 0.8 MILES SOUTHWEST OF HIGHLAND SPRINGS.
Location Detail: NO COORDINATE DATA GIVEN WITH ROUGH DRAWING ON MAP.
General: UNKNOWN NUMBER OF BIRDS OBSERVED.
Owner/Manager: UNKNOWN

Amsinckia lunaris

bent-flowered fiddleneck

Element Code: PDBOR01070

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G2	**CNPS List:** 1B.2
State: None	**State:** S2.2	

Habitat Associations

General: CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.

Micro: 50-500M.

Occurrence No. 22 **Map Index:** 17131 **EO Index:** 49071

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1952-05-03
Site: 1952-05-03

Record Last Updated: 2002-10-17

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.93143º / -122.92345º
UTM: Zone-10 N4309170 E506635
Area:
Elevation: 1,525 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON

Township: 13N
Range: 10W
Section: 36 **Qtr:** S
Meridian: M

Location: 1.2 MILES SOUTHWEST OF HIGHLAND SPRINGS.

Ecological: IN SHALLOW ROCKY SOIL ON 3 YEAR BURN, SOUTH FACING SLOPE.

General: NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Antirrhinum subcordatum

dimorphic snapdragon

Element Code: PDSCR2S070

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S3.3

Other Lists
CNPS List: 4.3

Habitat Associations
General: CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST.
Micro: GENERALLY ON SERPENTINE OR SHALE IN FOOTHILL WOODLAND OR CHAPARRAL ON S- AND W-FACING SLOPES. 185-800M.

Occurrence No. 25 **Map Index:** 17131 **EO Index:** 17883

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1951-05-13
Site: 1978-07-18
Record Last Updated: 2007-10-16

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.93143º / -122.92345º
UTM: Zone-10 N4309170 E506635
Area:
Elevation: 1,525 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON

Township: 13N
Range: 10W
Section: 36 **Qtr:** S
Meridian: M

Location: 1.2 MILES SOUTHWEST OF HIGHLAND SPRINGS.

Ecological: IN 2 YEAR OLD CHAPARRAL BURN IN SHALLOW ROCKY SOIL. ASSOCIATED WITH QUERCUS WISLIZENII, Q. DUMOSA, ADENOSTOMA, CEANOTHUS, ARCTOSTAPHYLOS. SOUTH-FACING SLOPE.

General: SEEN IN 1951. VISITED IN 1977 AND 1978 AND NO PLANTS SEEN.

Owner/Manager: UNKNOWN

Antrozous pallidus

pallid bat

Element Code: AMACC10010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5
State: S3

Other Lists
CDFG Status: SC

Habitat Associations
General: DESERTS, GRASSLANDS, SHRUBLANDS, WOODLANDS & FORESTS. MOST COMMON IN OPEN, DRY HABITATS WITH ROCKY AREAS FOR ROOSTING.
Micro: ROOSTS MUST PROTECT BATS FROM HIGH TEMPERATURES. VERY SENSITIVE TO DISTURBANCE OF ROOSTING SITES.

Occurrence No. 51 **Map Index:** 43661 **EO Index:** 43661
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1994-05-20
Site: 1994-05-20
Record Last Updated: 2000-08-29

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.65267º / -122.93261º
UTM: Zone-10 N4278236 E505863
Radius: 80 meters
Elevation: 150 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 10W
Section: 02 **Qtr:** XX
Meridian: M

Location: VINEYARD, NE CORNER OF WEST DRY CREEK ROAD AND LAMBERT BRIDGE ROAD, ~3 MILES WNW OF HEALDSBURG.
Location Detail: ON REAR OF BUILDING AT WINERY. MAPPED TO LAT-LONG COORDINATES GIVEN.
Ecological: VINEYARD ADJACENT TO RIPARIAN TO AND MIXED HARDWOOD.
Threat: PROPERTY CHANGED OWNERS, STATUS UNKNOWN
General: NIGHT ROOST ONLY, NUMBER NOT KNOWN, 1994.
Owner/Manager: PVT

Occurrence No. 52 **Map Index:** 43666 **EO Index:** 43666
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown

Dates Last Seen
Element: 1996-04-02
Site: 1996-04-02
Record Last Updated: 2000-08-29

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.65238º / -122.93401º
UTM: Zone-10 N4278204 E505741
Radius: 80 meters
Elevation: 153 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 10W
Section: 02 **Qtr:** XX
Meridian: M

Location: VINEYARD BUILDING, 0.1 MILE NW OF JUNCTION WEST DRY CREEK ROAD AND LAMBERT BRIDGE ROAD, ~3 MILES WNW OF HEALDSBURG.
Location Detail: MAPPED TO LAT-LONG COORDINATES GIVEN.
Ecological: VINEYARD BORDERED BY RIPARIAN HABITAT ALONG DRY CREEK.
Threat: BUILDING MODIFICATIONS EVICTED NIGHT ROOSTING BATS.
General: 50 TO 60 BATS OBSERVED, 1996.
Owner/Manager: PVT

Occurrence No. 53 **Map Index:** 43667 **EO Index:** 43667
Occ Rank: None
Origin: Natural/Native occurrence
Presence: Extirpated
Trend: Unknown

Dates Last Seen
Element: 1996-04-02
Site: 1996-04-02
Record Last Updated: 2000-08-29

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.65400º / -122.92462º
UTM: Zone-10 N4278384 E506558
Radius: 80 meters
Elevation: 160 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 10W
Section: 01 **Qtr:** XX
Meridian: M

Location: WINERY, N SIDE OF LAMBERT BRIDGE RD AND 0.15 MILE WSW OF JCT WITH EAST DRY CREEK RD, ~2.5 MILES WNW OF HEALDSBURG.
Location Detail: MAPPED TO LAT-LONG COORDINATES GIVEN.
Ecological: VINEYARD, NON-NATIVE SHRUBS, SOME ADJACENT RIPARIAN VEGETATION.
Threat: BATS EXCULDED FROM DAY ROOST INSIDE STRUCTURE.
General: TOTAL NUMBERS OF INDIVIDUALS UNKNOWN.
Owner/Manager: PVT

Antrozous pallidus

pallid bat

Element Code: AMACC10010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5
State: S3

Other Lists
CDFG Status: SC

Habitat Associations
General: DESERTS, GRASSLANDS, SHRUBLANDS, WOODLANDS & FORESTS. MOST COMMON IN OPEN, DRY HABITATS WITH ROCKY AREAS FOR ROOSTING.
Micro: ROOSTS MUST PROTECT BATS FROM HIGH TEMPERATURES. VERY SENSITIVE TO DISTURBANCE OF ROOSTING SITES.

Occurrence No. 61 **Map Index:** 43689 **EO Index:** 43689

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-07-08
Site: 1999-07-08
Record Last Updated: 2000-08-31

Quad Summary: Tombs Creek (3812362/519B)
County Summary: Sonoma

Lat/Long: 38.66220º / -123.23451º
UTM: Zone-10 N4279318 E479596
Radius: 80 meters
Elevation: 620 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 12W
Section: 06 **Qtr:** NW
Meridian: M

Location: BRIDGE ON STEWART'S POINT SKAGGS SPRING ROAD AT HOUSE CREEK, 0.3 MILE NORTH OF DOE RIDGE.
Location Detail: MAPPED TO SITE DESCRIPTION GIVEN, COORDINATES ARE 0.05 MILE WEST (LAT:38 39' 44"; LONG:123 14' 03").
Ecological: RIPARIAN AT BRIDGE, CHAPARRAL AND NON-NATIVE GRASSLAND, RURAL.
Threat: BRIDGE SEISMIC RETROFIT SCHEDULED FOR DAY WORK ONLY.
General: PALLID BAT NIGHT ROOST, SPEICES IDENTIFIED BY SIGN ONLY (FECAL PELLETS AND PREY REMAINS), ALSO, OTHER UNIDENTIFIED BAT SPECIES USING THE BRDGE, WORK WILL TEMPORARILY IMPACT MATERNITY DAY ROOST OF MYOTIS YUMANESIS.
Owner/Manager: SON COUNTY

Occurrence No. 70 **Map Index:** 47144 **EO Index:** 47144

Occ Rank: None
Origin: Natural/Native occurrence
Presence: Possibly Extirpated
Trend: Unknown

Dates Last Seen
Element: 2001-04-09
Site: 2001-04-09
Record Last Updated: 2002-01-30

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.65419º / -122.92829º
UTM: Zone-10 N4278405 E506239
Radius: 80 meters
Elevation: 144 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 10W
Section: 02 **Qtr:** XX
Meridian: M

Location: WEST SIDE OF DRY CREEK, AT LAMBERT BRIDGE ROAD, NW OF HEALDSBURG
Ecological: HABITAT SURROUNDING RESIDENTIAL ROOST SITE CONSISTS OF VINEYARD AND RIPARIAN.
Threat: THREATENED BY LOSS OF ROOSTING HABITAT.
General: THIS DAY/NIGHT ROOST WAS EXCLUDED FROM A RESIDENTIAL STRUCTURE; OBSERVED ON 4 SEP 2001.
Owner/Manager: PVT

Occurrence No. 208 **Map Index:** 66543 **EO Index:** 66671

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1927-06-07
Site: 1927-06-07
Record Last Updated: 2006-10-03

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.92659º / -123.05461º
UTM: Zone-10 N4308631 E495266
Radius: 1/5 mile
Elevation: 500 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 12N
Range: 11W
Section: 02 **Qtr:** NW
Meridian: M

Location: PIETA.
Location Detail: MAPPED ACCORDING TO LAT/LONG COORDINATES GIVEN IN MANIS, WITH UNCERTAINTY OF 164.592M.
General: 1 MALE SPECIMEN COLLECTED BY LEO K. WILSON ON 7 JUN 1927, MVZ #71628.
Owner/Manager: UNKNOWN

Antrozous pallidus

pallid bat

Element Code: AMACC10010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5
State: S3

Other Lists
CDFG Status: SC

Habitat Associations
General: DESERTS, GRASSLANDS, SHRUBLANDS, WOODLANDS & FORESTS. MOST COMMON IN OPEN, DRY HABITATS WITH ROCKY AREAS FOR ROOSTING.
Micro: ROOSTS MUST PROTECT BATS FROM HIGH TEMPERATURES. VERY SENSITIVE TO DISTURBANCE OF ROOSTING SITES.

Occurrence No. 300 **Map Index:** 66630 **EO Index:** 66773
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1976-07-03
Site: 1976-07-03
Record Last Updated: 2006-10-04

Quad Summary: Asti (3812278/534C)
County Summary: Sonoma

Lat/Long: 38.77716º / -122.97263º
UTM: Zone-10 N4292049 E502377
Radius: 1 mile
Elevation: 440 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 11N
Range: 10W
Section: 28 **Qtr:** XX
Meridian: M

Location: 0.5 MI N ITALIAN SWISS COLONY WINERY, ASTI.
Location Detail: MAPPED ACCORDING TO LAT/LONG COORDINATES GIVEN IN MANIS, WITH UNCERTAINTY 4662.2696M.
Ecological: COLLECTED FROM AN OLD BARN.
General: 1 MALE SPECIMEN COLLECTED BY DONALD O. STRANEY ON 3 JUL 1976, MVZ #151051.
Owner/Manager: UNKNOWN

Arborimus pomo

Sonoma tree vole

Element Code: AMAFF23030

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S3

Other Lists
CDFG Status: SC

Habitat Associations
General: NORTH COAST FOG BELT FROM OREGON BORDER TO SOMONA CO. IN DOUGLAS-FIR, REDWOOD & MONTANE HARDWOOD-CONIFER FORESTS.
Micro: FEEDS ALMOST EXCLUSIVELY ON DOUGLAS-FIR NEEDLES. WILL OCCASIONALY TAKE NEEDLES OF GRAND FIR, HEMLOCK OR SPRUCE.

Occurrence No. 173 **Map Index:** 41289 **EO Index:** 41289
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1994-06-10
Site: 1994-06-10
Record Last Updated: 1999-06-23

Quad Summary: Tombs Creek (3812362/519B), Big Foot Mtn. (3812372/535C)
County Summary: Sonoma

Lat/Long: 38.74917° / -123.16991°
UTM: Zone-10 N4288956 E485235
Radius: 1/5 mile
Elevation: 1,600 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 10N
Range: 12W
Section: 03 **Qtr:** NE
Meridian: M

Location: WHEATFIELD FORK GUALALA RIVER (NORTH SLOPE LYLE RIDGE, ~1 MILE NNE OF BUCK MOUNTAIN)
Location Detail: CONFLICT AMONG THE T-R-S, THE UTM AND THE ARCVIEW POINT DATA. MAPPED ACCORDING TO THE T-R-S GIVEN: T10N, R12W, NW 1/4 OF THE NE 1/4 OF SECTION 3.
General: 1 NEST OBSERVED IN 1994 BY WOOSTER.
Owner/Manager: UNKNOWN

Occurrence No. 187 **Map Index:** 41315 **EO Index:** 41315
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1993-07-28
Site: 1993-07-28
Record Last Updated: 1999-06-29

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.62788° / -122.98590°
UTM: Zone-10 N4275483 E501227
Area: 18.2 acres
Elevation: 920 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 09N
Range: 10W
Section: 17 **Qtr:** SE
Meridian: M

Location: PACHECO CREEK (~6 MILES WEST OF HIGHWAY 101 AT THE DRY CREEK ROAD CROSSING, ~4 MILES SSW OF BRADFORD MOUNTAIN)
General: 1 NEST OBSERVED BY SUSAN, & 1 NEST OBSERVED BY WOOSTER & SUSAN, 1993.
Owner/Manager: UNKNOWN

Arctostaphylos bakeri ssp. sublaevis

The Cedars manzanita

Element Code: PDERI04222

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G2T2	**CNPS List:** 1B.2
State: Rare	**State:** S2.2	

Habitat Associations

General: CHAPARRAL, CLOSED-CONE CONIFEROUS FOREST. ENTIRE SPECIES LISTED STATE RARE.

Micro: IN SERPENTINE CHAPARRAL AND SARGENT CYPRESS WOODLAND; TYPICALLY IN CANYONS AND ON SLOPES. 275-600M.

Occurrence No. 1 **Map Index:** 32617 **EO Index:** 1084

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1994-06-23
Site: 1994-06-23
Record Last Updated: 1996-01-03

Quad Summary: Fort Ross (3812352/519C), Warm Springs Dam (3812361/519A), Cazadero (3812351/519D), Tombs Creek (3812362/519B)

County Summary: Sonoma

Lat/Long: 38.62440º / -123.12144º
UTM: Zone-10 N4275104 E489429
Area:
Elevation: 1,200 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON

Township: 09N
Range: 11W
Section: 18 **Qtr:** XX
Meridian: M

Location: THE CEDARS, NORTH OF CAZADERO.

Location Detail: HEADWATERS OF BIG AUSTIN CREEK AND EAST AUSTIN CREEK. MAPPED AREA INCLUDED WITHIN T09N R11W SECTIONS 6, 7, 17, 18, 19, 20, 29, 30 AND T09N R12W SECTIONS 1, 11, 12, 13, 14, 24, AND 25.

Ecological: SERPENTINE CHAPARRAL/CUPRESSUS SARGENTII WOODLAND/SERPENTINE BARRENS; TYPICALLY STEEP CANYONLANDS. ASSOCIATED WITH A. VISCIDA PULCHELLA, CUPRESSUS SARGENTII, CEANOTHUS JEPSONII JEPSONII, QUERCUS DURATA, HOLODISCUS, STREPTANTHUS SPP, ET AL.

Threat: SOME RANCH ROADS CUT THROUGH AREA; MINING OF CHROMITE AND MAGNESITE IN PAST; SOME DEVELOPMENT.

General: 10,000'S OF PLANTS OBSERVED IN 1988. OTHER RARE PLANTS IN THIS AREA INCLUDE CALOCHORTUS RAICHEI, STREPTANTHUS MORRISONII MORRISONII, S. M. HIRTIFLORUS, S. GLANDULOSUS HOFFMANII, ERIOGONUM TERNATUM, AND ASCLEPIAS SOLANOANA.

Owner/Manager: PVT, BLM

Arctostaphylos manzanita ssp. elegans

Konocti manzanita

Element Code: PDERI04271

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G5T2	**CNPS List:** 1B.3
State: None	**State:** S2.3	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: VOLCANIC SOILS. 395-1400M.

Occurrence No. 18 **Map Index:** 24303 **EO Index:** 45540

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: XXXX-XX-XX
Site: XXXX-XX-XX

Record Last Updated: 2001-08-10

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.93683º / -122.90707º
UTM: Zone-10 N4309770 E508054
Radius: 1 mile
Elevation: 1,500 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 13N
Range: 09W
Section: 31 **Qtr:** XX
Meridian: M

Location: HIGHLAND SPRINGS, MAYACAMAS RANGE.

General: NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Arctostaphylos stanfordiana ssp. decumbens

Rincon Ridge manzanita

Element Code: PDERI041G4

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3T1
State: S1.1

Other Lists
CNPS List: 1B.1

Habitat Associations
General: CHAPARRAL.
Micro: HIGHLY RESTRICTED ENDEMIC TO RED RHYOLITES IN SONOMA COUNTY. 75-310M.

Occurrence No. 6 **Map Index:** 07856 **EO Index:** 14032

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1986-XX-XX
Site: 1986-XX-XX
Record Last Updated: 1997-02-11

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.68460º / -122.97335º
UTM: Zone-10 N4281777 E502317
Area: 8.2 acres
Elevation: 1,220 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 10N
Range: 10W
Section: 28 **Qtr:** SE
Meridian: M

Location: SUMMIT OF BRADFORD MOUNTAIN, WEST OF ALEXANDER VALLEY.

Ecological: IN UNIQUE CHAPARRAL BARREN ON RHYOLITE-LIKE DECOMPOSING ROCK. ASSOCIATED WITH CEANOTHUS CONFUSUS, FRITILLARIA RECURVA, HORKELIA TENUILOBA, PHLOX SPECIOSA NITIDA.

Threat: GENERAL AREA DISTURBED BY ROADS, ORV DAMAGE, RESIDENTIAL DEVELOPMENT, AND VINEYARDS.

Owner/Manager: UNKNOWN

Occurrence No. 7 **Map Index:** 07845 **EO Index:** 14031

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1986-XX-XX
Site: 1986-XX-XX
Record Last Updated: 1997-02-11

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.67492º / -122.97521º
UTM: Zone-10 N4280703 E502156
Area: 36.2 acres
Elevation: 860 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 10N
Range: 10W
Section: 33 **Qtr:** NW
Meridian: M

Location: APPROX 1 AIR MILE SSW OF BRADFORD MOUNTAIN; EAST OF PENA CREEK.

Ecological: IN UNIQUE CHAPARRAL BARREN ON RHYOLITE-LIKE DECOMPOSING ROCK. ASSOCIATED WITH CEANOTHUS CONFUSUS, FRITILLARIA RECURVA, HORKELIA TENUIFOLIA, PHLOX SPECIOSA NITIDA.

Threat: GENERAL AREA HAS LOTS OF ROADS, ORV DAMAGE, RESIDENTIAL DEVELOPMENT AND VINEYARDS.

Owner/Manager: UNKNOWN

Occurrence No. 8 **Map Index:** 07820 **EO Index:** 14030

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1986-XX-XX
Site: 1986-XX-XX
Record Last Updated: 1997-02-11

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.66791º / -122.98392º
UTM: Zone-10 N4279925 E501399
Area: 163.4 acres
Elevation: 880 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 10N
Range: 10E
Section: 32 **Qtr:** SE
Meridian: M

Location: APPROX 1.5 AIR MILES SOUTHWEST OF BRADFORD MOUNTAIN, EAST OF PENA CREEK.

Ecological: ON UNIQUE CHAPARRAL BARREN ON RHYOLITE-LIKE DECOMPOSING ROCK. ASSOCIATED WITH CEANOTHUS CONFUSUS, FRITILLARIA RECURVA, HORKELIA TENUIFOLIA, PHLOX SPECIOSA NITIDA.

Threat: GENERAL AREA HAS LOTS OF ROADS, ORV DAMAGE, RESIDENTIAL DEVELOPMENT AND VINEYARDS.

Owner/Manager: UNKNOWN

Arctostaphylos stanfordiana ssp. decumbens

Rincon Ridge manzanita

Element Code: PDERI041G4

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3T1
State: S1.1

Other Lists
CNPS List: 1B.1

Habitat Associations
General: CHAPARRAL.
Micro: HIGHLY RESTRICTED ENDEMIC TO RED RHYOLITES IN SONOMA COUNTY. 75-310M.

Occurrence No. 9 **Map Index:** 07846 **EO Index:** 14029

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1986-XX-XX
Site: 1986-XX-XX
Record Last Updated: 1997-02-11

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.65428° / -122.97461°
UTM: Zone-10 N4278413 E502209
Area: 130.4 acres
Elevation: 920 ft

Mapping PrecisionSPECIFIC
Symbol Type:POLYGON

Township: 09N
Range: 10W
Section: 04 **Qtr:** S
Meridian: M

Location: BETWEEN CHAPMAN BRANCH AND GRAPE CREEK, ABOUT 2 AIR MILES SOUTH OF BRADFORD MOUNTAIN.

Ecological: ON UNIQUE CHAPARRAL BARREN ON RHYOLITE-LIKE DECOMPOSING ROCK. ASSOCIATED WITH CEANOTHUS CONFUSUS, FRITILLARIA RECURVA, HORKELIA TENUIFOLIA, PHLOX SPECIOSA NITIDA.

Threat: ROADS, ORV DAMAGE, RESIDENTIAL DEVELOPMENT AND VINEYARDS.

Owner/Manager: UNKNOWN

Occurrence No. 10 **Map Index:** 07905 **EO Index:** 14028

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1986-XX-XX
Site: 1986-XX-XX
Record Last Updated: 1997-02-11

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.64876° / -122.95027°
UTM: Zone-10 N4277801 E504327
Area: 74.4 acres
Elevation: 600 ft

Mapping PrecisionSPECIFIC
Symbol Type:POLYGON

Township: 09N
Range: 10W
Section: 10 **Qtr:** NE
Meridian: M

Location: BETWEEN GRAPE CREEK AND CRANE CREEK, ABOUT 3 AIR MILES SOUTHEAST OF BRADFORD MOUNTAIN.

Ecological: UNIQUE CHAPARRAL BARREN ON RHYOLITE-LIKE DECOMPOSING ROCK. ASSOCIATED WITH CEANOTHUS CONFUSUS, FRITILLARIA RECURVA, HORKELIA TENUIFOLIA, PHLOX SPECIOSA NITIDA.

Threat: AREA DAMAGED BY ROADS, ORVS, RESIDENTIAL DEVELOPMENT AND VINEYARDS.

Owner/Manager: UNKNOWN

Arctostaphylos stanfordiana ssp. raichei

Raiche's manzanita

Element Code: PDERI041G2

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3T2?
State: S2?

Other Lists
CNPS List: 1B.1

Habitat Associations
General: CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST.
Micro: ON PERIPHERY OF MCNAB CYPRESS GROVE ON SERPENTINE. SLOPES AND RIDGES. 450-1000M.

Occurrence No. 1 **Map Index:** 28500 **EO Index:** 29788

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1985-08-11
Site: 1985-08-11
Record Last Updated: 1996-11-15

Quad Summary: Yorkville (3812382/535B)
County Summary: Mendocino

Lat/Long: 38.94895º / -123.17277º
UTM: Zone-10 N4311126 E485029
Radius: 1 mile
Elevation: 2,000 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 13N
Range: 12W
Section: 34 **Qtr:** XX
Meridian: M

Location: 3-4 MILES UP OLD HOPLAND-YORKVILLE ROAD NEAR SNOW MOUNTAIN.

Location Detail: MAPPED ALONG THE ROAD ABOUT 1.5 AIR MILES ENE OF SNOW MOUNTAIN SUMMIT.

Ecological: OCCURS ON SANDSTONE AND OVERLAPS SLIGHTLY ONTO SERPENTINE. ASSOCIATED WITH CUPRESSUS SARGENTII.

General: VICINTIY REPORTED IN TWO COLLECTIONS: 1985 COLLECTION BY EDWARDS ET AL. (#5212 ROH) AND UNDATED COLLECTION BY WHEELER (#2920 UNKNOWN HERBARIUM).

Owner/Manager: UNKNOWN

Boschniakia hookeri

small groundcone

Element Code: PDORO01010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5
State: S1S2

Other Lists
CNPS List: 2.3

Habitat Associations
General: NORTH COAST CONIFEROUS FOREST.
Micro: OPEN WOODS, SHRUBBY PLACES, GENERALLY ON GAULTHERIA SHALLON. 90-885M.

Occurrence No. 4 **Map Index:** 35147 **EO Index:** 72

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1976-XX-XX
Site: 1976-XX-XX
Record Last Updated: 1996-04-02

Quad Summary: Hopland (3812381/535A), Purdys Gardens (3912311/550D)
County Summary: Mendocino

Lat/Long: 39.00231° / -123.08436°
UTM: Zone-10 N4317036 E492695
Radius: 1 mile
Elevation: 1,000 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 13N
Range: 11W
Section: 08 **Qtr:** XX
Meridian: M

Location: HOPLAND FIELD STATION.

Ecological: PARASITIC ON ADENOSTOMA AND ARCTOSTAPHYLOS.

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS 1976 COLLECTION BY LANE CITED IN "A FLORA OF THE VASCULAR PLANTS OF MENDOCINO COUNTY" BY SMITH AND WHEELER (1991).

Owner/Manager: UCNR

Brodiaea californica var. leptandra

narrow-anthered California brodiaea

Element Code: PMLIL0C022

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4?T2T3
State: S2S3.2

Other Lists
CNPS List: 1B.2

Habitat Associations
General: BROADLEAFED UPLAND FOREST, CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST.
Micro: 110-915M.

Occurrence No. 21 **Map Index:** 47368 **EO Index:** 47368

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1993-XX-XX
Site: 1993-XX-XX

Record Last Updated: 2002-03-25

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.64815º / -122.95051º
UTM: Zone-10 N4277734 E504306
Radius: 1 mile
Elevation: 530 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 09N
Range: 10W
Section: 10 **Qtr:** XX
Meridian: M

Location: WEST SIDE OF DRY CREEK VALLEY.

Location Detail: LOCATION INFORMATION IS VAGUE. MAPPED AS BEST GUESS BASED ON OTHER COLLECTIONS FROM DRY CREEK VALLEY BY RAICHE.

General: NEEDS FIELDWORK. COLLECTION FROM "CHAMISE [CHEMISE] RIDGE ROAD, WEST OF HEALDSBURG" (GUGGOLZ SN) ALSO ATTRIBUTED TO THIS LOCATION.

Owner/Manager: UNKNOWN

Calochortus raichei

The Cedars fairy-lantern

Element Code: PMLIL0D1L0

Status
Federal: None
State: None

NDDB Element Ranks
Global: G1
State: S1.2

Other Lists
CNPS List: 1B.2

Habitat Associations
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL.
Micro: ON SERPENTINE. USUALLY ON SHADED SLOPES, BUT ALSO ON BARRENS AND TALUS. 200-395M.

Occurrence No. 8 **Map Index:** 07656 **EO Index:** 22092

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1994-06-23
Site: 1994-06-23
Record Last Updated: 1999-11-08

Quad Summary: Cazadero (3812351/519D), Tombs Creek (3812362/519B), Warm Springs Dam (3812361/519A), Fort Ross (3812352/519C)
County Summary: Sonoma

Lat/Long: 38.62654° / -123.12844°
UTM: Zone-10 N4275342 E488819
Area: 454.6 acres
Elevation: 900 ft

Mapping PrecisionSPECIFIC
Symbol Type:POLYGON

Township: 09N
Range: 12W
Section: 13 **Qtr:** SE
Meridian: M

Location: THE CEDARS, HEADWATERS OF AUSTIN CREEK, EAST AUSTIN CREEK, AND DANFIELD CREEK, ABOUT 5.5 MILES NORTH OF CAZADERO.

Location Detail: 11 COLONIES:S COLONY ALONG TRIBS TO AUSTIN AND EAST AUSTIN CR.; LARGE CENTRAL COLONY N OF LATON MINE; SMALL CENTRAL COLONY S OF LATON MINE; 4 NE COLONIES ALONG EAST AUSTIN CR. AND ASSOCIATED TRIBS; 4 NW COLONIES IN DANFIELD CREEK DRAINAGE.

Ecological: SERPENTINE CHAPARRAL AND CUPRESSUS SARGENTII WOODLAND. WITH ARCTOSTAPHYLOS BAKERI SSP SUBLAEVIS, A. VISCIDA PULCHELLA, QUERCUS DURATA, CEANOTHUS CUNEATUS, C. JEPSONII SSP JEPSONII, HOLODISCUS SPP, IRIS MACROSIPHON, ZIGADENUS SPP, ET AL.

Threat: OLD MINING ACTIVITY IN AREA, NO RECENT ACTIVITY NOTED. SOME RANCH ROADS CUT THROUGH AREA.

General: 1000+ PLANTS IN ENTIRE AREA IN 1988. HUNDREDS OF PLANTS AT WESTERN END OF S COLONY IN 1994; 20-50 PLANTS SEEN JUST NORTHWEST OF LATON MINE IN 1994. THE RARE ARCTOSTAPHYLOS BAKERI SSP SUBLAEVIS AND CYPRIPEDIUM CALIFORNICUM ALSO AT THIS SITE.

Owner/Manager: BLM, PVT

Calycadenia micrantha

small-flowered calycadenia

Element Code: PDAST1P0C0

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2G3
State: S2S3.2

Other Lists
CNPS List: 1B.2

Habitat Associations
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, MEADOWS AND SEEPS, LOWER MONTANE CONIFEROUS FOREST.
Micro: ROCKY TALUS OR SCREE; SPARSELY VEGETATED AREAS. OCCASIONALLY ON ROADSIDES; SOMETIMES ON SERPENTINE. 5-1500M.

Occurrence No. 4 **Map Index:** 17131 **EO Index:** 63743

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1950-05-06
Site: 1950-05-06
Record Last Updated: 2006-01-11

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.93143º / -122.92345º
UTM: Zone-10 N4309170 E506635
Area:
Elevation: 1,525 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POLYGON
Township: 13N
Range: 10W
Section: 36 **Qtr:** S
Meridian: M

Location: 1.0 MI WEST OF HIGHLAND SPRINGS ON BOTH SIDES OF THE ROAD; MAYACMAS MOUNTAINS.

Location Detail: LOCATION DESCRIPTION VAGUE, MAPPED AS BEST GUESS 1 MI WEST ALONG HIGHLAND SPRINGS ROAD FROM SOUTHERN TIP OF RESERVOIR AT HIGHLAND SPRINGS.

Ecological: ON SMALL GRASSY KNOLL OVER SERPENTINE.

General: COLLECTED AS CALYCADENIA TRUNCATA SSP. MICROCEPHALA; MAPPED BY CNDDB AS C. MICRANTHA BASED ON RANGE. NEEDS FIELDWORK TO VERIFY.

Owner/Manager: UNKNOWN

Occurrence No. 5 **Map Index:** 63649 **EO Index:** 63744

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2003-08-23
Site: 2003-08-23
Record Last Updated: 2006-01-11

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.99528º / -122.93049º
UTM: Zone-10 N4316255 E506019
Radius: 80 meters
Elevation: 1,640 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 13N
Range: 10W
Section: 12 **Qtr:** NW
Meridian: M

Location: ALONG HIGHWAY 175, ABOUT 2.5 MI WEST OF JUNCTION WITH HIGHWAY 29; WEST OF LAKEPORT.

Location Detail: MAPPED BASED ON LAT/LONG COORDINATES PROVIDED.

General: 2003 CARR COLLECTION IS THE ONLY SOURCE FOR THIS SITE. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Carex comosa

bristly sedge

Element Code: PMCYP032Y0

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5
State: S2?

Other Lists
CNPS List: 2.1

Habitat Associations
General: MARSHES AND SWAMPS.
Micro: LAKE MARGINS, WET PLACES; SITE BELOW SEA LEVEL IS ON A DELTA ISLAND. -5-1005M.

Occurrence No. 9 **Map Index:** 50097 **EO Index:** 50097
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-09-20
Site: 1999-09-20
Record Last Updated: 2003-02-04

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.99683º / -123.07038º
UTM: Zone-10 N4316427 E493905
Radius: 80 meters
Elevation: 982 ft

Mapping PrecisionSPECIFIC
Symbol Type:POINT

Township: 13N
Range: 11W
Section: 09 **Qtr:** SE
Meridian: M

Location: APPROXIMATELY 2.1 AIRMILES NORTHEAST OF OLD HOPLAND. NEAR TWO SMALL LAKES ON TOPO.
Location Detail: MAPPED IN THE NW 1/4 OF THE SE 1/4 OF SECTION 9.
Ecological: EDGE OF SAG POND WITH TYPHA SP., POLYGONUM PUNCTATUM & MENTHA PULEGIUM.
Threat: ENCROACHING MENTHA PULEGIUM. LOCATED IN "BIOLOGICAL AREA", FENCED FROM LIVESTOCK USE.
General: ~75 PLANTS OBSERVED IN 1999, COMPRISED OF ONE SOLID PATCH & TWO SMALL ADJACENT CLUMPS.
Owner/Manager: UC

Ceanothus confusus

Rincon Ridge ceanothus

Element Code: PDRHA04220

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2
State: S2.2

Other Lists
CNPS List: 1B.1

Habitat Associations
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, CISMONTANE WOODLAND.
Micro: KNOWN FROM VOLCANIC OR SERPENTINE SOILS, DRY SHRUBBY SLOPES. 75-1065M.

Occurrence No. 10 **Map Index:** 07863 **EO Index:** 18707

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2000-06-23
Site: 2000-06-23
Record Last Updated: 2001-10-04

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.65655º / -122.97991º
UTM: Zone-10 N4278665 E501747
Area: 355.2 acres
Elevation: 900 ft

Mapping PrecisionSPECIFIC
Symbol Type:POLYGON

Township: 09N
Range: 10W
Section: 04 **Qtr:** SW
Meridian: M

Location: SOUTH OF BRADFORD MOUNTAIN ALONG RIDGE NORTHEAST OF CHAPMAN CREEK, WEST OF HEALDSBURG.

Location Detail: MOSTLY ALONG CREST OF RIDGE FROM JUST NORTH OF THE HEAD OF DORMAN CANYON TO JUST NORTH OF THE MOUTH OF CHAPMAN CREEK. COLLECTIONS FROM "DORMAN CREEK" AND "DRY CREEK AREA" ARE ATTRIBUTED TO THIS SITE. MAPPED AS 2 LARGE AND 1 SMALL POLYGONS.

Ecological: WITH CHAPARRAL, CHAPARRAL BARRENS. ASSOCIATED WITH ARCTOSTAPHYLOS STANFORDIANA REPENS, BRODIAEA LEPTANDRA, FRITILLARIA RECURVA, CEANOTHUS FOLIOSUS, HORKELIA TENUIFOLIA, ETC. SOILS DERIVED FROM RHYOLITE-LIKE ROCK THAT RESEMBLES SANDSTONE.

Threat: ROADS, DIRTBIKE USE, RESIDENTIAL DEVELOPMENT, VINEYARD CONVERSION, LOGGING.

General: 1000+ PLANTS SEEN IN BRADFORD MTN AREA IN 1984-1986 (OCCURRENCES #10, 23, 24). POSSIBLE TAXONOMIC PROBLEMS (NOBS, 1963). FIELD RESEARCH IN 1978-1979 FAILED TO LOCATE PURE SPECIMENS. SEVERAL PLANTS SEEN IN 2000 IN THE E 1/2 OF SECTION 32.

Owner/Manager: UNKNOWN

Occurrence No. 19 **Map Index:** 42109 **EO Index:** 42109

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1985-11-28
Site: 1985-11-28
Record Last Updated: 2000-01-06

Quad Summary: Cloverdale (3812371/535D)
County Summary: Sonoma

Lat/Long: 38.79217º / -123.06243º
UTM: Zone-10 N4293716 E494578
Area: 13.4 acres
Elevation: 1,300 ft

Mapping PrecisionSPECIFIC
Symbol Type:POLYGON

Township: 11N
Range: 11W
Section: 23 **Qtr:** NW
Meridian: M

Location: NORTHWEST SLOPE OF RED MOUNTAIN, WEST OF CLOVERDALE.

Location Detail: MAPPED ALONG KNOLL ABOUT 0.3 MILE NW OF SUMMIT. SITE IS WITHIN THE NW 1/4 NW 1/4 SECTION 23 AND THE NE 1/4 NE 1/4 SECTION 22.

Ecological: DEPAUPERATE CHAPARRAL ON RHYOLITE-LIKE ROCK WITH CEANOTHUS JEPSONII VAR. ALBIFLORUS, ADENOSTOMA FASCICULATUM, HETEROMELES ARBUTIFOLIA, QUERCUS DURATA, IRIS MACROSIPHON, HYPERICUM CONCINNUM, ETC.

Threat: FIRE ROADS; DEVELOPMENT ENCROACHING INTO HILLS FROM CLOVERDALE.

General: ABOUT 50 PLANTS OBSERVED IN 1985.

Owner/Manager: UNKNOWN

Ceanothus confusus

Rincon Ridge ceanothus

Element Code: PDRHA04220

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2
State: S2.2

Other Lists
CNPS List: 1B.1

Habitat Associations
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, CISMONTANE WOODLAND.
Micro: KNOWN FROM VOLCANIC OR SERPENTINE SOILS, DRY SHRUBBY SLOPES. 75-1065M.

Occurrence No. 23 **Map Index:** 42106 **EO Index:** 42106
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1986-XX-XX
Site: 1986-XX-XX
Record Last Updated: 2000-01-06

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.64826º / -122.94698º
UTM: Zone-10 N4277746 E504613
Area: 126.1 acres
Elevation: 700 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 09N
Range: 10W
Section: 10 **Qtr:** NE
Meridian: M

Location: SOUTH OF BRADFORD MOUNTAIN ALONG RIDGE NORTH OF CRANE CREEK, ABOUT 0.6-1.6 MI WEST OF DRY CREEK, WEST OF HEALDSBURG.

Location Detail: MOSTLY ALONG CREST OF RIDGE WITHIN THE N 1/2 NE 1/4 SECTION 10 AND THE N 1/2 NW 1/4 SECTION 11.

Ecological: WITH CHAPARRAL AND CHAPARRAL BARRENS. ASSOCIATED WITH ARCTOSTAPHYLOS STANFORDIANA REPENS, BRODIAEA LEPTANDRA, FRITILLARIA RECURVA, CEANOTHUS FOLIOSUS, HORKELIA TENUIFOLIA, ETC. SOILS DERIVED FROM RHYOLITE-LIKE ROCK THAT RESEMBLES SANDSTONE.

Threat: ROADS, DIRTBIKE USE, RESIDENTIAL DEVELOPMENT, VINEYARD CONVERSION.

General: 1000+ PLANTS OBSERVED IN THE BRADFORD MOUNTAIN AREA IN 1984-1986 (OCCURENCES #10, 23, 24).

Owner/Manager: UNKNOWN

Occurrence No. 24 **Map Index:** 42107 **EO Index:** 42107
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1986-XX-XX
Site: 1986-XX-XX
Record Last Updated: 2000-01-06

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.68339º / -122.97338º
UTM: Zone-10 N4281643 E502315
Area: 29.1 acres
Elevation: 1,100 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 10N
Range: 10W
Section: 28 **Qtr:** SE
Meridian: M

Location: BRADFORD MOUNTAIN, WEST OF DRY CREEK, WEST OF HEALDSBURG.

Location Detail: ALONG SUMMIT AND SOUTHERN RIDGE OF BRADFORD MOUNTAIN. MAPPED MOSTLY WITHIN THE W 1/2 SE 1/4 SECTION 28.

Ecological: WITH CHAPARRAL AND CHAPARRAL BARRENS. ASSOCIATED WITH ARCTOSTAPHYLOS STANFORDIANA REPENS, BRODIAEA LEPTANDRA, FRITILLARIA RECURVA, CEANOTHUS FOLIOSUS, HORKELIA TENUIFOLIA, ETC. SOILS DERIVED FROM RHYOLITE-LIKE ROCK THAT RESEMBLES SANDSTONE.

Threat: ROADS, DIRTBIKE USE, RESIDENTIAL DEVELOPMENT, VINEYARD CONVERSION.

General: 1000+ PLANTS OBSERVED IN THE BRADFORD MOUNTAIN AREA IN 1984-1986 (OCCURENCES #10, 23, 24).

Owner/Manager: UNKNOWN

Ceanothus confusus

Rincon Ridge ceanothus

Element Code: PDRHA04220

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G2	**CNPS List:** 1B.1
State: None	**State:** S2.2	

Habitat Associations

General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, CISMONTANE WOODLAND.

Micro: KNOWN FROM VOLCANIC OR SERPENTINE SOILS, DRY SHRUBBY SLOPES. 75-1065M.

Occurrence No. 28 **Map Index:** 42115 **EO Index:** 42115

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1987-04-06
Site: 1987-04-06
Record Last Updated: 2000-01-06

Quad Summary: Yorkville (3812382/535B)
County Summary: Mendocino

Lat/Long: 38.96742º / -123.14810º
UTM: Zone-10 N4313171 E487169
Area: 12.7 acres
Elevation: 800 ft

Mapping Precision SPECIFIC
Symbol Type: POLYGON

Township: 13N
Range: 12W
Section: 23 **Qtr:** SE
Meridian: M

Location: DUNCAN CREEK, ALONG YORKVILLE ROAD ABOUT 0.5 MILE SOUTHWEST OF FELIZ CREEK ROAD, NORTHEAST OF YORKVILLE.

Location Detail: MAPPED ALONG E-FACING SLOPES WEST OF ROAD WITHIN THE W 1/4 SE 1/4 SECTION 23.

Ecological: IN CHAPARRAL AND OPEN QUERCUS AGRIFOLIA WOODLAND ON WHITE TUFF-LIKE SUBSTRATE. ASSOCIATED WITH ARCTOSTAPHYLOS MANZANITA, ADENOSTOMA FASCICULATUM, QUERCUS DURATA, UMBELLULARIA CALIFORNICA, HETEROMELES ARBUTIFOLIA, AND VARIOUS HERBS.

Threat: CURRENT GRAZING PRACTICE IS DAMAGING TO THIS TAXON.

General: 50-100 PLANTS OBSERVED IN 1987.

Owner/Manager: UNKNOWN

Corynorhinus townsendii

Townsend's big-eared bat

Element Code: AMACC08010

Status

Federal: None
State: None

NDDB Element Ranks

Global: G4
State: S2S3

Other Lists

CDFG Status: SC

Habitat Associations

General: THROUGHOUT CALIFORNIA IN A WIDE VARIETY OF HABITATS. MOST COMMON IN MESIC SITES.

Micro: ROOSTS IN THE OPEN, HANGING FROM WALLS & CEILINGS. ROOSTING SITES LIMITING. EXTREMELY SENSITIVE TO HUMAN DISTURBANCE.

Occurrence No. 136 **Map Index:** 37280 **EO Index:** 32280

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Decreasing

Dates Last Seen

Element: 1987-06-18
Site: 1987-06-18
Record Last Updated: 1997-10-21

Quad Summary: Hopland (3812381/535A), Purdys Gardens (3912311/550D)
County Summary: Mendocino

Lat/Long: 39.00237º / -123.08328º
UTM: Zone-10 N4317043 E492788
Area:
Elevation: 820 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON

Township: 13N
Range: 11W
Section: 08 **Qtr:** XX
Meridian: M

Location: HOPLAND FIELD STATION, 1.8 MILES E OF HIGHWAY 101 AND 2.7 MILES NE OF HOPLAND.

Ecological: 2 INDIVIDUALS OBSERVED, 1 YOUNG AND 1 FEMALE.

Threat: HUMAN ACTIVITY.

General: THE REPORT SUGGESTS THAT THERE IS A MARKED POPULATION DECLINE IN THE PAST 40 YEARS FOR THIS SPECIES. MAPPED TO COORDINATES AND WRITEN INFORMATION.

Owner/Manager: PVT

Cryptantha clevelandii var. dissita

serpentine cryptantha

Element Code: PDBOR0A0H2

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5T1
State: S1.1

Other Lists
CNPS List: 1B.1

Habitat Associations
General: CHAPARRAL.
Micro: SERPENTINE OUTCROPS. 330-730M.

Occurrence No. 3 **Map Index:** 24302 **EO Index:** 29068

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1943-05-10
Site: 1943-05-10
Record Last Updated: 1996-05-24

Quad Summary: Highland Springs (3812288/534B), Lakeport (3912218/549C)
County Summary: Lake, Mendocino

Lat/Long: 38.98746º / -122.97222º
UTM: Zone-10 N4315385 E502405
Radius: 1 mile
Elevation: 1,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 13N
Range: 10W
Section: 09 **Qtr:** SE
Meridian: M

Location: 5 MILES WEST OF LAKEPORT ON ROAD TO HOPLAND.
Location Detail: MAPPED ALONG HIGHWAY 175, 5 MILES FROM JUNCTION WITH HIGHWAY 29. 1938 COLLECTION BY BAKER FROM "WEST OF LAKEPORT...NEAR FOOT OF GRADE" IS ALSO MAPPED AT THIS SITE.
Ecological: SERPENTINE.
General: TYPE LOCALITY. TWO COLLECTIONS ATTRIBUTED TO THIS SITE; HOWELL #18008 (CAS) IN 1943 AND BAKER #8956 (DU) IN 1938.
Owner/Manager: UNKNOWN

Occurrence No. 9 **Map Index:** 61240 **EO Index:** 61276

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-06-01
Site: 1999-06-01
Record Last Updated: 2005-05-06

Quad Summary: Cloverdale (3812371/535D)
County Summary: Mendocino

Lat/Long: 38.86956º / -123.06604º
UTM: Zone-10 N4302304 E494270
Area: 4.4 acres
Elevation: 1,050 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 12N
Range: 11W
Section: 22 **Qtr:** SE
Meridian: M

Location: WEST OF RUSSIAN RIVER, ABOUT 2.0 MILES NORTHWEST OF REDWOOD MOUNTAIN AND 0.5 MILES EAST OF PEAK 1582.
Location Detail: ALONG JEEP ROAD ASCENDING RIDGE AT LAT-LONG 38 52' 10" N, 123 03' 55" W/IN THE SE 1/4 OF THE SE 1/4 OF SECTION 22.
Ecological: SERPENTINE BARRENS AND CHAPARRAL WITH SPARSE QUERCUS DURATA THICKETS, AND PERENNIAL GRASSLANDS WITH NASSELLA.
Owner/Manager: UNKNOWN

Occurrence No. 10 **Map Index:** 61243 **EO Index:** 61279

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-06-01
Site: 1999-06-01
Record Last Updated: 2005-05-06

Quad Summary: Cloverdale (3812371/535D)
County Summary: Mendocino

Lat/Long: 38.86767º / -123.05390º
UTM: Zone-10 N4302094 E495323
Radius: 80 meters
Elevation: 450 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 12N
Range: 11W
Section: 23 **Qtr:** SW
Meridian: M

Location: ABOUT 1.5 MILES NNW OF REDWOOD MOUNTAIN AND 0.7 MILES WNW OF CONFLUENCE OF EDWARDS CREEK AND RUSSIAN RIVER.
Location Detail: MAPPED AT LAT-LONG PROVIDED (38 52' 04" N, 123 03' 10" W) IN THE SE 1/4 OF THE SW 1/4 OF SECTION 23.
Ecological: SERPENTINE BARRENS AND CHAPARRAL WITH SPARSE QUERCUS DURATA THICKETS, AND PERENNIAL GRASSLANDS WITH NASSELLA. COMMON ON DISTURBED FILL SLOPES.
Threat: MINING PROSPECTS ON SERPENTINE HILLSOPES ON EDGE OF LARGE VINEYARD.
Owner/Manager: UNKNOWN

Didymodon norrisii

Norris' beard moss

Element Code: NBMUS2C0H0

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2G3
State: S2.2

Other Lists
CNPS List: 2.2

Habitat Associations
General: CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.
Micro: MOSS FROM INTERMITTENTLY MESIC SITES; ON ROCKS. 600-1700M.

Occurrence No. 17 **Map Index:** 65394 **EO Index:** 65473

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2002-03-25
Site: 2002-03-25
Record Last Updated: 2006-07-26

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.99552º / -122.94271º
UTM: Zone-10 N4316282 E504960
Radius: 1/10 mile
Elevation: 1,460 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 13N
Range: 10W
Section: 11 **Qtr:** NW
Meridian: M

Location: ROUGHLY 4 AIR MILES SSW OF LAKEPORT. ON THE N SIDE OF HWY 175, 1.8 ROAD MILES WEST OF THE INTERSECTION WITH GEORGE RD.
Location Detail: IN THE NE 1/4 OF THE NW 1/4 OF SECTION 11. LOCATION BASED ON COORDINATES PROVIDED IN COLLECTION INFORMATION.
Ecological: ON BARE SOIL IN RAIN GULLY.
General: ONLY SOURCES OF INFORMATION FOR THIS OCCURRENCE ARE THREE 2002 COLLECTIONS BY ALLEN.
Owner/Manager: UNKNOWN

Entosthodon kochii

Koch's cord moss

Element Code: NBMUS2P050

Status
Federal: None
State: None

NDDB Element Ranks
Global: G1
State: S1.3

Other Lists
CNPS List: 1B.3

Habitat Associations
General: CISMONTANE WOODLAND.
Micro: MOSS GROWING ON SOIL. 500-1000M.

Occurrence No. 4 **Map Index:** 35147 **EO Index:** 72342

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: XXXX-XX-XX
Site: XXXX-XX-XX

Record Last Updated: 2008-06-05

Quad Summary: Hopland (3812381/535A), Purdys Gardens (3912311/550D)
County Summary: Mendocino

Lat/Long: 39.00231° / -123.08436°
UTM: Zone-10 N4317036 E492695
Radius: 1 mile
Elevation: 1,000 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 13N
Range: 11W
Section: 08 **Qtr:** XX
Meridian: M

Location: UC HOPLAND FIELD STATION.

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS UNDATED COLLECTION BY KELLMAN. NEEDS FIELDWORK.

Owner/Manager: UC-HOPLAND FIELD STATION

Harmonia guggolziorum

Guggolz's harmonia

Element Code: PDAST650M0

Status
Federal: None
State: None

NDDB Element Ranks
Global: G1
State: S1.1

Other Lists
CNPS List: 1B.1

Habitat Associations
General: CHAPARRAL.
Micro: OPEN AREAS ON SERPENTINE. 160-195M.

Occurrence No. 1 **Map Index:** 55681 **EO Index:** 55681

Dates Last Seen
Element: 2000-04-30
Site: 2000-04-30
Record Last Updated: 2007-12-19

*** SENSITIVE ***

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Quad Summary: Yorkville (3812382/535B)
County Summary: Mendocino

*** SENSITIVE ***

Lat/Long:
UTM:
Radius:
Elevation:
Mapping Precision:
Symbol Type:
Township:
Range:
Section:
Meridian:
Qtr:

Location: *SENSITIVE* Location information suppressed.
Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.
Ecological: ON SERPENTINE (SEMI-) BARRENS, AT EDGES OF SERPENTINE CHAPARRAL.
Threat: ROAD MAINTENANCE AND WIDENING, VINEYARDS, HOUSING CONSTRUCTION.
Owner/Manager:

Occurrence No. 2 **Map Index:** 55682 **EO Index:** 55682

Dates Last Seen
Element: 2001-05-08
Site: 2001-05-08
Record Last Updated: 2007-12-19

*** SENSITIVE ***

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Quad Summary: Yorkville (3812382/535B)
County Summary: Mendocino

*** SENSITIVE ***

Lat/Long:
UTM:
Radius:
Elevation:
Mapping Precision:
Symbol Type:
Township:
Range:
Section:
Meridian:
Qtr:

Location: *SENSITIVE* Location information suppressed.
Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.
Ecological: ABOVE THE ROADCUT ON SERPENTINE (SEMI-) BARREN HILLSIDE, AT EDGES OF SERPENTINE CHAPARRAL.
Threat: ROAD CONSTRUCTION, VINEYARDS, HOUSING DEVELOPMENT.
Owner/Manager:

Hemizonia congesta ssp. congesta

seaside tarplant

Element Code: PDAST4R065

Status

Federal: None
State: None

NDDB Element Ranks

Global: G5T2T3
State: S2S3

Other Lists

CNPS List: 1B.2

Habitat Associations

General: COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.
Micro: GRASSY VALLEYS AND HILLS, OFTEN IN FALLOW FIELDS. 25-200M.

Occurrence No. 32 **Map Index:** 73001 **EO Index:** 73920

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen

Element: 1976-09-XX
Site: 1976-09-XX

Record Last Updated: 2008-11-25

Quad Summary: Warm Springs Dam (3812361/519A)
County Summary: Sonoma

Lat/Long: 38.71527° / -123.06666°
UTM: Zone-10 N4285183 E494204
Area:
Elevation:

Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON

Township: 10N
Range: 11W
Section: 15 **Qtr:** XX
Meridian: M

Location: 3.1 AIR MILES WEST OF WARM SPRINGS DAM.
Location Detail: MAPPED BY CNDDB ACCORDING TO T-R-S INFORMATION PROVIDED BY GUGGOLZ: T10N, R11W, SE 1/4 OF THE NW 1/4 OF SECTION 15.
Ecological: PLANT FOUND ON ROADSIDE.
General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRRENCE IS A 1976 COLLECTION BY GUGGOLZ.
Owner/Manager: UNKNOWN

Hesperolinon adenophyllum

glandular western flax

Element Code: PDLIN01010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2
State: S2.3

Other Lists
CNPS List: 1B.2

Habitat Associations
General: CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
Micro: SERPENTINE SOILS; GENERALLY FOUND IN SEPENTINE CHAPARRAL. 425-1315M.

Occurrence No. 17 **Map Index:** 07933 **EO Index:** 18593

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-06-18
Site: 1999-06-18
Record Last Updated: 2000-04-13

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.94942º / -122.96118º
UTM: Zone-10 N4311164 E503363
Area: 3.8 acres
Elevation: 1,920 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 13N
Range: 10W
Section: 27 **Qtr:** NW
Meridian: M

Location: HIGHLAND SPRINGS ROAD ABOUT 3.5 - 4.5 MILES WEST OF HIGHLAND SPRINGS, MAYACMAS MOUNTAINS.

Location Detail: 2 COLONIES. WEST COLONY ON NORTH SIDE OF ROAD ON BARE ROAD CUT, JUST WEST OF CREEK CROSSING. MAPPED WITHIN THE NW 1/4 NW 1/4 SECTION 27. EAST COLONY ON BOTH SIDES OF THE ROAD, MAPPED WITHIN THE SE 1/4 NW 1/4 OF SECTION 27.

Ecological: ASSOCIATED WITH CALYCADENA MULTIGLANDULOSA, CEANOTHUS CUNEATUS, AND QUERCUS DURATA. LESS THAN 20% VEGETATION COVER. SERPENTINE ROADCUTS.

Threat: ROAD MAINTENANCE, GRADING,SUSCEPTIBLE TO EROSION. PLANTS COULD BE DESTROYED BY HERBICIDE MISUSE.

General: 1995:30-40 PLANTS AT E COLONY. 1999:3 PLANTS AT E COLONY AND 1 PLANT AT W COLONY. 1931 COLLECTION BY HILDEBRAND FROM 3 MI W OF HIGHLAND SPRINGS ON TOLL ROAD ATTRIBUTED TO THIS SITE. THE RARE CALYSTEGIA COLLINA SSP. OXYPHYLLA OCCURS NEARBY.

Owner/Manager: UNKNOWN

Occurrence No. 24 **Map Index:** 42758 **EO Index:** 42758

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-06-18
Site: 1999-06-18
Record Last Updated: 2005-05-04

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.94348º / -122.91173º
UTM: Zone-10 N4310508 E507649
Area: 46.1 acres
Elevation: 1,460 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 13N
Range: 09W
Section: 30 **Qtr:** SW
Meridian: M

Location: HIGHLAND SPRINGS ROAD, ALONG WEST SIDE OF HIGHLAND SPRINGS RESERVOIR, EAST OF THE MAYACMAS MOUNTAINS.

Location Detail: PLANTS OCCUR ON BOTH SIDES OF ROAD FROM ABOUT 0.5 - 1.2 MILES SOUTH OF HIGHLAND SPRINGS CUTOFF (EAST HIGHLAND SPRINGS ROAD). PLANTS ON BASE OF SLOPE NEAR ROAD AND ON TOP OF SLOPE APPROXIMATELY 6 FEET FROM ROAD EDGE.

Ecological: OPENINGS IN CHAMISE CHAPARRAL ON EAST FACING SLOPES. ASSOCIATED WITH AIRA CARYOPHYLLA, LOTUS HUMISTRATUS, BROMUS HORDEACEUS, VULPIA SPP., ERIOPHYLLUM LANATUM, AVENA BARBATA, TRITELEIA LAXA, MADIA EXIGUA, M. GRACILIS, ETC.

Threat: POSSIBLE THREATS INCLUDE ROAD MAINTENANCE, HERBICIDES. BLM PORTION OF THIS SITE UNDER CONSIDERATION FOR LAND

General: 1500-2000 PLANTS OBSERVED IN 1995. 100 PLANTS OBSERVED ON BLM CLEAR LAKE RESOURCE AREA PARCEL 117-L IN 1997. MORE THAN 5000 PLANTS OBSERVED IN 1999. THE RARE CALYSTEGIA COLLINA SSP. OXYPHYLLA OCCURS NEARBY.

Owner/Manager: PVT, BLM

Hesperolinon adenophyllum

glandular western flax

Element Code: PDLIN01010

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G2	**CNPS List:** 1B.2
State: None	**State:** S2.3	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.

Micro: SERPENTINE SOILS; GENERALLY FOUND IN SEPENTINE CHAPARRAL. 425-1315M.

Occurrence No. 25 **Map Index:** 42759 **EO Index:** 42759

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1997-05-07
Site: 1997-05-07
Record Last Updated: 2000-04-13

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.93169º / -122.94197º
UTM: Zone-10 N4309198 E505029
Radius: 80 meters
Elevation: 2,360 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 13N
Range: 10W
Section: 35 **Qtr:** SW
Meridian: M

Location: HILLSLOPE ABOVE HIGHLAND CREEK, ABOUT 1.3 MILES NORTHEAST OF HIGH VALLEY RANCH, WEST OF HIGHLAND SPRINGS RESERVOIR.

Location Detail: ON RIDGELINE ADJACENT OT FIRE ROAD ABOUT 2-3 YEARS OLD IN 1997. MAPPED JUST SOUTH OF THE CENTER OF SECTION 35. BLM EXCHANGE PARCEL 147-L.

Ecological: ROCKY RIDGE ON RAW SERPENTINE AND REDDISH, WEATHERED SOILS, GROWING ON MARGIN OF DOZER ROAD, IN CHAPARRAL WITH PINUS ATTENUATA, CEANOTHUS JEPSONII VAR. ALBIFLORUS, AND CUPRESSUS SARGENTII.

Threat: PARCEL UNDER CONSIDERATION FOR SALE TO PRIVATE OWNER (LAND EXCHANGE).

General: 1000 PLANTS OBSERVED IN 1997.

Owner/Manager: BLM

Occurrence No. 26 **Map Index:** 42760 **EO Index:** 42760

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1998-06-24
Site: 1998-06-24
Record Last Updated: 2005-06-28

Quad Summary: Highland Springs (3812288/534B)
County Summary: Mendocino, Lake

Lat/Long: 38.93098º / -122.96208º
UTM: Zone-10 N4309118 E503286
Area: 10.4 acres
Elevation: 2,640 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 13N
Range: 10W
Section: 34 **Qtr:** SW
Meridian: M

Location: NORTH SLOPE OF HIGH VALLEY, SLOPES ON EAST SIDE OF ADOBE CREEK ROAD, ABOUT 3 MILES WSW OF HIGHLAND SPRINGS RESERVOIR.

Location Detail: EXTENDING EASTWARD FROM ADOBE CREEK ROAD IN A RECENT 2-3 YEAR OLD (IN 1997) BURN AREA. MAPPED WITHIN THE NE 1/4 OF THE SW 1/4 OF SECTION 34. BLM EXCHANGE PARCEL 146-L.

Ecological: ROCKY RIDGE ON RAW SERPENTINE AND REDDISH, WEATHERED SOILS. GROWING IN MATRIX OF SERPENTINE CHAPARRAL OF PINUS SABINIANA, CEANOTHUS JEPSONII ALBIFLORUS, CUPRESSUS SARGENTII. PLANTS COLONIZING LOOSE SOIL FROM RECENT DISTURBANCE ALONG ROAD.

Threat: PARCEL UNDER CONSIDERATION FOR SALE TO PRIVATE OWNER (LAND EXCHANGE).

General: 5,000 PLANTS OBSERVED IN 1997, AND UNKNOWN NUMBER IN 1998.

Owner/Manager: BLM

Hesperolinon adenophyllum

glandular western flax

Element Code: PDLIN01010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2
State: S2.3

Other Lists
CNPS List: 1B.2

Habitat Associations
General: CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
Micro: SERPENTINE SOILS; GENERALLY FOUND IN SEPENTINE CHAPARRAL. 425-1315M.

Occurrence No. 27 **Map Index:** 42763 **EO Index:** 42763

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: XXXX-XX-XX
Site: XXXX-XX-XX
Record Last Updated: 2000-04-13

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake, Mendocino

Lat/Long: 38.88096º / -122.88849º
UTM: Zone-10 N4303572 E509672
Radius: 1/5 mile
Elevation: 2,500 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 12N
Range: 09W
Section: 17 **Qtr:** XX
Meridian: M

Location: EASTERN END OF PINE MOUNTAIN ROAD, AT BOUNDARY OF MENDOCINO AND LAKE COUNTIES.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE ARE COLLECTIONS BY RAICHE (40,210 CAS) AND KNIGHT (5436 CAS) CITED IN A FLORA OF THE VASCULAR PLANTS OF MENDOCINO COUNTY.

Owner/Manager: UNKNOWN

Occurrence No. 41 **Map Index:** 61836 **EO Index:** 61872

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-06-03
Site: 1999-06-03
Record Last Updated: 2005-07-01

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.92288º / -122.90104º
UTM: Zone-10 N4308223 E508578
Area: 16.1 acres
Elevation: 1,800 ft

Mapping PrecisionSPECIFIC
Symbol Type:POLYGON

Township: 12N
Range: 09W
Section: 06 **Qtr:** NE
Meridian: M

Location: ABOUT 5 MILES SOUTHWEST OF KELSEYVILLE AND 1.0 AIRMI SOUTH OF HIGHLAND SPRINGS.

Location Detail: ALONG ROADCUT ABOUT 1.1 ROAD MILES UPHILL FROM GATE AT HIGHLAND SPRINGS ROAD. MAPPED IN THE NW 1/4 OF THE NE 1/4 OF SECTION 6.

Ecological: ROADCUT ON SANDSTONE IN CHAPARRAL. NORTH ASPECT. ASSOCIATED WITH ADENOSTOMA FASCICULATUM, QUERCUS BERBERIDIFOLIA, AND HETEROMELES ARBUTIFOLIA.

General: UNKNOWN NUMBER OF PLANTS SEEN IN 1999.

Owner/Manager: UNKNOWN

Horkelia bolanderi

Bolander's horkelia

Element Code: PDROS0W010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G1
State: S1.2

Other Lists
CNPS List: 1B.2

Habitat Associations
General: LOWER MONTANE CONIFEROUS FOREST, CHAPARRAL, MEADOWS, VALLEY AND FOOTHILL GRASSLAND.
Micro: GRASSY MARGINS OF VERNAL POOLS AND MEADOWS. 450-850M.

Occurrence No. 6 **Map Index:** 17131 **EO Index:** 9842

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1950-05-20
Site: 1989-05-28
Record Last Updated: 1992-02-03

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.93143º / -122.92345º
UTM: Zone-10 N4309170 E506635
Area:
Elevation: 1,525 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON

Township: 13N
Range: 10W
Section: 36 **Qtr:** S
Meridian: M

Location: 1.2 MILES SOUTHWEST OF HIGHLAND SPRINGS.

Location Detail: LATEST SURVEY DIDN'T KNOW WHERE TO START MEASURING FROM. BETTER DIRECTIONS NEEDED FROM SWEENEY.

Ecological: SWEENEY'S ORIGINAL HERBERIUM LABEL SAYS PLANT COLLECTED ON 1 YEAR BURN IN CHAPARRAL ON SHALLOW ROCKY SOIL, SOUTH-FACING SLOPE. THIS IS ATYPICAL

General: MORE FIELD SURVEYS NEEDED.

Owner/Manager: UNKNOWN

Horkelia tenuiloba

thin-lobed horkelia

Element Code: PDROS0W0E0

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2
State: S2.2

Other Lists
CNPS List: 1B.2

Habitat Associations
General: COASTAL SCRUB, CHAPARRAL.
Micro: SANDY SOILS; MESIC OPENINGS. 45-500M.

Occurrence No. 8 **Map Index:** 28819 **EO Index:** 30380

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1992-01-26
Site: 1992-01-26
Record Last Updated: 1997-02-11

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.67560º / -122.97666º
UTM: Zone-10 N4280778 E502030
Area: 9.4 acres
Elevation: 1,040 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 10N
Range: 10W
Section: 33 **Qtr:** NW
Meridian: M

Location: 0.5 MILE SSW OF BRADFORD MOUNTAIN, WEST OF ANDERSON VALLEY.

Location Detail: MAPPED ABOUT 1.7 AIR MILES WEST OF DRY CREEK ROAD AT MOUNTAIN VIEW RANCH ROAD AND 1.2 MILES SOUTHWEST OF THE SW ARM OF MERLO LAKE.

Ecological: GROWING IN OPEN SPACES BETWEEN ARCTOSTAPHYLOS WITH CEANOTHUS CONFUSUS. OTHER ASSOCIATES INCLUDE DENDROMECON RIGIDA, ADENOSTOMA FASCICULATUM, AND TOXICODENDRON DIVERSILOBUM. ARCTOSTAPHYLOS STANFORDIANA VAR. REPENS OCCURS NEARBY.

Threat: PART OF PROPERTY TO BE DEVELOPED FOR HOMESITE AND SMALL VINEYARD.

General: 200+ PLANTS OBSERVED IN 1992. SOME PROTECTION OF THIS SITE TO BE PROVIDED BY A CONSERVATION AGREEMENT FOR THE A. STANFORDIANA REPENS.

Owner/Manager: PVT

Occurrence No. 9 **Map Index:** 28820 **EO Index:** 30379

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1991-05-04
Site: 1991-05-04
Record Last Updated: 2008-09-15

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.68265º / -122.97229º
UTM: Zone-10 N4281561 E502410
Area: 20.9 acres
Elevation: 1,060 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 10N
Range: 10W
Section: 28 **Qtr:** SE
Meridian: M

Location: TOP OF BRADFORD MOUNTAIN, WEST OF ANDERSON VALLEY.

Location Detail: FROM SUMMIT SOUTH ALONG FIREBREAK FOR ABOUT 0.25 MILE.

Ecological: ON FIREBREAK AND IN CLEAR AREAS IN THE BRUSH ON BOTH SIDES OF THE BREAK. YELLOW CLAY SOIL. ASSOCIATED WITH CEANOTHUS CONFUSUS, ADENOSTOMA FASCICULATUM, AND ERIODICTYON CALIFORNICUM. HORKELIA FOUND ON SLIGHT SLOPES.

Threat: MAINTENANCE OF FIRE BREAK SETS PLANTS BACK A SHORT TIME, BUT MAY BE BENEFICIAL OVER TIME.

General: 100+ PLANTS OBESERVED IN 1991.

Owner/Manager: PVT

Lasiurus blossevillii

western red bat

Element Code: AMACC05060

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5
State: S3?

Other Lists
CDFG Status: SC

Habitat Associations
General: ROOSTS PRIMARILY IN TREES, 2-40 FT ABOVE GROUND, FROM SEA LEVEL UP THROUGH MIXED CONIFER FORESTS.
Micro: PREFERS HABITAT EDGES & MOSAICS WITH TREES THAT ARE PROTECTED FROM ABOVE & OPEN BELOW WITH OPEN AREAS FOR FORAGING.

Occurrence No. 96 **Map Index:** 71708 **EO Index:** 72607

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1954-09-08
Site: 1954-09-08
Record Last Updated: 2008-07-15

Quad Summary: Asti (3812278/534C)
County Summary: Sonoma

Lat/Long: 38.78952º / -122.99124º
UTM: Zone-10 N4293420 E500760
Radius: 1/5 mile
Elevation: 300 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 11N
Range: 10W
Section: 20 **Qtr:** NE
Meridian: M

Location: ALEXANDER VALLEY, BLACK WINERY ON RIVER ROAD, 1.8 MILES SE OF THE CLOVERDALE POST OFFICE.

Location Detail: MAPPED TO DESCRIBED LOCATION OF "BLACK WINERY, 2 MILES SOUTHEAST OF CLOVERDALE, SONOMA COUNTY."

Ecological: IN CANOPY OF FIG TREE.

General: A FEMALE RED BAT WAS CAPTURED WHILE HANGING IN AN OVERHANG PRODUCED BY THE OVERLAPPING CANOPIES OF 2 FIG TREES ON 8 SEP 1954.

Owner/Manager: PVT

Lasiurus cinereus

hoary bat

Element Code: AMACC05030

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G5	**CDFG Status:**
State: None	**State:** S4?	

Habitat Associations

General: PREFERS OPEN HABITATS OR HABITAT MOSAICS, WITH ACCESS TO TREES FOR COVER & OPEN AREAS OR HABITAT EDGES FOR FEEDING.

Micro: ROOSTS IN DENSE FOLIAGE OF MEDIUM TO LARGE TREES. FEEDS PRIMARILY ON MOTHS. REQUIRES WATER.

Occurrence No. 67 **Map Index:** 68512 **EO Index:** 68827

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1958-05-19
Site: 1958-05-19

Record Last Updated: 2007-03-16

Quad Summary: Yorkville (3812382/535B)
County Summary: Mendocino

Lat/Long: 38.97302º / -123.19060º
UTM: Zone-10 N4313800 E483488
Radius: 1 mile
Elevation:

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 13N
Range: 12W
Section: 21 **Qtr:** XX
Meridian: M

Location: 4 MILES WEST OF HOPLAND.

Location Detail: MAPPED ACCORDING TO LAT/LONG COORDINATES PROVIDED BY MANIS, WITH UNCERTAINTY OF 6564.5142M. COORDINATES DO NOT MATCH WITH LOCALITY GIVEN, "4 MILES E OF HOPLAND;" RATHER THEY POINT TO 4 MILES W OF HOPLAND.

General: 7 MALE AND 1 FEMALE SPECIMEN COLLECTED (MVZ #122493-122532) COLLECTED BY ALAN C. ZIEGLER & CARL B. KOFORD ON 10, 12, 19-20 APR AND 19 MAY 1958.

Owner/Manager: UNKNOWN

Lavinia exilicauda chi

Clear Lake hitch

Element Code: AFCJB19011

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5T2
State: S2

Other Lists
CDFG Status: SC

Habitat Associations
General: FOUND ONLY IN CLEAR LAKE, LAKE CO, AND ASSOCIATED PONDS. SPAWNS IN STREAMS FLOWING INTO CLEAR LAKE.
Micro: ADULTS FOUND IN THE LIMNETIC ZONE. JUVENILES FOUND IN THE NEARSHORE SHALLOW-WATER HABITAT HIDING IN THE VEGETATION.

Occurrence No. 2 **Map Index:** 63527 **EO Index:** 63619

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1963-04-12
Site: 1963-04-12
Record Last Updated: 2005-12-28

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.95744° / -122.89042°
UTM: Zone-10 N4312060 E509494
Area:
Elevation: 1,413 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON

Township: 13N
Range: 09W
Section: 20 **Qtr:** SW
Meridian: M

Location: ADOBE CREEK AT BELL HILL ROAD IN BIG VALLEY
Ecological: TRIBUTARY CREEK TO CLEAR LAKE.
General: COLLECTED 12 APR 1963 BY J.D. HOPKIRD & C.C. SWIFT (CAS #23261) PARATYPE.
Owner/Manager: UNKNOWN

Layia septentrionalis

Colusa layia

Element Code: PDAST5N0F0

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G2	**CNPS List:** 1B.2
State: None	**State:** S2.2	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.

Micro: SCATTERED COLONIES IN FIELDS AND GRASSY SLOPES IN SANDY OR SERPENTINE SOIL. 145-1095M.

Occurrence No. 4 **Map Index:** 24302 **EO Index:** 29069

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1943-05-10
Site: 1943-05-10
Record Last Updated: 1996-01-25

Quad Summary: Highland Springs (3812288/534B), Lakeport (3912218/549C)
County Summary: Lake, Mendocino

Lat/Long: 38.98746º / -122.97222º
UTM: Zone-10 N4315385 E502405
Radius: 1 mile
Elevation: 1,800 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 13N
Range: 10W
Section: 09 **Qtr:** SE
Meridian: M

Location: 5 MILES WEST OF LAKEPORT ON ROAD TO HOPLAND. MAPPED 5 ROAD MILES FROM JUNCTION OF HWYS 29 & 175.

General: ONLY INFO IS COLLECTION BY HOWELL (#18005).

Owner/Manager: UNKNOWN

Occurrence No. 12 **Map Index:** 24313 **EO Index:** 7031

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1978-05-05
Site: 1978-05-05
Record Last Updated: 1993-10-11

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.90462º / -123.08916º
UTM: Zone-10 N4306196 E492269
Area:
Elevation: 600 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POLYGON
Township: 12N
Range: 11W
Section: 09 **Qtr:** NE
Meridian: M

Location: 4.5 KM (2.8 MI) N OF HWY 128 ALONG MOUNTAIN HOUSE ROAD (RT 111).

General: ONLY INFO IS COLLECTION BY WHEELER & WHEELER (#297).

Owner/Manager: UNKNOWN

Occurrence No. 14 **Map Index:** 24303 **EO Index:** 7029

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1947-04-09
Site: 1947-04-09
Record Last Updated: 2008-09-26

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.93683º / -122.90707º
UTM: Zone-10 N4309770 E508054
Radius: 1 mile
Elevation: 1,500 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 13N
Range: 09W
Section: 31 **Qtr:** XX
Meridian: M

Location: HIGHLAND SPRINGS, MAYACMAS RANGE.

Ecological: FOOTHILLS.

General: 1928 AND 1947 COLLECTIONS FROM "HIGHLAND SPRINGS" ATTRIBUTED TO THIS OCCURRENCE. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Layia septentrionalis

Colusa layia

Element Code: PDAST5N0F0

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2
State: S2.2

Other Lists
CNPS List: 1B.2

Habitat Associations
General: CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
Micro: SCATTERED COLONIES IN FIELDS AND GRASSY SLOPES IN SANDY OR SERPENTINE SOIL. 145-1095M.

Occurrence No. 28 **Map Index:** 37544 **EO Index:** 32546

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1995-05-05
Site: 1995-05-05
Record Last Updated: 2005-06-29

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.93503º / -123.04058º
UTM: Zone-10 N4309568 E496482
Radius: 80 meters
Elevation: 1,060 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 13N
Range: 11W
Section: 35 **Qtr:** SW
Meridian: M

Location: ABOUT 5 MILES SE OF HOPLAND. ALONG JEEP TRAIL 1.7 MILES NE OF SQUAW ROCK SLIDE HISTORICAL MARKER.
Location Detail: IN THE SE 1/4 OF THE SW 1/4 OF SECTION 35.
Ecological: OAK WOODLAND/NON-NATIVE GRASSLAND WITH AVENA BARBATA, LAGOPHYLLA RAMOSISSIMA, TRIFOLIUM CILIOLATUM, T. MICROCEPHALUM, AND ALBOPURPUREUM.
General: 200 PLANTS IN 1995.
Owner/Manager: PVT

Occurrence No. 29 **Map Index:** 37545 **EO Index:** 32547

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1995-04-26
Site: 1995-04-26
Record Last Updated: 1997-11-06

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.94804º / -123.02773º
UTM: Zone-10 N4311011 E497596
Area: 4.5 acres
Elevation: 1,200 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 13N
Range: 11W
Section: 36 **Qtr:** NW
Meridian: M

Location: ABOUT 6 MI ESE OF HOPLAND, ALONG YOUNCE ROAD.
Location Detail: THREE LITTLE POPULATIONS MAPPED. TWO IN NW1/4 OF NW1/4 OF SECTION 36. ONE IN NE 1/4 OF NE 1/4 OF SECTION 35.
Ecological: EAST AND WEST-FACING SLOPES OF LOOSE ROCK ABOVE ROADCUT. WITH AVENA BARBATA, BROMUS SP., ERIOGONUM NUDUM, MELICA IMPERFECTA, MONARDELLA SP., TRIFOLIUM MICROCEPHALUM, TUNICA PROLIFERA, MONTIA EXIGUA, THYSANOCARPUS SP., AND LINANTHUS SP.
General: MORE THAN 250 PLANTS IN 1995.
Owner/Manager: PVT?

Occurrence No. 30 **Map Index:** 37748 **EO Index:** 32755

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1949-05-11
Site: 1949-05-11
Record Last Updated: 1997-12-22

Quad Summary: Cloverdale (3812371/535D)
County Summary: Sonoma

Lat/Long: 38.83684º / -123.02127º
UTM: Zone-10 N4298671 E498153
Radius: 1 mile
Elevation: 600 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 11N
Range: 10W
Section: 06 **Qtr:** XX
Meridian: M

Location: 2 MILES NORTH OF CLOVERDALE.
Location Detail: MAPPED IN VICINITY OF PRESTON ALONG THE RUSSIAN RIVER.
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1949 COLLECTION BY BEANE.
Owner/Manager: UNKNOWN

Lupinus sericatus

Cobb Mountain lupine

Element Code: PDFAB2B3J0

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2
State: S2.2

Other Lists
CNPS List: 1B.2

Habitat Associations
General: CHAPARRAL, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.
Micro: IN STANDS OF KNOBCONE PINE-OAK WOODLAND, ON OPEN WOODED SLOPES IN GRAVELLY SOILS; SOMETIMES ON SERPENTINE. 180-1500M.

Occurrence No. 22 **Map Index:** 35501 **EO Index:** 30919
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1986-04-23
Site: 1986-04-23
Record Last Updated: 1997-02-27

Quad Summary: Big Foot Mtn. (3812372/535C)
County Summary: Sonoma

Lat/Long: 38.76589º / -123.17649º
UTM: Zone-10 N4290812 E484667
Area: 17.5 acres
Elevation: 1,950 ft

Mapping PrecisionSPECIFIC
Symbol Type:POLYGON

Township: 11N
Range: 12W
Section: 34 **Qtr:** NE
Meridian: M

Location: KELLY ROAD JUST WEST OF ROCKPILE ROAD, ABOUT 1.3 MILES SOUTH OF WHITE MOUNTAIN, WEST OF LAKE SONOMA.

Location Detail: ABOUT 0.2 MILE WEST OF ROCKPILE ROAD ROADSIDE CLIFF-FACE.

Ecological: OPEN SSW-FACING ROCK CLIFFS AND LEDGES. AREA DOMINANTLY GRASSLAND WITH MIXED EVERGREEN WOODLAND IN AREAS, CHAPARRAL OCCURING NEARBY. ASSOCIATED ON THE CLIFFS WITH ERIOPHYLLUM LANATUM AND GRASSES.

Threat: ROAD WIDENING IS POTENTIAL THREAT.

General: 50-100 PLANTS REPORTED IN 1986. RAICHE NOTES THAT A SOLITARY PLANT OBSERVED SEVERAL MILES TO THE EAST ALONG ROCKPILE ROAD IS NOW EXTIRPATED. THIS SITE NOT YET MAPPED BY CNDDB (INSUFFICIENT SITE DESCRIPTION).

Owner/Manager: DOD-COE

Monardella villosa ssp. globosa

robust monardella

Element Code: PDLAM180P7

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5T2
State: S2.2

Other Lists
CNPS List: 1B.2

Habitat Associations
General: BROADLEAVED UPLAND FOREST, CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
Micro: OPENINGS. 30-300M.

Occurrence No. 6 **Map Index:** 32595 **EO Index:** 1075

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1897-06-XX
Site: 1897-06-XX
Record Last Updated: 2007-04-05

Quad Summary: Healdsburg (3812257/518D), Geyserville (3812268/518B), Jimtown (3812267/518A), Guerneville (3812258/518C)
County Summary: Sonoma

Lat/Long: 38.61273º / -122.86698º
UTM: Zone-10 N4273810 E511580
Radius: 1 mile
Elevation: 100 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 09N
Range: 09W
Section: 21 **Qtr:** XX
Meridian: M

Location: HEALDSBURG.
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS AN 1897 COLLECTION BY KING.
Owner/Manager: UNKNOWN

Occurrence No. 11 **Map Index:** 46404 **EO Index:** 46404

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2000-06-23
Site: 2000-06-23
Record Last Updated: 2001-11-06

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.67147º / -122.98863º
UTM: Zone-10 N4280320 E500988
Area:
Elevation:

Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON

Township: 10N
Range: 10W
Section: 32 **Qtr:** E
Meridian: M

Location: EAST OF PENA CREEK ABOUT 0.1- 1 MILE DOWNSTREAM FROM CONFLUENCE WITH CHAPMAN BRANCH, SOUTHWEST OF GEYSERVILLE.
Location Detail: EASTERN HALF OF SECTION 32.
Ecological: IN SERPENTINE CHAPARRAL. RARE ASSOCIATES INCLUDE ARCTOSTAPHYLOS STANFORDIANA SPP. DECUMBENS, CEANOTHUS CONFUSUS, AND CORDYLANTHUS TENUIS SSP. BRUNNEUS.
Threat: SURROUNDING LAND USE INCLUDES TIMBER HARVEST, RURAL RESIDENTIAL, VINEYARDS, RESERVOIR.
General: UNKNOWN NUMBER OF PLANTS OBSERVED IN 2000.
Owner/Manager: PVT

Myotis yumanensis

Yuma myotis

Element Code: AMACC01020

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5
State: S4?

Other Lists
CDFG Status:

Habitat Associations
General: OPTIMAL HABITATS ARE OPEN FORESTS AND WOODLANDS WITH SOURCES OF WATER OVER WHICH TO FEED.
Micro: DISTRIBUTION IS CLOSELY TIED TO BODIES OF WATER. MATERNITY COLONIES IN CAVES, MINES, BUILDINGS OR CREVICES.

Occurrence No. 7 **Map Index:** 43689 **EO Index:** 43691

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-07-08
Site: 1999-07-08
Record Last Updated: 2000-08-31

Quad Summary: Tombs Creek (3812362/519B)
County Summary: Sonoma

Lat/Long: 38.66220º / -123.23451º
UTM: Zone-10 N4279318 E479596
Radius: 80 meters
Elevation: 620 ft

Mapping PrecisionSPECIFIC
Symbol Type:POINT

Township: 09N
Range: 12W
Section: 06 **Qtr:** NW
Meridian: M

Location: BRIDGE ON STEWART'S POINT SKAGGS SPRING ROAD AT HOUSE CREEK, 0.3 MILE NORTH OF DOE RIDGE.
Location Detail: MAPPED TO SITE DESCRIPTION GIVEN COORDINATES ARE 0.05 MILE WEST (LAT:38 39' 44"; LONG:123 14' 03").
Ecological: RIPARIAN AT BRIDGE, CHAPARRAL AND NON-NATIVE GRASSLAND, RURAL.
Threat: BRIDGE SEISMIC RETROFIT SCHEDULED FOR DAY WORK ONLY. WORK WILL TEMPORARILY IMPACT MATERNITY DAY ROOST
General: 1999: NUMBER OF M. YUMANENSIS UNKNOWN. ALSO PALLID BAT NIGHT ROOST AND OTHER UNIDENTIFIED BAT SPECIES USING THE BRIDGE.
Owner/Manager: SON COUNTY

Oncorhynchus mykiss irideus

steelhead - central California coast ESU

Element Code: AFCHA0209G

Status
Federal: Threatened
State: None

NDDB Element Ranks
Global: G5T2Q
State: S2

Other Lists
CDFG Status:

Habitat Associations
General: FROM RUSSIAN RIVER, SOUTH TO SOQUEL CR & TO, BUT NOT INCLUDING, PAJARO RIVER. ALSO SAN FRANCISCO & SAN PABLO BAY BASINS.
Micro:

Occurrence No. 25 **Map Index:** 43107 **EO Index:** 43107

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1998-08-25
Site: 1998-08-25
Record Last Updated: 2000-06-20

Quad Summary: The Geysers (3812277/534D), Asti (3812278/534C)
County Summary: Sonoma

Lat/Long: 38.83911° / -122.84597°
UTM: Zone-10 N4298934 E513367
Area: 309.3 acres
Elevation: 1,500 ft

Mapping PrecisionSPECIFIC
Symbol Type:POLYGON

Township: 12N
Range: 09W
Section: 34 **Qtr:** XX
Meridian: M

Location: SQUAW CREEK, TRIB TO BIG SULFUR CREEK, TRIB TO RUSSIAN RIVER, 4 MILES NW OF "THE GEYSERS" AND GEYSERS RESORT.

Location Detail: SQUAW CREEK SAMPLE STATIONS: 1, 3 (ON ALDER CREEK 0.3 MI UPSTREAM OF SQUAW), 4, 7, & 10. NO SITES 2 & 5; SITES, 6 ON WILDHORSE CREEK & 8 ON COLDWATER CANYON HAVE NO DATA.

Ecological: SITE 1: WIDE CHANNEL, LITTLE-NO SHADING, POOLS & BACKWATERS; SANDY/GRAVEL/BOULDERS; 4, NARROW FLOODPLAIN, COBBLE & BEDROCK, AGGRADATION AREA; 7 & 10, DENSE RIPARIAN, ABUNDANT SHADE, (7 PRIMAILY SANDY, SEVERAL POOLS), (10 COBBLE & GRAVEL).

Threat: NATURAL AND HUMAN CAUSE EROSION/ SEDIMENTATION; WATER WITHDRAWAL. SURROUNDING LAND USE IN GEOTHERMAL ENERGY PRODUCTION.

General: BARRIERS UP & DOWNSTREAM OF SITE 3, DOWNSTREAM WATERFALL CAN BE PASSED DURING HIGH FLOWS. 477 OBSERVED, 207 ADULTS (1+ YEARS), 270 JUVENILES (0-1 YEAR)

Owner/Manager: PVT-CALPINE CORP, SMUD

Rana boylii

foothill yellow-legged frog

Element Code: AAABH01050

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2S3

Other Lists
CDFG Status: SC

Habitat Associations
General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 113 **Map Index:** 32342 **EO Index:** 2544
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1956-04-XX
Site: 1956-04-XX
Record Last Updated: 1995-07-26

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.91374º / -123.03916º
UTM: Zone-10 N4307205 E496604
Area:
Elevation: 750 ft
Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON
Township: 12N
Range: 11W
Section: 01 **Qtr:** XX
Meridian: M

Location: PIETA CREEK; TRIBUTARY TO RUSSIAN RIVER; SOUTHEAST OF HOPLAND.
General: MODERATELY ABUNDANT NUMBERS OF FROGS OBSERVED MARCH-APRIL 1956.
Owner/Manager: UNKNOWN

Occurrence No. 114 **Map Index:** 32343 **EO Index:** 2576
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1956-04-XX
Site: 1956-04-XX
Record Last Updated: 1995-06-27

Quad Summary: Hopland (3812381/535A), Highland Springs (3812288/534B)
County Summary: Mendocino, Lake

Lat/Long: 38.99134º / -122.99060º
UTM: Zone-10 N4315815 E500814
Area:
Elevation: 2,400 ft
Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON
Township: 13N
Range: 10W
Section: 08 **Qtr:** XX
Meridian: M

Location: MCDOWELL CREEK; LAKE/MENDOCINO COUNTY LINES; WEST OF BIG VALLEY.
Ecological: RIVER.
General: MODERATELY ABUNDANT NUMBERS OBSERVED.
Owner/Manager: UNKNOWN

Occurrence No. 156 **Map Index:** 36014 **EO Index:** 31012
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1997-06-09
Site: 1997-06-09
Record Last Updated: 1997-07-07

Quad Summary: Asti (3812278/534C)
County Summary: Sonoma

Lat/Long: 38.79716º / -122.91352º
UTM: Zone-10 N4294271 E507509
Area:
Elevation: 720 ft
Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON
Township: 11N
Range: 09W
Section: 18 **Qtr:** XX
Meridian: M

Location: LITTLE SULPHUR CREEK, APPROXIMATELY 1.5 MILES UPSTREAM FROM ITS CONFLUENCE WITH BIG SULPHUR CREEK.
Location Detail: LARVAE ABUNDANT INTHE SHALLOW, QUIET WATER ALONG THE SHORE.
Ecological: HABITAT CONSISTS OF A STREAM WITH A VERY WIDE, SHALLOW CHANNEL; SOME ROCKY COVER ALONG THE SHORE CREATES SMALL POOLS WHERE ADULT FROGS ARE PRESENT (NO OVER-HANGING VEGETATION). SURROUNDING AREA IS OAK WOODLAND. STEELHEAD ABUNDAND IN CREEK.
Threat: THREATENED BY PROPOSED VINEYARD DEVELOPMENT/WATER DIVERSION.
General: 2 ADULT FROGS AND MANY TADPOLES OBSERVED ON 9 JUNE 1997.
Owner/Manager: PVT

Rana boylii

foothill yellow-legged frog

Element Code: AAABH01050

Status	NDDB Element Ranks	Other Lists
Federal: None	**Global:** G3	**CDFG Status:** SC
State: None	**State:** S2S3	

Habitat Associations

General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.

Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 157 **Map Index:** 36015 **EO Index:** 31013

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1997-06-09
Site: 1997-06-09
Record Last Updated: 1997-07-07

Quad Summary: Asti (3812278/534C)
County Summary: Sonoma

Lat/Long: 38.80236º / -122.92234º
UTM: Zone-10 N4294847 E506743
Area:
Elevation: 720 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POLYGON
Township: 11N
Range: 10W
Section: 13 **Qtr:** XX
Meridian: M

Location: UNNAMED TRIBUTARY TO LITTLE SULPHUR CREEK, NE OF ALEXANDER VALLEY.

Ecological: HABITAT CONSISTS OF A HIGH-GRADIENT, FIRST AND SECOND ORDER STREAM, DEEPLY INCISED IN PLACES WITH BEDROCK, COBBLE, AND GRAVEL BOTTOM; SURROUNDING VEGETATION IS GRAZED OAK WOODLAND. STEELHEAD ABUNDANT IN LOWER REACH; NONE IN UPPER REACH.

Threat: THREATENED BY VINEYARD DEVELOPMENT, AS WELL AS A PROPOSED DAM/RESERVOIR/WATER DIVERSION.

General: 8 ADULT FROGS AND THOUSANDS OF TADPOLES OBSERVED ON 9 JUNE 1997.

Owner/Manager: PVT

Occurrence No. 158 **Map Index:** 36016 **EO Index:** 31014

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1997-06-09
Site: 1997-06-09
Record Last Updated: 1997-07-07

Quad Summary: Asti (3812278/534C)
County Summary: Sonoma

Lat/Long: 38.77729º / -122.94351º
UTM: Zone-10 N4292064 E504906
Area:
Elevation: 920 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POLYGON
Township: 11N
Range: 10W
Section: 26 **Qtr:** XX
Meridian: M

Location: CROCKER CREEK, APPROXIMATELY 2.5 MILES UPSTREAM FROM ITS CONFLUENCE WITH RUSSIAN RIVER, NE OF ASTI.

Ecological: HABITAT CONSISTS OF A VERY HIGH-GRADIENT, CASCADING STREAM WITH A BOULDER/COBBLE BOTTOM; SURROUNDING AREA CONSISTS OF GRAZED OAK/MAPLE/BAY WOODLAND.

Threat: THREATENED BY PROPOSED VINEYARD DEVELOPMENT AND DAM/RESERVOIR/WATER DIVERSION PROJECT.

General: 5 ADULT FROGS AND THOUSANDS OF TADPOLES OBSERVED ON 9 JUN 1997.

Owner/Manager: PVT

Occurrence No. 163 **Map Index:** 38444 **EO Index:** 33451

Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1997-07-11
Site: 1997-07-11
Record Last Updated: 1998-03-24

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.93838º / -122.94187º
UTM: Zone-10 N4309940 E505037
Area: 28.5 acres
Elevation: 1,760 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 13N
Range: 10W
Section: 35 **Qtr:** NW
Meridian: M

Location: HIGHLAND CREEK, ON THE NORTH SIDE OF HIGHLAND SPRINGS ROAD, ABOUT 2 MILES UPSTREAM FROM HIGHLAND RESERVOIR.

Ecological: HABITAT CONSISTS A PERENNIAL STREAM WITH RIPARIAN DOMINATED BY SALIX LASIANDRA AND ABUNDANT EMERGENT CAREX NUDATA.

General: 4 ADULTS CAPTURED ON 11 JULY 1997 ALONG THE CREEK BANKS.

Owner/Manager: BLM-CLEAR LAKE RA

Rana boylii

foothill yellow-legged frog

Element Code: AAABH01050

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2S3

Other Lists
CDFG Status: SC

Habitat Associations
General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 174 **Map Index:** 41689 **EO Index:** 41689
Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-05-21
Site: 1999-05-21
Record Last Updated: 1999-09-27

Quad Summary: Cloverdale (3812371/535D)
County Summary: Mendocino

Lat/Long: 38.86188º / -123.05580º
UTM: Zone-10 N4301451 E495158
Radius: 80 meters
Elevation: 500 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 12N
Range: 11W
Section: 26 **Qtr:** NW
Meridian: M

Location: UNNAMED TRIBUTARY ON THE SOUTH SIDE OF EDWARDS CREEK, 1 MILE UPSTREAM FROM THE RUSSIAN RIVER, NNW OF CLOVERDALE.
Location Detail: JUVENILE FROGS OBSERVED IN THE ALLUVIAL FLAT AT THE CONFLUENCE WITH EDWARDS CREEK.
Ecological: HABITAT CONSISTS OF A SEASONAL DRAINAGE TO EDWARDS CREEK THAT FLOWS FROM SOUTH TO NORTH.
Threat: THREATENED BY A PROPOSED VINEYARD EAST OF THE SEASONAL DRAINAGE.
General: MANY JUVENILES WERE OBSERVED ON 21 MAY 1999.
Owner/Manager: PVT

Occurrence No. 262 **Map Index:** 43064 **EO Index:** 43064
Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1998-08-25
Site: 1998-08-25
Record Last Updated: 2000-06-08

Quad Summary: Asti (3812278/534C)
County Summary: Sonoma

Lat/Long: 38.82477º / -122.87735º
UTM: Zone-10 N4297339 E510646
Radius: 80 meters
Elevation: 800 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 11N
Range: 09W
Section: 04 **Qtr:** SW
Meridian: M

Location: SQUAW CREEK, AT THE BIG SULPHUR CREEK CONFLUENCE, 8 MILES EAST OF CLOVERDALE
Ecological: HABITAT CONSISTS OF A RELATIVELY WIDE CREEK CHANNEL, WITH LITTLE TO NO RIPARIAN SHADING; POOLS AND BACKWATERS PRESENT. SUBSTRATE SANDY/GRAVEL/BOULDERS. SURROUNDING LAND USE: GEOTHERMAL POWER PRODUCTION. ONCORHYNCHUS MYKISS PRESENT.
Threat: POSSIBLY THREATENED BY BULLFORGS.
General: 20 ADULTS OBSERVED ON 25 AUG 1998.
Owner/Manager: PVT-CALPINE CORP

Occurrence No. 280 **Map Index:** 43835 **EO Index:** 43835
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-XX-XX
Site: 1999-XX-XX
Record Last Updated: 2000-09-21

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.87863º / -123.00287º
UTM: Zone-10 N4303308 E499751
Radius: 80 meters
Elevation: 2,440 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 12N
Range: 10W
Section: 20 **Qtr:** NW
Meridian: M

Location: SALT SPRINGS CREEK, 6 MILES NNE OF CLOVERDALE.
General: 1 INDIVIDUAL OBSERVED DURING MAY-JUN 1999.
Owner/Manager: PVT

Rana boylii

foothill yellow-legged frog

Element Code: AAABH01050

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2S3

Other Lists
CDFG Status: SC

Habitat Associations
General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 281 **Map Index:** 43836 **EO Index:** 43836
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-XX-XX
Site: 1999-XX-XX
Record Last Updated: 2000-09-21

Quad Summary: Yorkville (3812382/535B)
County Summary: Mendocino

Lat/Long: 38.88615º / -123.14849º
UTM: Zone-10 N4304153 E487121
Radius: 80 meters
Elevation: 2,625 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 12N
Range: 12W
Section: 13 **Qtr:** SW
Meridian: M

Location: NORTH SIDE OF DRY CREEK AND HIGHWAY 128, 4 MILES ESE OF YORKVILLE.
Location Detail: LOCATED EAST OF AT&T POLE 5310+00.
General: 1 INDIVIDUAL OBSERVED DURING MAY-JUN 1999.
Owner/Manager: UNKNOWN

Occurrence No. 282 **Map Index:** 43837 **EO Index:** 43837
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-XX-XX
Site: 1999-XX-XX
Record Last Updated: 2000-09-21

Quad Summary: Yorkville (3812382/535B)
County Summary: Mendocino

Lat/Long: 38.89160º / -123.18412º
UTM: Zone-10 N4304763 E484032
Area: 14.4 acres
Elevation: 2,525 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 12N
Range: 12W
Section: 15 **Qtr:** N
Meridian: M

Location: ALONG DRY CREEK AND HIGHWAY 128, 2 MILES ESE OF YORKVILLE
Location Detail: LOCATED AT AT&T POLE 5401+83 & WEST OF AT&T POLE 5410+00.
General: 2 INDIVIDUALS OBSERVED DURING MAY-JUN 1999.
Owner/Manager: UNKNOWN

Occurrence No. 283 **Map Index:** 43838 **EO Index:** 43838
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-XX-XX
Site: 1999-XX-XX
Record Last Updated: 2000-09-21

Quad Summary: Yorkville (3812382/535B)
County Summary: Mendocino

Lat/Long: 38.89269º / -123.20530º
UTM: Zone-10 N4304888 E482195
Radius: 80 meters
Elevation: 2,600 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 12N
Range: 12W
Section: 16 **Qtr:** NW
Meridian: M

Location: ALONG DRY CREEK AND HIGHWAY 128, JUST WEST OF THE ELKHORN CREEK CONFLUENCE, 1 MILE ESE OF YORKVILLE.
Location Detail: 200 FEET EAST OF AT7T POLE 187-005.
General: 1 INDIVIDUAL OBSERVED DURING MAY-JUN 1999.
Owner/Manager: PVT

Rana boylii

foothill yellow-legged frog

Element Code: AAABH01050

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2S3

Other Lists
CDFG Status: SC

Habitat Associations
General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 290 **Map Index:** 44336 **EO Index:** 44336
Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-XX-XX
Site: 1999-XX-XX
Record Last Updated: 2000-11-16

Quad Summary: Highland Springs (3812288/534B)
County Summary: Mendocino

Lat/Long: 38.90267º / -122.98863º
UTM: Zone-10 N4305976 E500985
Radius: 80 meters
Elevation: 1,560 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 12N
Range: 10W
Section: 08 **Qtr:** XX
Meridian: M

Location: PIETA CREEK, NORTH OF CLOVERDALE PEAK, IN THE MAYACAMAS MOUNTAINS
Ecological: HABITAT CONSISTS OF RIPARIAN.
General: 1 FYLF OF UNKNOWN AGE OBSERVED DURING SURVEYS MADE DURING MAY-JUN 1999.
Owner/Manager: UNKNOWN

Occurrence No. 291 **Map Index:** 44380 **EO Index:** 44380
Occ Rank: Fair
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-XX-XX
Site: 1999-XX-XX
Record Last Updated: 2000-11-27

Quad Summary: Highland Springs (3812288/534B)
County Summary: Mendocino

Lat/Long: 38.90821º / -122.98656º
UTM: Zone-10 N4306591 E501165
Radius: 80 meters
Elevation: 2,200 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 12N
Range: 10W
Section: 08 **Qtr:** NE
Meridian: M

Location: BETWEEN JAKES CREEK AND PIETA CREEK, NORTH OF CLOVERDALE PEAK, IN THE MAYACAMAS MOUNTAINS
Location Detail: LOCATED APPROXIMATELY 100 FEET EAST OF POLE 4523+65.
General: 1 FYLF OF UNKNOWN AGE OBSERVED DURING SURVEYS MADE DURING MAY-JUN 1999.
Owner/Manager: PVT

Occurrence No. 292 **Map Index:** 44381 **EO Index:** 44381
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1999-XX-XX
Site: 1999-XX-XX
Record Last Updated: 2000-11-27

Quad Summary: Highland Springs (3812288/534B)
County Summary: Lake

Lat/Long: 38.91800º / -122.90087º
UTM: Zone-10 N4307681 E508593
Radius: 80 meters
Elevation: 2,000 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 12N
Range: 09W
Section: 06 **Qtr:** SE
Meridian: M

Location: 1.4 MILES SOUTH OF HIGHLAND SPRINGS, IN THE MAYACAMAS MOUNTAINS
Location Detail: LOCATED APPROXIMATELY 450 FEET SOUTH OF POLE 4090.
General: 1 FYLF OF UNKNOWN AGE OBSERVED DURING SURVEYS MADE DURING MAY-JUN 1999.
Owner/Manager: PVT

Rana boylii

foothill yellow-legged frog

Element Code: AAABH01050

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2S3

Other Lists
CDFG Status: SC

Habitat Associations
General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 299 **Map Index:** 45349 **EO Index:** 45349
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2000-08-04
Site: 2000-08-04
Record Last Updated: 2001-05-15

Quad Summary: Geyserville (3812268/518B), Jimtown (3812267/518A)
County Summary: Sonoma

Lat/Long: 38.72579º / -122.87429º
UTM: Zone-10 N4286355 E510927
Area: 62.5 acres
Elevation: 330 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 10N
Range: 09W
Section: 08 **Qtr:** XX
Meridian: M

Location: MILLER CREEK AND AN UNNNAMED TRIBUTARY TO MILLER CREEK, 1 MILE NORTH OF HIGHWAY 128, EAST OF GEYSERVILLE

Location Detail: ADULTS, SUBADULTS, AND TADPOLES WERE FOUND IN BOTH STREAMS, BUT WERE MUCH MORE ABUNDANT IN THE SMALLER STREAM (SPRING FED, BETTER SHADE, COOLER WATER, PERENNIAL FLOW).

Ecological: HABITAT CONSISTS OF A SECOND ORDER STREAM (MILLER CREEK) AND A THIRD ORDER TRIBUTARY STREAM. TRIBUTARY STREAM HAS MORE SHADE AND ALSO CONTAINS JUVENILE STEELHEAD. SITE IS SURROUNDED BY VINEYARDS.

General: ~15 ADULTS, ~300 SUBADULTS, AND MANY TADPOLES OBSERVED ON 4 AUG 2000.

Owner/Manager: PVT-HAMBRECHT VINEYARDS

Occurrence No. 342 **Map Index:** 47967 **EO Index:** 47967
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2002-05-14
Site: 2002-05-14
Record Last Updated: 2002-05-21

Quad Summary: Yorkville (3812382/535B)
County Summary: Mendocino

Lat/Long: 38.99481º / -123.12879º
UTM: Zone-10 N4316208 E488846
Radius: 80 meters
Elevation: 520 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 13N
Range: 12W
Section: 12 **Qtr:** XX
Meridian: M

Location: UNNAMED STREAM, 1.6 MILES NNW OF HOPLAND

Location Detail: FROGS OBSERVED IN A SMALL, SUNNY POOL AT THE CONFLUENCE OF THE TWO FORKS OF THE CREEK, ABOUT 75 FEET UPSTREAM OF RESERVOIR INLET. DOWNSTREAM, CREEK FLOWS INTO A STRAIGHT DITCH THROUGH A VINEYARD, THEN INTO AN UNNAMED STREAM.

Ecological: HABITAT CONSISTS OF A SEASONAL STREAM WITH PERENNIAL POOLS, FEEDING INTO A RESERVOIR (BUILT BEFORE 1990); STREAM HAS SMALL PATCHES OPEN TO SUN. OVERSTORY CONSISTS PRIMARILY OF BAY LAUREL. STREAM FLOW ~0.2 CFS.

Threat: THREATENED BY PRESENCE OF BULLFROGS (2 SUB-ADULTS FOUND ABOUT 50 FEET UPSTREAM AND RESERVOIR LOADED WITH BULLFROGS).

General: 2 ADULT FYLF (ONE MEASURED - 34MM SVL, THE OTHER SLIGHTLY LARGER) OBSERVED ON 14 MAY 2002.

Owner/Manager: PVT-SARACINA VINEYARDS

Rana boylii

foothill yellow-legged frog

Element Code: AAABH01050

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2S3

Other Lists
CDFG Status: SC

Habitat Associations
General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 349 **Map Index:** 48991 **EO Index:** 48991
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2002-09-11
Site: 2002-09-11
Record Last Updated: 2002-10-10

Quad Summary: Cloverdale (3812371/535D)
County Summary: Sonoma

Lat/Long: 38.79593º / -123.05424º
UTM: Zone-10 N4294132 E495290
Radius: 80 meters
Elevation: 800 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 11N
Range: 11W
Section: 14 **Qtr:** XX
Meridian: M

Location: SKUNK CREEK, 0.5 MILE NORTH OF RED MOUNTAIN, 2 MILES WEST OF CLOVERDALE
Location Detail: FROGS FOUND IN A 5' X 5' PLUNGE POOL AT THE CULVERT OUTLET.
Ecological: HABITAT CONSISTS OF A HEADWATER DRAINAGE RUNNING THROUGH MIXED CONIFEROUS FOREST, DOMINATED BY DOUGLAS FIR AND SOME REDWOODS. LARGE STANDS OF CHAIN FERN (WOODWARDIA FIMBRIATA) FOUND IN SKUNK CREEK.
Threat: THREATENED BY PROBABILITY OF CULVERT REPLACEMENT.
General: 5 ADULTS OBSERVED ON 11 SEP 2002.
Owner/Manager: SON COUNTY, PVT

Occurrence No. 357 **Map Index:** 49525 **EO Index:** 49525
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2002-11-05
Site: 2002-11-05
Record Last Updated: 2002-12-02

Quad Summary: Cloverdale (3812371/535D)
County Summary: Sonoma

Lat/Long: 38.79823º / -123.10721º
UTM: Zone-10 N4294391 E490690
Radius: 80 meters
Elevation: 1,150 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 11N
Range: 11W
Section: 17 **Qtr:** SE
Meridian: M

Location: UNNAMED TRIBUTARY TO CHERRY CREEK, 0.5 MILE EAST OF RED MOUNTAIN
Ecological: HABITAT CONSISTS OF 6 INCH DEEP POOLS IN A STREAM CONTAINING A GRAVEL ROCK BED AND CLEAR, COLD WATER.
Threat: THREATENED BY PROPOSED ON-STREAM RESERVOIRS UPSTREAM.
General: 20+ INDIVIDUALS OBSERVED ON 5 NOV 2002.
Owner/Manager: PVT

Occurrence No. 365 **Map Index:** 43689 **EO Index:** 50173
Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2002-08-XX
Site: 2002-08-XX
Record Last Updated: 2003-02-13

Quad Summary: Tombs Creek (3812362/519B)
County Summary: Sonoma

Lat/Long: 38.66220º / -123.23451º
UTM: Zone-10 N4279318 E479596
Radius: 80 meters
Elevation: 620 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 09N
Range: 12W
Section: 06 **Qtr:** NW
Meridian: M

Location: HOUSE CREEK, IN THE VICINITY OF THE BRIDGE ON STEWART'S POINT SKAGGS SPRING ROAD, 0.3 MILE NORTH OF DOE RIDGE
Ecological: HABITAT CONSISTS OF A MID-CHANNEL POOL ON HOUSE CREEK WITHIN WHITE ALDER RIPARIAN FOREST; MIXED CONIFEROUS FOREST NEARBY.
Threat: THREATENED BY USE OF THE CREEKBED AS A VEHICLE ROADWAY.
General: 10 JUVENILES OBSERVED DURING A SINGLE DAY IN AUG 2002.
Owner/Manager: SON COUNTY

Rana boylii

foothill yellow-legged frog

Element Code: AAABH01050

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2S3

Other Lists
CDFG Status: SC

Habitat Associations
General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 391 **Map Index:** 53462 **EO Index:** 53462

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2003-11-17
Site: 2003-11-17
Record Last Updated: 2003-12-03

Quad Summary: Yorkville (3812382/535B)
County Summary: Mendocino

Lat/Long: 38.89546º / -123.19687º
UTM: Zone-10 N4305194 E482927
Radius: 1/10 mile
Elevation: 840 ft
Mapping Precision NON-SPECIFIC
Symbol Type: POINT
Township: 12N
Range: 12W
Section: 16
Meridian: M
Qtr: XX

Location: DRY CREEK, 0.4 MILE EAST OF THE ELKHORN CREEK CONFLUENCE, 1 MILE EAST OF YORKVILLE

Location Detail: AVAILABLE HABITAT EXTENDS UPSTREAM AND DOWNSTREAM.

Ecological: HABITAT CONSISTS OF A CLEAR-WATER STREAM WITH A ROCKY SUBSTRATE/DEEP POOLS; OVERSTORY OF RIPARIAN AND CALIFORNIA BAY/OAK WOODLAND, DOMINATED BY WILLOW, BIG LEAF MAPLE, CALIFORNIA BAY, COAST LIVE OAK, VALLEY OAK, BUCKEYE, AND RED ALDER.

Threat: THREATENED BY FUTURE BRIDGE CONSTRUCTION.

General: 3 ADULTS OBSERVED ON 17 NOV 2003.

Owner/Manager: CALTRANS

Occurrence No. 447 **Map Index:** 67883 **EO Index:** 68031

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2006-08-15
Site: 2006-08-15
Record Last Updated: 2007-01-23

Quad Summary: Geyserville (3812268/518B)
County Summary: Sonoma

Lat/Long: 38.71247º / -122.89564º
UTM: Zone-10 N4284875 E509072
Radius: 80 meters
Elevation: 195 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 10N
Range: 09W
Section: 18
Meridian: M
Qtr: XX

Location: RUSSIAN RIVER, ON THE SE SIDE OF THE HIGHWAY 128 BRIDGE, JUST NE OF GEYSERVILLE.

Ecological: HABITAT CONSISTS OF RIVERINE WITH A GRAVEL/COBBLE SUBSTRATE ON THE RIGHT BANK OF THE RIVER. PSEUDACRIS REGILLA, BUFO BOREAS, AND RANA CATESBIANA TADPOLES ALSO PRESENT.

Threat: BRIDGE CONSTRUCTION/MAINTENANCE, HUMAN RECREATION, ALTERATION OF PLUG CR (LEFT BANK TRIBUTARY) & PRESENCE OF BULLFROGS.

General: 11 JUVENILE FROGS OBSERVED ON 15 AUG 2006.

Owner/Manager: UNKNOWN

Rana boylii

foothill yellow-legged frog

Element Code: AAABH01050

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2S3

Other Lists
CDFG Status: SC

Habitat Associations
General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 592 **Map Index:** 74279 **EO Index:** 75327

Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2008-08-06
Site: 2008-08-06
Record Last Updated: 2009-04-02

Quad Summary: Asti (3812278/534C)
County Summary: Sonoma

Lat/Long: 38.82348º / -122.88354º
UTM: Zone-10 N4297195 E510109
Radius: 80 meters
Elevation: 860 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 11N
Range: 09W
Section: 05 **Qtr:** SE
Meridian: M

Location: BIG SULPHUR CREEK AT GEYSER RD; ABOUT 0.3 MI WEST OF BIG SULPHUR CREEK AT SQUAW CREEK, ABOUT 7.25 MI EAST OF CLOVERDALE.

Location Detail: MAPPED TO PROVIDED COORDINATES - LOCATED UNDERNEATH GEYSER ROAD BRIDGE.

Ecological: PERENNIAL CREEK WITH DEVELOPED RIPARIAN ZONE. COBBLE AND GRAVEL SUBSTRATE. IMMEDIATE/SURROUNDING LAND IS UNDEVELOPED.

General: 4 ADULTS & 5 TADPOLES OBSERVED ON 6 AUG 2008 DURING AN EVENING SPOTLIGHT SURVEY.

Owner/Manager: UNKNOWN

Occurrence No. 593 **Map Index:** 74280 **EO Index:** 75328

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2008-04-30
Site: 2008-04-30
Record Last Updated: 2009-04-02

Quad Summary: Asti (3812278/534C)
County Summary: Sonoma

Lat/Long: 38.76484º / -122.96912º
UTM: Zone-10 N4290681 E502682
Radius: 80 meters
Elevation: 260 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 11N
Range: 10W
Section: 34 **Qtr:** NW
Meridian: M

Location: RUSSIAN RIVER, ASTI; 0.3 MI SOUTH OF RUSSIAN RIVER AT CROCKER CK AND ~1.4 MI ESE OF CLOVERDALE MUNICIPAL AIRPORT.

Location Detail: MAPPED TO PROVIDED MAP & COORDINATES. LOCATED 100 METERS UPSTREAM FROM SCHOOL ROAD BRIDGE.

Ecological: RUSSIAN RIVER HABITAT WITH PATCHY MATURE WILLOW RIPARIAN; LARGE BROAD GRAVEL BARS WITH GRAVEL TO LARGE COBBLE SUBSTRATE. IMMEDIATE/SURROUNDING LAND USE: RURAL, VINEYARD.

General: 4 EGG MASSES FOUND ALONG SHORELINE IN SLOWER MOVING WATER ATTACHED TO COBBLE ON 30 APR 2008. MASSES ONLY A FEW DAYS OLD BUT DIFFICULT TO DETECT DUE TO SEDIMENT COVERING. 1 WESTERN TOAD STRAND ALSO FOUND.

Owner/Manager: UNKNOWN

Occurrence No. 594 **Map Index:** 74281 **EO Index:** 75330

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 2008-04-30
Site: 2008-04-30
Record Last Updated: 2009-04-02

Quad Summary: Asti (3812278/534C)
County Summary: Sonoma

Lat/Long: 38.77285º / -122.96423º
UTM: Zone-10 N4291571 E503107
Area: 24.0 acres
Elevation: 350 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 11N
Range: 10W
Section: 27 **Qtr:** NW
Meridian: M

Location: CROCKER CREEK, CLOVERDALE; ~0.5 MI NE OF CROCKER CREEK AT RUSSIAN RIVER, ~1.3 MI EAST OF CLOVERDALE MUNICIPAL AIRPORT.

Location Detail: MAPPED TO PROVIDED MAP & COORDINATES ALONG CROCKER CREEK. MASSES FOUND IN SLOWER MOVING RIFFLES & POOLS ATTACHED TO COBBLE & BOULDERS. CURRENT/SURROUNDING LAND USE: RURAL, CAMPGROUND. VISIBLE DISTURBANCES: EROSION DUE TO HISTORIC DAM.

Ecological: MODERATE GRADIENT CREEK WITH STEP POOLS & RIFFLES; PATCHY WILLOW & ALDER RIPARIAN; GRAVEL TO COBBLE SUBSTRATE. SITE IS OLD FOOTPRINT OF RESERVOIR; DAM REMOVED & AREA RESTORED BY SONOMA COUNTY WATER AGENCY IN 2002. STEELHEAD ALSO OBSERVED.

General: 10 EGG MASSES FOUND (1 HATCHING MASS) & 11 ADULTS ON 8 APR 2008; 35 EGG MASSES (6 OLDER & 29 DEPOSITED WITHIN 1 WEEK) FOUND ON 30 APR 2008. THIS SITE, PREVIOUSLY A RESERVOIR FOR NEARLY A CENTURY, HAS BEEN COLONIZED QUICKLY BY FROGS.

Rana boylii

foothill yellow-legged frog

Element Code: AAABH01050

Status
Federal: None
State: None

NDDB Element Ranks
Global: G3
State: S2S3

Other Lists
CDFG Status: SC

Habitat Associations
General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Owner/Manager: UNKNOWN

Occurrence No. 783 **Map Index:** 75061 **EO Index:** 76058

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1974-03-11
Site: 1974-03-11
Record Last Updated: 2009-06-19

Quad Summary: Warm Springs Dam (3812361/519A)
County Summary: Sonoma

Lat/Long: 38.69345º / -123.02673º
UTM: Zone-10 N4282759 E497674
Radius: 1/10 mile
Elevation: 590 ft

Mapping Precision NON-SPECIFIC
Symbol Type: POINT

Township: 10N
Range: 11W
Section: 24 **Qtr:** SE
Meridian: M

Location: IN VICINITY OF SKAGGS SPRINGS & LAKE SONOMA; ABOUT 2 MI SW OF SKAGGS SPRINGS RD & DRY CREEK RD JCT, LAKE SONOMA RA.

Location Detail: MVZ STATED LOCALITIES: "SKAGGS SPRINGS, SKAGGS SPRINGS RD, 3.0 MI W JCT DRY CREEK RD; SONOMA COUNTY." & "SKAGGS SPRINGS; SONOMA COUNTY."

Ecological: SKAGGS SPRINGS AND SKAGG SPRINGS RD ARE NOW UNDER LAKE SONOMA.

General: 1 COLLECTED 23 JAN 1970 (MVZ 125366). 1 COLLECTED ON 20 FEB 1971 (MVZ 99445). 2 COLLECTED ON 11 MAR 1974 (MVZ 148942, 148943).

Owner/Manager: USACE-LAKE SONOMA RA

Streptanthus morrisonii

Morrison's jewel-flower

Element Code: PDBRA2G0S0

Status
Federal: None
State: None

NDDB Element Ranks
Global: G2
State: S2

Other Lists
CNPS List:

Habitat Associations
General: CHAPARRAL, CISMONTANE WOODLAND, CLOSED-CONE CONIFEROUS FOREST.
Micro: THE COMPLEX HAS BEEN MAPPED AS THE SPECIES, THOUGH AT LEAST 4 SSP. HAVE BEEN RECOGNIZED. ON SERPENTINE. 210-910M.

Occurrence No. 24 **Map Index:** 34511 **EO Index:** 290
Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1987-XX-XX
Site: 1987-XX-XX
Record Last Updated: 1996-04-02

Quad Summary: Tombs Creek (3812362/519B), Warm Springs Dam (3812361/519A), Fort Ross (3812352/519C), Cazadero (3812351/519D)
County Summary: Sonoma

Lat/Long: 38.62121° / -123.11986°
UTM: Zone-10 N4274750 E489566
Area: 1,334.1 acres
Elevation: 1,200 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 09N
Range: 11W
Section: 20 **Qtr:** XX
Meridian: M

Location: THE CEDARS.

Location Detail: LARGE POPULATION MAPPED WITHIN PORTIONS OF T09N R11W SECTIONS 17, 18, 19, 20, 29, 30 AND T09N R12W SECTIONS 13 AND 24.

Ecological: VIRTUALLY ANY OPEN SERPENTINE ROCK OUTCROP, LEDGE, SLOPE, TALUS, OR BARREN WITHIN THE BOUNDED AREA. ASSOCIATED WITH ERIOGONUM TERNATUM, E. VIMINEUM, ALLIUM FALCIFOLIUM, STREPTANTHUS BARBINGER, S. GLANDULOSUS, ANTIRRHINUM, ETC.

General: THOUSANDS OF PLANTS OBSERVED IN 1982-1987 BY RAICHE. THIS SITE INCLUDES THE TYPE LOCATION OF STREPTANTHUS MORRISONII SSP. MORRISONII AT LAYTON MINE.

Owner/Manager: BLM, PVT

Occurrence No. 25 **Map Index:** 34512 **EO Index:** 285
Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1988-05-02
Site: 1988-05-02
Record Last Updated: 1996-04-02

Quad Summary: Tombs Creek (3812362/519B)
County Summary: Sonoma

Lat/Long: 38.63704° / -123.13111°
UTM: Zone-10 N4276508 E488589
Area: 9.2 acres
Elevation: 2,050 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 09N
Range: 12W
Section: 12 **Qtr:** NE
Meridian: M

Location: NORTHWEST PORTION OF THE CEDARS, ABOUT 1.2 MILES ESE OF THE SUMMIT OF FERN MOUNTAIN.

Location Detail: THREE COLONIES ALONG RIDGE BETWEEN HEADWATERS OF DANFIELD CREEK DRAINAGE AND AUSTIN CREEK DRAINAGE. MAPPED WITHIN THE SE 1/4 OF THE NE 1/4 OF SECTION 12.

Ecological: OPEN, USUALLY NE-FACING SERPENTINE BARRENS, TALUS, AND LEDGES WITHIN CHAPARRAL. ASSOCIATED WITH ERIOGONUM TERNATUM, E. VIMINEUM, ALLIUM FALCIFOLIUM, STREPTANTHUS BARBINGER, ERYSIMUM CAPITATUM, AND ANTIRRHINUM VEXILLO-CALYCULATUM.

General: ABOUT 200 PLANTS OBSERVED BETWEEN OCCURRENCE #25 AND 26 IN 1988. THIS POPULATION IS NOTED BY RAICHE AS BEING QUITE DIFFERENT FROM STREPTANTHUS MORRISONII SSP. HIRTIFLOUS AND SSP. MORRISONII WHICH OCCUR NEARBY.

Owner/Manager: UNKNOWN

Occurrence No. 26 **Map Index:** 34513 **EO Index:** 286
Occ Rank: Excellent
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1988-05-02
Site: 1988-05-02
Record Last Updated: 1996-04-02

Quad Summary: Tombs Creek (3812362/519B)
County Summary: Sonoma

Lat/Long: 38.63510° / -123.14104°
UTM: Zone-10 N4276294 E487724
Area: 14.7 acres
Elevation: 1,600 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 09N
Range: 12W
Section: 12 **Qtr:** W
Meridian: M

Location: NORTHWEST PORTION OF THE CEDARS, ABOUT 0.7 MILES SOUTHEAST OF THE SUMMIT OF FERN MOUNTAIN. IN DANFIELD CREEK DRAINAGE.

Ecological: OPEN, USUALLY NE-FACING SERPENTINE BARRENS, TALUS, AND LEDGES WITHIN CHAPARRAL. ASSOCIATED WITH ERIOGONUM TERNATUM, E. VIMINEUM, ALLIUM FALCIFOLIUM, STREPTANTHUS BARBINGER, ERYSIMUM CAPITATUM, AND ANTIRRHINUM VEXILLO-CALYCULATUM.

General: ABOUT 200 PLANTS OBSERVED BETWEEN OCCURRENCES #25 AND 26 IN 1988. THIS POPULATION IS NOTED BY RAICHE AS BEING QUITE DIFFERENT FROM STREPTANTHUS MORRISONII SSP. HIRTIFLORUS AND SSP. MORRISONII WHICH OCCUR NEARBY.

Owner/Manager: UNKNOWN

Tracyina rostrata

beaked tracyina

Element Code: PDAST9D010

Status
Federal: None
State: None

NDDB Element Ranks
Global: G1G2
State: S1S2.2

Other Lists
CNPS List: 1B.2

Habitat Associations
General: CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
Micro: OPEN GRASSY MEADOWS WITHIN OAK WOODLAND AND GRASSLAND HABITATS. 150-500M.

Occurrence No. 7 **Map Index:** 07635 **EO Index:** 16846

Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1998-06-22
Site: 1998-06-22
Record Last Updated: 2001-05-02

Quad Summary: Big Foot Mtn. (3812372/535C)
County Summary: Sonoma

Lat/Long: 38.79701° / -123.16484°
UTM: Zone-10 N4294263 E485685
Radius: 80 meters
Elevation: 600 ft
Mapping Precision SPECIFIC
Symbol Type: POINT
Township: 11N
Range: 12W
Section: 14 **Qtr:** SW
Meridian: M

Location: CONFLUENCE OF GALLOWAY AND DRY CREEKS, 1.1 AIRMILES NE OF WHITE MOUNTAIN SUMMIT, APPROX 8 AIRMILES WEST OF CLOVERDALE.

Location Detail: ON GRASSY SLOPE ABOVE CONFLUENCE OF CREEKS. PLANTS FOUND ON CENTRAL SLOPE TO THE NORTH OF INTERMITTENT TRIBUTARY THAT FLOWS INTO GALLOWAY CREEK AND NW OF TRIBUTARY ON SHORT GRASSLAND. MAPPED WITHIN THE SE 1/4 SW 1/4 OF SECTION 14.

Ecological: SE SLOPE IN MIXED NATIVE AND INTRODUCED GRASSLAND. ASSOCIATES INCLUDE BRIZA MINOR, AIRA CARYOPHYLLEA, CYNOSURUS ECHINATUS, LOLIUM MULTIFLORUM, MADIA EXIGUA, ANAGALIS ARVENSIS, DAUCUS PUSILLUS, FILAGO GALLICA, MICROPUS CALIFORNICUS, ET AL.

Threat: GRAZING; MANY SHEEP OR DEER TRAILS ON LOWER HILLSIDE. NON-NATIVE GRASSES AND FORBES ARE OUT-COMPETING THE NATIVES.

General: ABOUT 20 PLANTS OBSERVED IN 1998.

Owner/Manager: UNKNOWN

Occurrence No. 13 **Map Index:** 45300 **EO Index:** 45300

Occ Rank: Poor
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1998-06-05
Site: 1998-06-05
Record Last Updated: 2001-05-02

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.99486° / -123.06783°
UTM: Zone-10 N4316208 E494125
Area: 4.8 acres
Elevation: 950 ft
Mapping Precision SPECIFIC
Symbol Type: POLYGON
Township: 13N
Range: 11W
Section: 09 **Qtr:** SE
Meridian: M

Location: LITTLE BUCKS PASTURE, HOPLAND RESEARCH AND EXTENSION CENTER, ABOUT 2 AIRMILES NORTHEAST OF OLD HOPLAND.

Location Detail: BETWEEN AIRSTRIP AND UNIVERSITY ROAD. MAPPED WITHIN THE SE 1/4 OF THE SE 1/4 OF SECTION 9.

Ecological: GENTLY SLOPED NE FACING ANNUAL GRASSLAND WITH A FEW SCATTERED BLUE OAKS AND MADRONE. DOMINATED BY AEGILOPS TRIUNCIALIS, TAENIATHERUM CAPUT-MEDUSAE, AND LOLIUM MULTIFLORUM WITH OVER 70 OTHER SPECIES OF GRASSES AND FORBS.

Threat: INVASIVE GRASSES OUT-COMPETING NATIVES, HALF OF PASTURE RECENTLY BURNED FOR CONTROL. GRAZED BY SHEEP PERIODICALLY.

General: ABOUT 50 PLANTS OBSERVED IN 1997, IN UNBURNED SIDE OF PASTURE. 96 PLANTS OBSERVED IN 1998. PLANTS ARE PERSISTING IN SPITE OF GRAZING PRESSURE AND ESTABLISHMENT OF EXOTIC GRASSES.

Owner/Manager: UCNR

Tracyina rostrata

beaked tracyina

Element Code: PDAST9D010

Status

Federal: None
State: None

NDDB Element Ranks

Global: G1G2
State: S1S2.2

Other Lists

CNPS List: 1B.2

Habitat Associations

General: CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.

Micro: OPEN GRASSY MEADOWS WITHIN OAK WOODLAND AND GRASSLAND HABITATS. 150-500M.

Occurrence No. 15 **Map Index:** 61444 **EO Index:** 61480

Occ Rank: Good
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen

Element: 2003-06-03
Site: 2003-06-03

Record Last Updated: 2005-05-27

Quad Summary: Hopland (3812381/535A)
County Summary: Mendocino

Lat/Long: 38.98810º / -123.07807º
UTM: Zone-10 N4315458 E493238
Radius: 80 meters
Elevation: 990 ft

Mapping PrecisionSPECIFIC
Symbol Type:POINT

Township: 13N
Range: 11W
Section: 16 **Qtr:** NW
Meridian: M

Location: ABOUT 1.5 AIRMI ENE OF OLD HOPLAND AND 0.9 AIRMI SOUTH OF UC HOPLAND FIELD STATION.

Location Detail: MAPPED JUST SOUTH OF ROAD IN THE SE 1/4 OF THE NW 1/4 OF SECTION 16.

Ecological: GENTLY-SLOPED NORTH-FACING GRASSLAND DOMINATED BY EXOTIC ANNUAL GRASSES. SOILS THIN OF FINELY FRACTURED SANDSTONE. ASSOCIATED WITH CYNOSURUS ECHINATUS, HYPOCHAERIS GLBRA, MADIA GRACILIS, AND ACHYRACHAENA MOLLIS.

Threat: INVASIVE ANNUAL GRASSES.

General: 250 PLANTS SEEN IN 2003.

Owner/Manager: UC-HOPLAND FIELD STATION

Usnea longissima

long-beard lichen

Element Code: NLLEC5P420

Status
Federal: None
State: None

NDDB Element Ranks
Global: G4
State: S4.2

Other Lists
CNPS List:

Habitat Associations
General: NORTH COAST CONIFEROUS FOREST, BROADLEAFED UPLAND FOREST.
Micro: GROWS IN THE "REDWOOD ZONE" ON A VARIETY OF TREES INCL BIG LEAF MAPLE, OAKS, ASH, DOUG-FIR, AND BAY. 0-2000' IN CALIF.

Occurrence No. 10 **Map Index:** 45328 **EO Index:** 45328
Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: XXXX-XX-XX
Site: XXXX-XX-XX
Record Last Updated: 2001-05-14

Quad Summary: Yorkville (3812382/535B)
County Summary: Mendocino

Lat/Long: 38.89896º / -123.21805º
UTM: Zone-10 N4305587 E481092
Radius: 1 mile
Elevation: 960 ft

Mapping PrecisionNON-SPECIFIC
Symbol Type:POINT

Township: 12N
Range: 12W
Section: 08 **Qtr:** XX
Meridian: M

Location: YORKVILLE, GALBRAITH PRESERVE.
Location Detail: MAPPED AS BEST GUESS TO INCLUDE YORKVILLE BY CNDDB.
General: NEEDS FIELDWORK; COULD NOT LOCATE GALBRAITH PRESERVE. OBSERVED BY DOUG GLAVICH, HSU.
Owner/Manager: UNKNOWN

Viburnum ellipticum

oval-leaved viburnum

Element Code: PDCPR07080

Status
Federal: None
State: None

NDDB Element Ranks
Global: G5
State: S2.3

Other Lists
CNPS List: 2.3

Habitat Associations
General: CHAPARRAL, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.
Micro: 215-1400M.

Occurrence No. 10 **Map Index:** 49962 **EO Index:** 49962

Occ Rank: Unknown
Origin: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

Dates Last Seen
Element: 1953-05-27
Site: 1953-05-27
Record Last Updated: 2008-12-31

Quad Summary: Hopland (3812381/535A), Purdys Gardens (3912311/550D)
County Summary: Mendocino

Lat/Long: 38.99656º / -123.09805º
UTM: Zone-10 N4316399 E491509
Area:
Elevation:

Mapping PrecisionNON-SPECIFIC
Symbol Type:POLYGON

Township: 13N
Range: 11W
Section: 08 **Qtr:** SW
Meridian: M

Location: HOPLAND FIELD STATION.

Location Detail: MAPPED BY CNDDB IN THE SW 1/4 OF SEC 8 ACCORDING TO A COMMUNICATION WITH HEISE IN 1999.

Ecological: SHADY CANYON, NORTH EXPOSURE.

General: A COUPLE OF PLANTS SEEN AT AN UNKNOWN DATE. A 1953 LONGHURST COLLECTION FROM "HOPLAND FIELD STATION, FOSTER PASTURE W OF HEADQUARTERS" ALSO ATTRIBUTED TO THIS SITE. NEEDS FIELDWORK.

Owner/Manager: UC-HOPLAND FIELD STATION

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

September 22, 2009

Document Number: 090922110714

Jamie Galos
ESA
2600 Capitol Avenue
S. 200
Sacramento, CA 95816

Subject: Species List for Cloverdale Rancheria of Pomo Indians Fee to Trust and Resort Casino Project

Dear: Mr. Galos

We are sending this official species list in response to your September 22, 2009 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be December 21, 2009.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division

U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 090922110714

Database Last Updated: January 29, 2009

Quad Lists

Listed Species

Invertebrates

Syncaris pacifica
California freshwater shrimp (E)

Fish

Eucyclogobius newberryi
tidewater goby (E)

Hypomesus transpacificus
delta smelt (T)

Oncorhynchus kisutch
coho salmon - central CA coast (E) (NMFS)
Critical habitat, coho salmon - central CA coast (X) (NMFS)

Oncorhynchus mykiss
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
Critical habitat, Northern California steelhead (X) (NMFS)
Northern California steelhead (T) (NMFS)

Oncorhynchus tshawytscha
California coastal chinook salmon (T) (NMFS)
Critical habitat, California coastal chinook salmon (X) (NMFS)

Amphibians

Rana aurora draytonii
California red-legged frog (T)

Birds

Brachyramphus marmoratus
marbled murrelet (T)

Strix occidentalis caurina
northern spotted owl (T)

Quads Containing Listed, Proposed or Candidate Species:

HIGHLAND SPRINGS (534B)

ASTI (534C)

HOPLAND (535A)

Yorkville (535B)

BIG FOOT MTN. (535C)

CLOVERDALE (535D)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed as being in danger of extinction.
(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.
(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.
Critical Habitat - Area essential to the conservation of a species.
(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
(C) *Candidate* - Candidate to become a proposed species.
(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or

injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you

will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be December 21, 2009.

Appendix F

Cultural Resources Technical Report (Bound Under Separate Cover)

ESA

Appendix G
Transportation Analysis

ESA

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec): 70 Critical Vol./Cap.(X): 0.287
Loss Time (sec): 4 (Y+R=4.0 sec) Average Delay (sec/veh): 11.6
Optimal Cycle: 16 Level Of Service: B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm												
Base Vol:	47	317	71	34	212	15	16	35	69	109	36	38
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	52	349	78	37	233	17	18	39	76	120	40	42
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	53	355	79	38	237	17	18	39	77	122	40	43
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	53	355	79	38	237	17	18	39	77	122	40	43
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	53	355	79	38	237	17	18	39	77	122	40	43
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.84	0.84	0.85	0.83	0.83	0.83	0.89	0.89	0.89	0.76	0.76	0.76
Lanes:	0.26	1.74	1.00	0.26	1.63	0.11	0.13	0.29	0.58	0.59	0.20	0.21
Final Sat.:	412	2779	1615	410	2554	181	224	491	968	856	283	298
Capacity Analysis Module:												
Vol/Sat:	0.13	0.13	0.05	0.09	0.09	0.09	0.08	0.08	0.08	0.14	0.14	0.14
Crit Moves:		****									****	
Green/Cycle:	0.45	0.45	0.45	0.45	0.45	0.45	0.50	0.50	0.50	0.50	0.50	0.50
Volume/Cap:	0.29	0.29	0.11	0.21	0.21	0.21	0.16	0.16	0.16	0.29	0.29	0.29
Delay/Veh:	12.4	12.4	11.4	11.9	11.9	11.9	9.7	9.7	9.7	10.5	10.5	10.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.4	12.4	11.4	11.9	11.9	11.9	9.7	9.7	9.7	10.5	10.5	10.5
LOS by Move:	B	B	B	B	B	B	A	A	A	B	B	B
HCM2kAvgQ:	3	3	1	2	2	2	2	2	2	3	3	3

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec): 70 Critical Vol./Cap.(X): 0.251
Loss Time (sec): 4 (Y+R=4.0 sec) Average Delay (sec/veh): 11.2
Optimal Cycle: 15 Level Of Service: B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	64	291	99	39	291	17	18	39	64	99	40	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	291	99	39	291	17	18	39	64	99	40	39
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	64	291	99	39	291	17	18	39	64	99	40	39
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	64	291	99	39	291	17	18	39	64	99	40	39
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	64	291	99	39	291	17	18	39	64	99	40	39
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.80	0.80	0.85	0.84	0.84	0.84	0.89	0.89	0.89	0.78	0.78	0.78
Lanes:	0.36	1.64	1.00	0.22	1.68	0.10	0.15	0.32	0.53	0.56	0.22	0.22
Final Sat.:	550	2501	1615	359	2682	157	252	546	895	824	333	325
Capacity Analysis Module:												
Vol/Sat:	0.12	0.12	0.06	0.11	0.11	0.11	0.07	0.07	0.07	0.12	0.12	0.12
Crit Moves:		****									****	
Green/Cycle:	0.46	0.46	0.46	0.46	0.46	0.46	0.48	0.48	0.48	0.48	0.48	0.48
Volume/Cap:	0.25	0.25	0.13	0.23	0.23	0.23	0.15	0.15	0.15	0.25	0.25	0.25
Delay/Veh:	11.5	11.5	10.8	11.4	11.4	11.4	10.3	10.3	10.3	11.0	11.0	11.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.5	11.5	10.8	11.4	11.4	11.4	10.3	10.3	10.3	11.0	11.0	11.0
LOS by Move:	B	B	B	B	B	B	B	B	B	B	B	B
HCM2kAvgQ:	3	3	1	2	2	2	1	1	1	2	2	2

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.3 Worst Case Level Of Service: C[19.3]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	466		95		46	399		0		0	0		0		61	0		34	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	466		95		46	399		0		0	0		0		61	0		34	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	0.89	0.89		0.89		0.89	0.89		0.89		1.00	1.00		1.00		0.75	0.75		0.75	
PHF Volume:	0	525		107		52	447		0		0	0		0		81	0		45	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	525		107		52	447		0		0	0		0		81	0		45	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.8	xxxx		6.9	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		632	xxxx		xxxxx		xxxx	xxxx		xxxxx		905	xxxx		316	
Potent Cap.:	xxxx	xxxx		xxxxx		961	xxxx		xxxxx		xxxx	xxxx		xxxxx		280	xxxx		686	
Move Cap.:	xxxx	xxxx		xxxxx		961	xxxx		xxxxx		xxxx	xxxx		xxxxx		268	xxxx		686	
Volume/Cap:	xxxx	xxxx		xxxx		0.05	xxxx		xxxx		xxxx	xxxx		xxxx		0.30	xxxx		0.07	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.2	xxxx		xxxxx		xxxx	xxxx		xxxxx		1.2	xxxx		0.2	
Control Del:	xxxxx	xxxx		xxxxx		9.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		24.2	xxxx		10.6	
LOS by Move:	*	*		*		A	*		*		*	*		*		C	*		B	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		9.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					19.3				
ApproachLOS:	*					*					*					C				

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.0 Worst Case Level Of Service: C[16.0]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	432		78		40	432		0		0	0		0		78	0		40	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	432		78		40	432		0		0	0		0		78	0		40	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	432		78		40	432		0		0	0		0		78	0		40	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	432		78		40	432		0		0	0		0		78	0		40	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.8	xxxx		6.9	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		510	xxxx		xxxxx		xxxx	xxxx		xxxxx		767	xxxx		255	
Potent Cap.:	xxxx	xxxx		xxxxx		1065	xxxx		xxxxx		xxxx	xxxx		xxxxx		343	xxxx		750	
Move Cap.:	xxxx	xxxx		xxxxx		1065	xxxx		xxxxx		xxxx	xxxx		xxxxx		333	xxxx		750	
Volume/Cap:	xxxx	xxxx		xxxx		0.04	xxxx		xxxx		xxxx	xxxx		xxxx		0.23	xxxx		0.05	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.1	xxxx		xxxxx		xxxx	xxxx		xxxxx		0.9	xxxx		0.2	
Control Del:	xxxxx	xxxx		xxxxx		8.5	xxxx		xxxxx		xxxxx	xxxx		xxxxx		19.1	xxxx		10.1	
LOS by Move:	*	*		*		A	*		*		*	*		*		C	*		B	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.5	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					16.0				
ApproachLOS:	*					*					*					C				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 Critical Vol./Cap.(X): 0.309
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 13.3
Optimal Cycle: 20 Level Of Service: B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm												
Base Vol:	7	382	52	97	370	2	1	12	15	104	21	178
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	8	420	57	107	407	2	1	13	17	114	23	196
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	8	435	59	110	421	2	1	14	17	118	24	202
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	8	435	59	110	421	2	1	14	17	118	24	202
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	8	435	59	110	421	2	1	14	17	118	24	202
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.93	0.93	0.95	0.95	0.95	0.93	0.93	0.93	0.96	0.96	0.85
Lanes:	1.00	1.76	0.24	1.00	1.99	0.01	0.04	0.43	0.53	1.66	0.34	1.00
Final Sat.:	1805	3120	425	1805	3587	19	63	754	943	3035	613	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.14	0.14	0.06	0.12	0.12	0.02	0.02	0.02	0.04	0.04	0.13
Crit Moves:		****		****			****					****
Green/Cycle:	0.02	0.45	0.45	0.20	0.62	0.62	0.06	0.06	0.06	0.21	0.21	0.41
Volume/Cap:	0.19	0.31	0.31	0.31	0.19	0.19	0.31	0.31	0.31	0.19	0.19	0.31
Delay/Veh:	35.7	12.4	12.4	24.5	5.6	5.6	33.3	33.3	33.3	23.0	23.0	14.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	35.7	12.4	12.4	24.5	5.6	5.6	33.3	33.3	33.3	23.0	23.0	14.4
LOS by Move:	D	B	B	C	A	A	C	C	C	C	C	B
HCM2kAvgQ:	0	4	4	2	2	2	1	1	1	1	1	3

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 Critical Vol./Cap.(X): 0.429
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 19.0
Optimal Cycle: 24 Level Of Service: B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module: >> Count Date: 23 Aug 2008 << 12:00 - 1:00 pm												
Base Vol:	68	6	88	0	8	9	5	255	50	80	230	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	6	88	0	8	9	5	255	50	80	230	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	77	7	100	0	9	10	6	288	57	90	260	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	77	7	100	0	9	10	6	288	57	90	260	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	77	7	100	0	9	10	6	288	57	90	260	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.82	0.82	1.00	0.87	0.87	0.98	0.98	0.98	0.99	0.99	1.00
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	0.02	0.82	0.16	1.00	1.00	1.00
Final Sat.:	1805	1552	1552	1900	1662	1662	30	1527	299	1875	1875	1900
Capacity Analysis Module:												
Vol/Sat:	0.04	0.00	0.06	0.00	0.01	0.01	0.19	0.19	0.19	0.05	0.14	0.00
Crit Moves:			****	****			****				****	
Green/Cycle:	0.13	0.15	0.15	0.00	0.02	0.02	0.44	0.44	0.44	0.32	0.32	0.00
Volume/Cap:	0.33	0.03	0.43	0.00	0.29	0.33	0.43	0.43	0.43	0.15	0.43	0.00
Delay/Veh:	28.4	25.4	28.2	0.0	36.3	37.1	13.9	13.9	13.9	16.8	18.9	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	28.4	25.4	28.2	0.0	36.3	37.1	13.9	13.9	13.9	16.8	18.9	0.0
LOS by Move:	C	C	C	A	D	D	B	B	B	B	B	A
HCM2kAvgQ:	2	0	3	0	1	1	5	5	5	1	5	0

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: A[9.8]

Street Name:	US 101 South Ramps												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm																				
Base Vol:	0	0	0	4	0	24	0	43	97	25	345	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	4	0	24	0	43	97	25	345	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94								
PHF Volume:	0	0	0	4	0	26	0	46	103	27	368	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	4	0	26	0	46	103	27	368	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	444	570	184	xxxx	xxxx	xxxxx	149	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	547	434	833	xxxx	xxxx	xxxxx	1444	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	540	426	833	xxxx	xxxx	xxxxx	1444	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.01	0.00	0.03	xxxx	xxxx	xxxx	0.02	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	11.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx								
LOS by Move:	*	*	*	B	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	833	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.5	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*								
ApproachDel:	xxxxxx			9.8			xxxxxx			xxxxxx										
ApproachLOS:	*			A			*			*										

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.0 Worst Case Level Of Service: A[9.0]

Street Name:	US 101 South Ramps												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module: >> Count Date: 6 Sep 2008 << 1:00 - 2:00 pm																				
Base Vol:	0	0	0	3	0	23	0	42	117	19	176	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	3	0	23	0	42	117	19	176	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92								
PHF Volume:	0	0	0	3	0	25	0	46	128	21	192	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	3	0	25	0	46	128	21	192	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	256	407	96	xxxx	xxxx	xxxxx	173	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	716	537	948	xxxx	xxxx	xxxxx	1416	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	708	529	948	xxxx	xxxx	xxxxx	1416	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.00	0.00	0.03	xxxx	xxxx	xxxx	0.01	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	10.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx								
LOS by Move:	*	*	*	B	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	948	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	8.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*								
ApproachDel:	xxxxxx			9.0			xxxxxx			xxxxxx										
ApproachLOS:	*			A			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 8.5 Worst Case Level Of Service: B[10.6]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm																				
Base Vol:	272		0		55	0		0		0	23		15		0	0		57		6
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	272		0		55	0		0		0	23		15		0	0		57		6
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	0.94	0.94		0.94		0.94	0.94		0.94		0.94	0.94		0.94		0.94	0.94		0.94	
PHF Volume:	290		0		59	0		0		0	24		16		0	0		61		6
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	290		0		59	0		0		0	24		16		0	0		61		6
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	95	132			8	xxxx	xxxx	xxxxx			67	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	900	762			1078	xxxx	xxxx	xxxxx			1547	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	889	750			1078	xxxx	xxxx	xxxxx			1547	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.33	0.00			0.05	xxxx	xxxx	xxxx			0.02	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.2	xxxx	xxxx	xxxxx			0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			8.5	xxxxx	xxxx	xxxxx			7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	889	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	1.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					
Shrd ConDel:	11.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	B	*		*	*	*	*	*	*	*	*	*								
ApproachDel:	10.6			xxxxxx			xxxxxx				xxxxxx									
ApproachLOS:	B			*			*				*									

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 6.6 Worst Case Level Of Service: A[9.8]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module: >> Count Date: 6 Sep 2008 << 1:00 - 2:00 pm																				
Base Vol:	144		0		27	0		0		0	26		20		0	0		58		8
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	144		0		27	0		0		0	26		20		0	0		58		8
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	0.91	0.91		0.91		0.91	0.91		0.91		0.91	0.91		0.91		0.91	0.91		0.91	
PHF Volume:	158		0		30	0		0		0	29		22		0	0		64		9
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	158		0		30	0		0		0	29		22		0	0		64		9
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	111	151			11	xxxx	xxxx	xxxxx			72	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	880	744			1074	xxxx	xxxx	xxxxx			1540	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	868	730			1074	xxxx	xxxx	xxxxx			1540	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.18	0.00			0.03	xxxx	xxxx	xxxx			0.02	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.1	xxxx	xxxx	xxxxx			0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			8.4	xxxxx	xxxx	xxxxx			7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	868	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	0.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					
Shrd ConDel:	10.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	B	*		*	*	*	*	*	*	*	*	*								
ApproachDel:	9.8			xxxxxx			xxxxxx				xxxxxx									
ApproachLOS:	A			*			*				*									

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 5.0 Worst Case Level Of Service: A[9.8]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	32	45		0		0	27		26		69		0		6		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	32	45		0		0	27		26		69		0		6		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	0.88	0.88		0.88		0.78	0.78		0.78		0.72		0.72		0.72		1.00		1.00	
PHF Volume:	37	51		0		0	35		33		96		0		8		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	37	51		0		0	35		33		96		0		8		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	68	xxxx	xxxxx	xxxx	xxxx	xxxxx					159	xxxx			35	xxxx	xxxx	xxxxx		
Potent Cap.:	1546	xxxx	xxxxx	xxxx	xxxx	xxxxx					837	xxxx			1044	xxxx	xxxx	xxxxx		
Move Cap.:	1546	xxxx	xxxxx	xxxx	xxxx	xxxxx					821	xxxx			1044	xxxx	xxxx	xxxxx		
Volume/Cap:	0.02	xxxx	xxxx	xxxx	xxxx	xxxx					0.12	xxxx			0.01	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx					0.4	xxxx			0.0	xxxx	xxxx	xxxxx		
Control Del:	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx					10.0	xxxx			8.5	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*		*	*	*					A	*			A	*	*	*		
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*		*	*	*					*	*			*	*	*	*		
ApproachDel:	xxxxxx			xxxxxx							9.8					xxxxxx				
ApproachLOS:	*			*							A					*				

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 3.4 Worst Case Level Of Service: A[9.0]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module: >> Count Date: 30 Aug 2008 << 12:30 - 1:30 pm																				
Base Vol:	11	28		0		0	26		28		32		0		10		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	11	28		0		0	26		28		32		0		10		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	0.87	0.87		0.87		0.87	0.87		0.87		0.87		0.87		0.87		0.87		0.87	
PHF Volume:	13	32		0		0	30		32		37		0		12		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	13	32		0		0	30		32		37		0		12		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	62	xxxx	xxxxx	xxxx	xxxx	xxxxx					88	xxxx			30	xxxx	xxxx	xxxxx		
Potent Cap.:	1553	xxxx	xxxxx	xxxx	xxxx	xxxxx					918	xxxx			1050	xxxx	xxxx	xxxxx		
Move Cap.:	1553	xxxx	xxxxx	xxxx	xxxx	xxxxx					912	xxxx			1050	xxxx	xxxx	xxxxx		
Volume/Cap:	0.01	xxxx	xxxx	xxxx	xxxx	xxxx					0.04	xxxx			0.01	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx					0.1	xxxx			0.0	xxxx	xxxx	xxxxx		
Control Del:	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx					9.1	xxxx			8.5	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*		*	*	*					A	*			A	*	*	*		
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*		*	*	*					*	*			*	*	*	*		
ApproachDel:	xxxxxx			xxxxxx							9.0					xxxxxx				
ApproachLOS:	*			*							A					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	0	69		0		0	37		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	69		0		0	37		0		0	0		0		0	0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	0.93	0.93		0.93		0.93	0.93		0.93		0.93	0.93		0.93		0.93	0.93		0.93	
PHF Volume:	0	74		0		0	40		0		0	0		0		0	0		0	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	74		0		0	40		0		0	0		0		0	0		0	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		114	114		74	
Potent Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		887	780		993	
Move Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		887	780		993	
Volume/Cap:	xxxx	xxxx		xxxx		xxxx	xxxx		xxxx		xxxx	xxxx		xxxx		0.00	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		*	*		*		*	*		*		*	*		*	
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	0		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		*	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	*					*					*					*				

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	40		0		0	37		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	40		0		0	37		0		0	0		0		0	0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	40		0		0	37		0		0	0		0		0	0		0	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	40		0		0	37		0		0	0		0		0	0		0	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		77	77		40	
Potent Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		931	817		1037	
Move Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		931	817		1037	
Volume/Cap:	xxxx	xxxx		xxxx		xxxx	xxxx		xxxx		xxxx	xxxx		xxxx		0.00	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		*	*		*		*	*		*		*	*		*	
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	0		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		*	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	*					*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 2.0 Worst Case Level Of Service: A[9.2]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	0	66		16		2	35		0		0		0		0	27		0		3
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	66		16		2	35		0		0		0		0	27		0		3
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	0.93	0.93		0.93		0.93	0.93		0.93		0.93		0.93		0.93	0.93		0.93		0.93
PHF Volume:	0	71		17		2	38		0		0		0		0	29		0		3
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	0	71		17		2	38		0		0		0		0	29		0		3
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx		xxxx		xxxxx	6.4		6.5		6.2
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	3.5		4.0		3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		88	xxxx		xxxxx		xxxx		xxxx		xxxxx	122		122		80
Potent Cap.:	xxxx	xxxx		xxxxx		1520	xxxx		xxxxx		xxxx		xxxx		xxxxx	879		773		986
Move Cap.:	xxxx	xxxx		xxxxx		1520	xxxx		xxxxx		xxxx		xxxx		xxxxx	878		771		986
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx		xxxx		xxxx	0.03		0.00		0.00
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
Control Del:	xxxxx	xxxx		xxxxx		7.4	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
LOS by Move:	*	*		*		A	*		*		*		*		*	*		*		*
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		887		xxxxx
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		0.1		xxxxx
Shrd ConDel:	xxxxx	xxxx		xxxxx		7.4	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		9.2		xxxxx
Shared LOS:	*	*		*		A	*		*		*		*		*	*		A		*
ApproachDel:	xxxxxx					xxxxxx					xxxxxx							9.2		
ApproachLOS:	*					*					*							A		

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.4 Worst Case Level Of Service: A[8.5]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Volume Module:	>> Count Date: 30 Aug 2008 << 12:00 - 1:00 pm																			
Base Vol:	0	37		2		1	36		0		0		0		0	0		0		3
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	37		2		1	36		0		0		0		0	0		0		3
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	0.86	0.86		0.86		0.86	0.86		0.86		0.86		0.86		0.86	0.86		0.86		0.86
PHF Volume:	0	43		2		1	42		0		0		0		0	0		0		3
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	0	43		2		1	42		0		0		0		0	0		0		3
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		6.2
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		45	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		44
Potent Cap.:	xxxx	xxxx		xxxxx		1576	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		1032
Move Cap.:	xxxx	xxxx		xxxxx		1576	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		1032
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx		xxxx		xxxx	xxxx		xxxx		0.00
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		0.0
Control Del:	xxxxx	xxxx		xxxxx		7.3	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		8.5
LOS by Move:	*	*		*		A	*		*		*		*		*	*		*		A
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
Shrd ConDel:	xxxxx	xxxx		xxxxx		7.3	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
Shared LOS:	*	*		*		A	*		*		*		*		*	*		*		*
ApproachDel:	xxxxxx					xxxxxx					xxxxxx							8.5		
ApproachLOS:	*					*					*							A		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.3 Worst Case Level Of Service: B[12.1]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1	0	1	0	1	0	1	0	0	1	0	0	0
Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm																
Base Vol:	177	343	0	0	135	47	33	0	71	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	177	343	0	0	135	47	33	0	71	0	0	0				
User Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10				
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94				
PHF Volume:	207	401	0	0	158	55	39	0	83	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	207	401	0	0	158	55	39	0	83	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	213	xxxx	xxxxx	xxxx	xxxx	xxxxx	972	972	158	xxxx	xxxx	xxxxx				
Potent Cap.:	1370	xxxx	xxxxx	xxxx	xxxx	xxxxx	283	255	893	xxxx	xxxx	xxxxx				
Move Cap.:	1370	xxxx	xxxxx	xxxx	xxxx	xxxxx	250	216	893	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	322	287	xxxxx	248	270	xxxxx				
Volume/Cap:	0.15	xxxx	xxxx	xxxx	xxxx	xxxx	0.12	0.00	0.09	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.3	xxxx	xxxx	xxxxx				
Control Del:	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.4	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	A	*	*	*				
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	322	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	17.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	C	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			12.1			xxxxxx						
ApproachLOS:	*			*			B			*						

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.5 Worst Case Level Of Service: B[11.1]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1	0	1	0	1	0	1	0	0	1	0	0	0
Volume Module:																
Base Vol:	124	239	0	0	239	40	40	0	124	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	124	239	0	0	239	40	40	0	124	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	124	239	0	0	239	40	40	0	124	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	124	239	0	0	239	40	40	0	124	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	279	xxxx	xxxxx	xxxx	xxxx	xxxxx	726	726	239	xxxx	xxxx	xxxxx				
Potent Cap.:	1295	xxxx	xxxxx	xxxx	xxxx	xxxxx	394	354	805	xxxx	xxxx	xxxxx				
Move Cap.:	1295	xxxx	xxxxx	xxxx	xxxx	xxxxx	366	320	805	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	458	405	xxxxx	330	379	xxxxx				
Volume/Cap:	0.10	xxxx	xxxx	xxxx	xxxx	xxxx	0.09	0.00	0.15	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.5	xxxx	xxxx	xxxxx				
Control Del:	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.3	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	B	*	*	*				
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	458	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	13.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	B	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			11.1			xxxxxx						
ApproachLOS:	*			*			B			*						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 9.7 Worst Case Level Of Service: B[13.4]

Street Name:	Cloverdale Blvd									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:	2007 Balanced																			
Base Vol:	0	79		12		194	53		0		0	0		0		26	0		452	
Growth Adj:	1.10	1.10		1.10		1.10	1.10		1.10		1.10	1.10		1.10		1.10	1.10		1.10	
Initial Bse:	0	87		13		213	58		0		0	0		0		29	0		497	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	0.93	0.93		0.93		0.93	0.93		0.93		0.93	0.93		0.93		0.93	0.93		0.93	
PHF Volume:	0	93		14		229	63		0		0	0		0		31	0		535	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	93		14		229	63		0		0	0		0		31	0		535	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	xxxx		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		108	xxxx		xxxxx		xxxx	xxxx		xxxxx		622	xxxx		101	
Potent Cap.:	xxxx	xxxx		xxxxx		1496	xxxx		xxxxx		xxxx	xxxx		xxxxx		454	xxxx		960	
Move Cap.:	xxxx	xxxx		xxxxx		1496	xxxx		xxxxx		xxxx	xxxx		xxxxx		400	xxxx		960	
Volume/Cap:	xxxx	xxxx		xxxx		0.15	xxxx		xxxx		xxxx	xxxx		xxxx		0.08	xxxx		0.56	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.5	xxxx		xxxxx		xxxx	xxxx		xxxxx		0.2	xxxx		3.5	
Control Del:	xxxxx	xxxx		xxxxx		7.8	xxxx		xxxxx		xxxxx	xxxx		xxxxx		14.7	xxxx		13.3	
LOS by Move:	*	*		*		A	*		*		*	*		*		B	*		B	
Movement:	LT -	LTR -		RT		LT -	LTR -		RT		LT -	LTR -		RT		LT -	LTR -		RT	
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		*	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					13.4				
ApproachLOS:	*					*					*					B				

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 8.0 Worst Case Level Of Service: B[10.6]

Street Name:	Cloverdale Blvd									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:	>> Count Date: 8 Sep 2007 << 11:30 - 12:30 pm																			
Base Vol:	0	42		0		280	65		0		0	0		0		2	0		345	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	42		0		280	65		0		0	0		0		2	0		345	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	0.90	0.90		0.90		0.90	0.90		0.90		0.90	0.90		0.90		0.90	0.90		0.90	
PHF Volume:	0	47		0		311	72		0		0	0		0		2	0		383	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	47		0		311	72		0		0	0		0		2	0		383	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	xxxx		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		47	xxxx		xxxxx		xxxx	xxxx		xxxxx		740	xxxx		47	
Potent Cap.:	xxxx	xxxx		xxxxx		1574	xxxx		xxxxx		xxxx	xxxx		xxxxx		387	xxxx		1028	
Move Cap.:	xxxx	xxxx		xxxxx		1574	xxxx		xxxxx		xxxx	xxxx		xxxxx		328	xxxx		1028	
Volume/Cap:	xxxx	xxxx		xxxx		0.20	xxxx		xxxx		xxxx	xxxx		xxxx		0.01	xxxx		0.37	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.7	xxxx		xxxxx		xxxx	xxxx		xxxxx		0.0	xxxx		1.7	
Control Del:	xxxxx	xxxx		xxxxx		7.8	xxxx		xxxxx		xxxxx	xxxx		xxxxx		16.0	xxxx		10.6	
LOS by Move:	*	*		*		A	*		*		*	*		*		C	*		B	
Movement:	LT -	LTR -		RT		LT -	LTR -		RT		LT -	LTR -		RT		LT -	LTR -		RT	
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		*	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					10.6				
ApproachLOS:	*					*					*					B				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: B[12.3]

Street Name:	101 S Ramps									South Interchange							
Approach:	North Bound					South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced																				
Base Vol:	0	0	0	5	0	49	0	100	106		16	429	0							
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10		1.10	1.10	1.10							
Initial Bse:	0	0	0	6	0	54	0	110	117		18	472	0							
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00							
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93		0.93	0.93	0.93							
PHF Volume:	0	0	0	6	0	58	0	118	125		19	507	0							
Reduct Vol:	0	0	0	0	0	0	0	0	0		0	0	0							
FinalVolume:	0	0	0	6	0	58	0	118	125		19	507	0							
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx							
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx							
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	726	789	507	xxxx	xxxx	xxxxx		244	xxxx	xxxxx							
Potent Cap.:	xxxx	xxxx	xxxxx	394	325	569	xxxx	xxxx	xxxxx		1334	xxxx	xxxxx							
Move Cap.:	xxxx	xxxx	xxxxx	390	321	569	xxxx	xxxx	xxxxx		1334	xxxx	xxxxx							
Volume/Cap:	xxxx	xxxx	xxxx	0.02	0.00	0.10	xxxx	xxxx	xxxx		0.01	xxxx	xxxx							
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.3	xxxx	xxxx	xxxxx		0.0	xxxx	xxxxx							
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	12.0	xxxxx	xxxx	xxxxx		7.7	xxxx	xxxxx							
LOS by Move:	*	*	*	*	*	B	*	*	*		A	*	*							
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	390	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx	14.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shared LOS:	*	*	*	B	*	*	*	*	*		*	*	*							
ApproachDel:	xxxxxx			12.3			xxxxxx				xxxxxx									
ApproachLOS:	*			B			*				*									

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: B[10.6]

Street Name:	101 S Ramps									South Interchange							
Approach:	North Bound					South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module: >> Count Date: 8 Sep 2007 << 12:30 - 1:30 pm																				
Base Vol:	0	0	0	0	0	60	0	124	201		1	299	0							
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00							
Initial Bse:	0	0	0	0	0	60	0	124	201		1	299	0							
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00							
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90		0.90	0.90	0.90							
PHF Volume:	0	0	0	0	0	67	0	138	224		1	333	0							
Reduct Vol:	0	0	0	0	0	0	0	0	0		0	0	0							
FinalVolume:	0	0	0	0	0	67	0	138	224		1	333	0							
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx							
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx							
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	586	698	333	xxxx	xxxx	xxxxx		362	xxxx	xxxxx							
Potent Cap.:	xxxx	xxxx	xxxxx	476	367	713	xxxx	xxxx	xxxxx		1207	xxxx	xxxxx							
Move Cap.:	xxxx	xxxx	xxxxx	476	367	713	xxxx	xxxx	xxxxx		1207	xxxx	xxxxx							
Volume/Cap:	xxxx	xxxx	xxxx	0.00	0.00	0.09	xxxx	xxxx	xxxx		0.00	xxxx	xxxx							
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.3	xxxx	xxxx	xxxxx		0.0	xxxx	xxxxx							
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.6	xxxxx	xxxx	xxxxx		8.0	xxxx	xxxxx							
LOS by Move:	*	*	*	*	*	B	*	*	*		A	*	*							
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	0	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shared LOS:	*	*	*	*	*	*	*	*	*		*	*	*							
ApproachDel:	xxxxxx			10.6			xxxxxx				xxxxxx									
ApproachLOS:	*			B			*				*									

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 13.7 Worst Case Level Of Service: C[19.0]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:	2007 Balanced																			
Base Vol:	371		0		18	0		0		0	63		42		0	0		74		5
Growth Adj:	1.10	1.10		1.10		1.10	1.10		1.10		1.10	1.10		1.10		1.10	1.10		1.10	
Initial Bse:	408		0		20	0		0		0	69		46		0	0		81		6
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	0.93	0.93		0.93		0.93	0.93		0.93		0.93	0.93		0.93		0.93	0.93		0.93	
PHF Volume:	439		0		21	0		0		0	75		50		0	0		88		6
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	439		0		21	0		0		0	75		50		0	0		88		6
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	289	292			50	xxxx	xxxx	xxxxx			93	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	706	622			1024	xxxx	xxxx	xxxxx			1514	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	679	591			1024	xxxx	xxxx	xxxxx			1514	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.65	0.00			0.02	xxxx	xxxx	xxxx			0.05	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.1	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			8.6	xxxxx	xxxx	xxxxx			7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	679	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	4.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	19.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	C	*		*	*	*	*	*		*	*	*								
ApproachDel:	19.0			xxxxxx			xxxxxx			xxxxxx										
ApproachLOS:	C			*			*			*										

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 9.3 Worst Case Level Of Service: B[13.2]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:	>> Count Date: 8 Sep 2007 << 12:15 - 1:15 pm																			
Base Vol:	248		6		11	0		0		0	77		41		0	0		57		1
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	248		6		11	0		0		0	77		41		0	0		57		1
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	0.94	0.94		0.94		0.94	0.94		0.94		0.94	0.94		0.94		0.94	0.94		0.94	
PHF Volume:	263		6		12	0		0		0	82		44		0	0		61		1
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	263		6		12	0		0		0	82		44		0	0		61		1
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	268	269			44	xxxx	xxxx	xxxxx			62	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	726	641			1032	xxxx	xxxx	xxxxx			1554	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	696	607			1032	xxxx	xxxx	xxxxx			1554	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.38	0.01			0.01	xxxx	xxxx	xxxx			0.05	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.0	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			8.5	xxxxx	xxxx	xxxxx			7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	694	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	1.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	13.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	B	*		*	*	*	*	*		*	*	*								
ApproachDel:	13.2			xxxxxx			xxxxxx			xxxxxx										
ApproachLOS:	B			*			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: A[9.5]

Street Name:	Asti (Frontage) Rd								South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	0 1	0	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0
Volume Module:	2007 Balanced															
Base Vol:	32	33	0	0	15	47	49	0	11	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	32	33	0	0	15	47	49	0	11	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93				
PHF Volume:	34	35	0	0	16	51	53	0	12	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	34	35	0	0	16	51	53	0	12	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	67	xxxx	xxxxx	xxxx	xxxx	xxxxx	146	146	41	xxxx	xxxx	xxxxx				
Potent Cap.:	1548	xxxx	xxxxx	xxxx	xxxx	xxxxx	851	749	1035	xxxx	xxxx	xxxxx				
Move Cap.:	1548	xxxx	xxxxx	xxxx	xxxx	xxxxx	837	732	1035	xxxx	xxxx	xxxxx				
Volume/Cap:	0.02	xxxx	xxxx	xxxx	xxxx	xxxx	0.06	0.00	0.01	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	867	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.2	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	9.5	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	A	*	*	*	*	*	*	A	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx				9.5		xxxxxx						
ApproachLOS:	*			*				A		*						

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: A[9.3]

Street Name:	Asti (Frontage) Rd								South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	0 1	0	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0
Volume Module:	>> Count Date: 8 Sep 2007 << 11:30 - 12:30 pm															
Base Vol:	26	19	0	0	18	42	37	0	11	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	26	19	0	0	18	42	37	0	11	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85				
PHF Volume:	31	22	0	0	21	49	44	0	13	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	31	22	0	0	21	49	44	0	13	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	71	xxxx	xxxxx	xxxx	xxxx	xxxxx	129	129	46	xxxx	xxxx	xxxxx				
Potent Cap.:	1543	xxxx	xxxxx	xxxx	xxxx	xxxxx	870	765	1029	xxxx	xxxx	xxxxx				
Move Cap.:	1543	xxxx	xxxxx	xxxx	xxxx	xxxxx	856	749	1029	xxxx	xxxx	xxxxx				
Volume/Cap:	0.02	xxxx	xxxx	xxxx	xxxx	xxxx	0.05	0.00	0.01	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	891	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.2	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	9.3	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	A	*	*	*	*	*	*	A	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx				9.3		xxxxxx						
ApproachLOS:	*			*				A		*						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.342
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.0
Optimal Cycle:	17	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	76	380	100	44	257	17	18	43	98	147	44	51
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	76	380	100	44	257	17	18	43	98	147	44	51
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	76	380	100	44	257	17	18	43	98	147	44	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	76	380	100	44	257	17	18	43	98	147	44	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	76	380	100	44	257	17	18	43	98	147	44	51
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.81	0.81	0.85	0.82	0.82	0.82	0.88	0.88	0.88	0.73	0.73	0.73
Lanes:	0.33	1.67	1.00	0.28	1.61	0.11	0.11	0.27	0.62	0.61	0.18	0.21
Final Sat.:	511	2554	1615	429	2503	166	190	454	1034	847	254	294
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.06	0.10	0.10	0.10	0.09	0.09	0.09	0.17	0.17	0.17
Crit Moves:		****									****	
Green/Cycle:	0.44	0.44	0.44	0.44	0.44	0.44	0.51	0.51	0.51	0.51	0.51	0.51
Volume/Cap:	0.34	0.34	0.14	0.24	0.24	0.24	0.19	0.19	0.19	0.34	0.34	0.34
Delay/Veh:	13.3	13.3	12.0	12.5	12.5	12.5	9.5	9.5	9.5	10.6	10.6	10.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	13.3	13.3	12.0	12.5	12.5	12.5	9.5	9.5	9.5	10.6	10.6	10.6
LOS by Move:	B	B	B	B	B	B	A	A	A	B	B	B
HCM2kAvgQ:	4	4	1	2	2	2	2	2	2	3	3	3

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.311
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	11.7
Optimal Cycle:	16	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	88	322	121	46	315	17	18	43	86	126	44	48
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	88	322	121	46	315	17	18	43	86	126	44	48
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	88	322	121	46	315	17	18	43	86	126	44	48
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	88	322	121	46	315	17	18	43	86	126	44	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	88	322	121	46	315	17	18	43	86	126	44	48
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.77	0.77	0.85	0.83	0.83	0.83	0.89	0.89	0.89	0.75	0.75	0.75
Lanes:	0.43	1.57	1.00	0.24	1.67	0.09	0.12	0.29	0.59	0.58	0.20	0.22
Final Sat.:	627	2294	1615	382	2614	141	206	493	986	827	289	315
Capacity Analysis Module:												
Vol/Sat:	0.14	0.14	0.07	0.12	0.12	0.12	0.09	0.09	0.09	0.15	0.15	0.15
Crit Moves:		****									****	
Green/Cycle:	0.45	0.45	0.45	0.45	0.45	0.45	0.49	0.49	0.49	0.49	0.49	0.49
Volume/Cap:	0.31	0.31	0.17	0.27	0.27	0.27	0.18	0.18	0.18	0.31	0.31	0.31
Delay/Veh:	12.4	12.4	11.5	12.1	12.1	12.1	10.0	10.0	10.0	11.0	11.0	11.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.4	12.4	11.5	12.1	12.1	12.1	10.0	10.0	10.0	11.0	11.0	11.0
LOS by Move:	B	B	B	B	B	B	B	B	B	B	B	B
HCM2kAvgQ:	3	3	2	3	3	3	2	2	2	3	3	3

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.0 Worst Case Level Of Service: C[20.1]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	542	113		46	472		0		0	0		0		76		0		34	
Growth Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	
Initial Bse:	0	542	113		46	472		0		0	0		0		76		0		34	
User Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	
PHF Volume:	0	542	113		46	472		0		0	0		0		76		0		34	
Reduct Vol:	0	0	0		0	0		0		0	0		0		0		0		0	
FinalVolume:	0	542	113		46	472		0		0	0		0		76		0		34	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.8	xxxx		6.9	
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		655	xxxx	xxxxx	xxxx	xxxx	xxxxx					927	xxxx		328	
Potent Cap.:	xxxx	xxxx	xxxxx		942	xxxx	xxxxx	xxxx	xxxx	xxxxx					271	xxxx		674	
Move Cap.:	xxxx	xxxx	xxxxx		942	xxxx	xxxxx	xxxx	xxxx	xxxxx					261	xxxx		674	
Volume/Cap:	xxxx	xxxx	xxxx		0.05	xxxx	xxxx	xxxx	xxxx	xxxx					0.29	xxxx		0.05	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx					1.2	xxxx		0.2	
Control Del:	xxxxx	xxxx	xxxxx		9.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx					24.4	xxxx		10.6	
LOS by Move:	*	*	*		A	*	*	*	*	*					C	*		B	
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx		0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx		9.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx		xxxxx	
Shared LOS:	*	*	*		A	*	*	*	*	*					*	*		*	
ApproachDel:	xxxxxx				xxxxxx			xxxxxx							20.1				
ApproachLOS:	*				*			*							C				

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 1.7 Worst Case Level Of Service: B[14.1]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	371	71		28	367		0		0	0		0		68		0		27	
Growth Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	
Initial Bse:	0	371	71		28	367		0		0	0		0		68		0		27	
User Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	
PHF Volume:	0	371	71		28	367		0		0	0		0		68		0		27	
Reduct Vol:	0	0	0		0	0		0		0	0		0		0		0		0	
FinalVolume:	0	371	71		28	367		0		0	0		0		68		0		27	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.8	xxxx		6.9	
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		442	xxxx	xxxxx	xxxx	xxxx	xxxxx					646	xxxx		221	
Potent Cap.:	xxxx	xxxx	xxxxx		1129	xxxx	xxxxx	xxxx	xxxx	xxxxx					409	xxxx		789	
Move Cap.:	xxxx	xxxx	xxxxx		1129	xxxx	xxxxx	xxxx	xxxx	xxxxx					401	xxxx		789	
Volume/Cap:	xxxx	xxxx	xxxx		0.02	xxxx	xxxx	xxxx	xxxx	xxxx					0.17	xxxx		0.03	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx					0.6	xxxx		0.1	
Control Del:	xxxxx	xxxx	xxxxx		8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx					15.8	xxxx		9.7	
LOS by Move:	*	*	*		A	*	*	*	*	*					C	*		A	
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx		0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx		8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx		xxxxx	
Shared LOS:	*	*	*		A	*	*	*	*	*					*	*		*	
ApproachDel:	xxxxxx				xxxxxx			xxxxxx							14.1				
ApproachLOS:	*				*			*							B				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 Critical Vol./Cap.(X): 0.378
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 14.6
Optimal Cycle: 22 Level Of Service: B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	15	465	133	152	446	6	5	14	25	194	25	241
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	465	133	152	446	6	5	14	25	194	25	241
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	15	465	133	152	446	6	5	14	25	194	25	241
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	15	465	133	152	446	6	5	14	25	194	25	241
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	15	465	133	152	446	6	5	14	25	194	25	241
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.96	0.96	0.85
Lanes:	1.00	1.56	0.44	1.00	1.97	0.03	0.11	0.32	0.57	1.77	0.23	1.00
Final Sat.:	1805	2714	776	1805	3555	48	198	555	990	3225	416	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.17	0.17	0.08	0.13	0.13	0.03	0.03	0.03	0.06	0.06	0.15
Crit Moves:		****		****				****				****
Green/Cycle:	0.04	0.45	0.45	0.22	0.63	0.63	0.07	0.07	0.07	0.17	0.17	0.39
Volume/Cap:	0.20	0.38	0.38	0.38	0.20	0.20	0.38	0.38	0.38	0.35	0.35	0.38
Delay/Veh:	33.7	12.8	12.8	23.7	5.4	5.4	33.3	33.3	33.3	25.9	25.9	15.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	33.7	12.8	12.8	23.7	5.4	5.4	33.3	33.3	33.3	25.9	25.9	15.5
LOS by Move:	C	B	B	C	A	A	C	C	C	C	C	B
HCM2kAvgQ:	1	5	5	3	2	2	1	1	1	2	2	4

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 Critical Vol./Cap.(X): 0.346
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 21.4
Optimal Cycle: 21 Level Of Service: C

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	53	50	136	45	44	10	8	175	42	135	158	45
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	53	50	136	45	44	10	8	175	42	135	158	45
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	53	50	136	45	44	10	8	175	42	135	158	45
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	53	50	136	45	44	10	8	175	42	135	158	45
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	53	50	136	45	44	10	8	175	42	135	158	45
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.85	0.85	0.95	0.92	0.92	0.97	0.97	0.97	0.98	0.98	0.85
Lanes:	1.00	1.00	1.00	1.00	1.63	0.37	0.03	0.78	0.19	1.00	1.00	1.00
Final Sat.:	1805	1606	1606	1805	2859	650	66	1438	345	1856	1856	1615
Capacity Analysis Module:												
Vol/Sat:	0.03	0.03	0.08	0.02	0.02	0.02	0.12	0.12	0.12	0.07	0.09	0.03
Crit Moves:			****	****			****				****	
Green/Cycle:	0.21	0.24	0.24	0.07	0.11	0.11	0.35	0.35	0.35	0.25	0.25	0.32
Volume/Cap:	0.14	0.13	0.35	0.35	0.14	0.14	0.35	0.35	0.35	0.30	0.35	0.09
Delay/Veh:	22.8	20.7	22.2	32.5	28.4	28.4	17.1	17.1	17.1	21.6	22.0	16.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	22.8	20.7	22.2	32.5	28.4	28.4	17.1	17.1	17.1	21.6	22.0	16.8
LOS by Move:	C	C	C	C	C	C	B	B	B	C	C	B
HCM2kAvgQ:	1	1	3	1	1	1	4	4	4	3	3	1

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: B[10.4]

Street Name:	US 101 South Ramps												Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			1 0 0 1 0			0 0 1 1 0			1 0 2 0 0		
Volume Module:												
Base Vol:	0	0	0	8	0	41	0	70	192	46	455	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	8	0	41	0	70	192	46	455	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	8	0	41	0	70	192	46	455	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	8	0	41	0	70	192	46	455	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	582	809	228	xxxx	xxxx	xxxxx	262	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	449	317	781	xxxx	xxxx	xxxxx	1314	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	437	306	781	xxxx	xxxx	xxxxx	1314	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.02	0.00	0.05	xxxx	xxxx	xxxx	0.04	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	13.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	*	*	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	781	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*
ApproachDel:	xxxxxx			10.4			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.2 Worst Case Level Of Service: A[9.3]

Street Name:	US 101 South Ramps												Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			1 0 0 1 0			0 0 1 1 0			1 0 2 0 0		
Volume Module:												
Base Vol:	0	0	0	6	0	33	0	56	175	34	230	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	6	0	33	0	56	175	34	230	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	6	0	33	0	56	175	34	230	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	6	0	33	0	56	175	34	230	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	326	529	115	xxxx	xxxx	xxxxx	231	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	648	458	922	xxxx	xxxx	xxxxx	1349	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	636	446	922	xxxx	xxxx	xxxxx	1349	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.01	0.00	0.04	xxxx	xxxx	xxxx	0.03	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	10.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	*	*	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	922	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.0	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*
ApproachDel:	xxxxxx			9.3			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 9.1 Worst Case Level Of Service: B[12.2]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module:																				
Base Vol:	361		0		79	0		0		0	38		31		0	0		99		16
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	361		0		79	0		0		0	38		31		0	0		99		16
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	361		0		79	0		0		0	38		31		0	0		99		16
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	361		0		79	0		0		0	38		31		0	0		99		16
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	157	222			16	xxxx	xxxx	xxxxx			115	xxxx	xxxxx		xxxx	xxxx	xxxxx			
Potent Cap.:	825	680			1067	xxxx	xxxx	xxxxx			1487	xxxx	xxxxx		xxxx	xxxx	xxxxx			
Move Cap.:	809	663			1067	xxxx	xxxx	xxxxx			1487	xxxx	xxxxx		xxxx	xxxx	xxxxx			
Volume/Cap:	0.45	0.00			0.07	xxxx	xxxx	xxxx			0.03	xxxx	xxxx		xxxx	xxxx	xxxx			
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.2	xxxx	xxxx	xxxxx			0.1	xxxx	xxxxx		xxxx	xxxx	xxxxx			
Control Del:	xxxxx	xxxx			8.6	xxxxx	xxxx	xxxxx			7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	809	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	2.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	13.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	B	*		*	*	*	*	*		*	*	*								
ApproachDel:	12.2			xxxxxx			xxxxxx			xxxxxx										
ApproachLOS:	B			*			*			*										

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 6.6 Worst Case Level Of Service: B[10.2]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module:																				
Base Vol:	187		0		42	0		0		0	33		30		0	0		82		16
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	187		0		42	0		0		0	33		30		0	0		82		16
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	187		0		42	0		0		0	33		30		0	0		82		16
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	187		0		42	0		0		0	33		30		0	0		82		16
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	137	194			15	xxxx	xxxx	xxxxx			98	xxxx	xxxxx		xxxx	xxxx	xxxxx			
Potent Cap.:	848	705			1067	xxxx	xxxx	xxxxx			1508	xxxx	xxxxx		xxxx	xxxx	xxxxx			
Move Cap.:	834	689			1067	xxxx	xxxx	xxxxx			1508	xxxx	xxxxx		xxxx	xxxx	xxxxx			
Volume/Cap:	0.22	0.00			0.04	xxxx	xxxx	xxxx			0.02	xxxx	xxxx		xxxx	xxxx	xxxx			
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.1	xxxx	xxxx	xxxxx			0.1	xxxx	xxxxx		xxxx	xxxx	xxxxx			
Control Del:	xxxxx	xxxx			8.5	xxxxx	xxxx	xxxxx			7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	834	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	0.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	10.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	B	*		*	*	*	*	*		*	*	*								
ApproachDel:	10.2			xxxxxx			xxxxxx			xxxxxx										
ApproachLOS:	B			*			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 4.8 Worst Case Level Of Service: B[10.3]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	69	76		0		0	52		41		88		0		26		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	69	76		0		0	52		41		88		0		26		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	69	76		0		0	52		41		88		0		26		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	69	76		0		0	52		41		88		0		26		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	93	xxxx	xxxxx	xxxx	xxxx	xxxxx					266	xxxx			52	xxxx	xxxx	xxxxx		
Potent Cap.:	1514	xxxx	xxxxx	xxxx	xxxx	xxxxx					727	xxxx			1021	xxxx	xxxx	xxxxx		
Move Cap.:	1514	xxxx	xxxxx	xxxx	xxxx	xxxxx					702	xxxx			1021	xxxx	xxxx	xxxxx		
Volume/Cap:	0.05	xxxx	xxxx	xxxx	xxxx	xxxx					0.13	xxxx			0.03	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx					0.4	xxxx			0.1	xxxx	xxxx	xxxxx		
Control Del:	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx					10.9	xxxx			8.6	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*					B	*			A	*	*	*		
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*					*	*	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx							10.3					xxxxxx				
ApproachLOS:	*			*							B					*				

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 4.0 Worst Case Level Of Service: A[9.3]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	45	50		0		0	43		34		41		0		27		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	45	50		0		0	43		34		41		0		27		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	45	50		0		0	43		34		41		0		27		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	45	50		0		0	43		34		41		0		27		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	77	xxxx	xxxxx	xxxx	xxxx	xxxxx					183	xxxx			43	xxxx	xxxx	xxxxx		
Potent Cap.:	1535	xxxx	xxxxx	xxxx	xxxx	xxxxx					811	xxxx			1033	xxxx	xxxx	xxxxx		
Move Cap.:	1535	xxxx	xxxxx	xxxx	xxxx	xxxxx					793	xxxx			1033	xxxx	xxxx	xxxxx		
Volume/Cap:	0.03	xxxx	xxxx	xxxx	xxxx	xxxx					0.05	xxxx			0.03	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx					0.2	xxxx			0.1	xxxx	xxxx	xxxxx		
Control Del:	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx					9.8	xxxx			8.6	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*					A	*			A	*	*	*		
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*					*	*	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx							9.3					xxxxxx				
ApproachLOS:	*			*							A					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	119		0		0	72		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	119		0		0	72		0		0	0		0		0	0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	119		0		0	72		0		0	0		0		0	0		0	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	119		0		0	72		0		0	0		0		0	0		0	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		191	191		119	
Potent Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		803	708		938	
Move Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		803	708		938	
Volume/Cap:	xxxx	xxxx		xxxx		xxxx	xxxx		xxxx		xxxx	xxxx		xxxx		0.00	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		*	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	0		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		*	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	*					*					*					*				

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	77		0		0	60		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	77		0		0	60		0		0	0		0		0	0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	77		0		0	60		0		0	0		0		0	0		0	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	77		0		0	60		0		0	0		0		0	0		0	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		137	137		77	
Potent Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		861	758		990	
Move Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		861	758		990	
Volume/Cap:	xxxx	xxxx		xxxx		xxxx	xxxx		xxxx		xxxx	xxxx		xxxx		0.00	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		*	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	0		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		*	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	*					*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 1.4 Worst Case Level Of Service: A[9.7]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	106		16		5	86		0		0	0		0		27		0		3
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
Initial Bse:	0	106		16		5	86		0		0	0		0		27		0		3
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
PHF Volume:	0	106		16		5	86		0		0	0		0		27		0		3
Reduct Vol:	0	0		0		0	0		0		0	0		0		0		0		0
FinalVolume:	0	106		16		5	86		0		0	0		0		27		0		3
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	6.5		6.2					
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	4.0		3.3					
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		122	xxxx	xxxxx	xxxx	xxxx	xxxxx		210	210		114					
Potent Cap.:	xxxx	xxxx	xxxxx		1478	xxxx	xxxxx	xxxx	xxxx	xxxxx		783	691		944					
Move Cap.:	xxxx	xxxx	xxxxx		1478	xxxx	xxxxx	xxxx	xxxx	xxxxx		781	688		944					
Volume/Cap:	xxxx	xxxx	xxxx		0.00	xxxx	xxxx	xxxx	xxxx	xxxx		0.03	0.00		0.00					
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx							
Control Del:	xxxxx	xxxx	xxxxx		7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx							
LOS by Move:	*	*	*		A	*	*	*	*	*	*	*	*							
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	795	xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx		0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx		7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	9.7	xxxxx							
Shared LOS:	*	*	*		A	*	*	*	*	*	*	A	*							
ApproachDel:	xxxxxx				xxxxxx			xxxxxx				9.7								
ApproachLOS:	*				*			*				A								

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.3 Worst Case Level Of Service: A[8.6]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Volume Module:																				
Base Vol:	0	65		1		4	75		0		0	0		0		0		0		2
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
Initial Bse:	0	65		1		4	75		0		0	0		0		0		0		2
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
PHF Volume:	0	65		1		4	75		0		0	0		0		0		0		2
Reduct Vol:	0	0		0		0	0		0		0	0		0		0		0		0
FinalVolume:	0	65		1		4	75		0		0	0		0		0		0		2
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx		6.2						
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx		3.3						
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		66	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx		66						
Potent Cap.:	xxxx	xxxx	xxxxx		1549	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx		1004						
Move Cap.:	xxxx	xxxx	xxxxx		1549	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx		1004						
Volume/Cap:	xxxx	xxxx	xxxx		0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx		0.00						
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx		0.0						
Control Del:	xxxxx	xxxx	xxxxx		7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx		8.6						
LOS by Move:	*	*	*		A	*	*	*	*	*	*	*		A						
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx		0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx		7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx							
Shared LOS:	*	*	*		A	*	*	*	*	*	*	*	*							
ApproachDel:	xxxxxx				xxxxxx			xxxxxx				8.6								
ApproachLOS:	*				*			*				A								

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.1 Worst Case Level Of Service: B[12.3]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module:																
Base Vol:	199	444		0	0	214		50	36		0	91	0		0	0
Growth Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Initial Bse:	199	444		0	0	214		50	36		0	91	0		0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Volume:	199	444		0	0	214		50	36		0	91	0		0	0
Reduct Vol:	0	0		0	0	0		0	0		0	0	0		0	0
FinalVolume:	199	444		0	0	214		50	36		0	91	0		0	0
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5		6.2	xxxxx	xxxx	xxxxx	
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	xxxx	xxxxx	
Capacity Module:																
Cnflict Vol:	264	xxxx	xxxxx	xxxx	xxxx	xxxxx			1056	1056		214	xxxx	xxxx	xxxxx	
Potent Cap.:	1312	xxxx	xxxxx	xxxx	xxxx	xxxxx			252	227		831	xxxx	xxxx	xxxxx	
Move Cap.:	1312	xxxx	xxxxx	xxxx	xxxx	xxxxx			222	193		831	xxxx	xxxx	xxxxx	
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			306	273		xxxxx	228	255	xxxxx	
Volume/Cap:	0.15	xxxx	xxxx	xxxx	xxxx	xxxx			0.12	0.00		0.11	xxxx	xxxx	xxxx	
Level Of Service Module:																
2Way95thQ:	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	xxxx		0.4	xxxx	xxxx	xxxxx	
Control Del:	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	xxxx		9.9	xxxxx	xxxx	xxxxx	
LOS by Move:	A	*	*	*	*	*			*	*		A	*	*	*	
Movement:	LT -	LTR -	RT	LT -	LTR -	RT			LT -	LTR -	RT		LT -	LTR -	RT	
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			306	xxxx	xxxxx		xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			0.4	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			18.3	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
Shared LOS:	*	*	*	*	*	*			C	*	*		*	*	*	
ApproachDel:	xxxxxx			xxxxxx					12.3				xxxxxx			
ApproachLOS:	*			*					B				*			

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.4 Worst Case Level Of Service: B[12.3]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module:																
Base Vol:	146	340		0	0	318		43	43		0	144	0		0	0
Growth Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Initial Bse:	146	340		0	0	318		43	43		0	144	0		0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Volume:	146	340		0	0	318		43	43		0	144	0		0	0
Reduct Vol:	0	0		0	0	0		0	0		0	0	0		0	0
FinalVolume:	146	340		0	0	318		43	43		0	144	0		0	0
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5		6.2	xxxxx	xxxx	xxxxx	
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	xxxx	xxxxx	
Capacity Module:																
Cnflict Vol:	361	xxxx	xxxxx	xxxx	xxxx	xxxxx			950	950		318	xxxx	xxxx	xxxxx	
Potent Cap.:	1209	xxxx	xxxxx	xxxx	xxxx	xxxxx			291	262		727	xxxx	xxxx	xxxxx	
Move Cap.:	1209	xxxx	xxxxx	xxxx	xxxx	xxxxx			264	230		727	xxxx	xxxx	xxxxx	
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			372	330		xxxxx	243	303	xxxxx	
Volume/Cap:	0.12	xxxx	xxxx	xxxx	xxxx	xxxx			0.12	0.00		0.20	xxxx	xxxx	xxxx	
Level Of Service Module:																
2Way95thQ:	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	xxxx		0.7	xxxx	xxxx	xxxxx	
Control Del:	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	xxxx		11.2	xxxxx	xxxx	xxxxx	
LOS by Move:	A	*	*	*	*	*			*	*		B	*	*	*	
Movement:	LT -	LTR -	RT	LT -	LTR -	RT			LT -	LTR -	RT		LT -	LTR -	RT	
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			372	xxxx	xxxxx		xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			0.4	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			15.9	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
Shared LOS:	*	*	*	*	*	*			C	*	*		*	*	*	
ApproachDel:	xxxxxx			xxxxxx					12.3				xxxxxx			
ApproachLOS:	*			*					B				*			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 10.8 Worst Case Level Of Service: C[16.1]

Street Name:	Cloverdale Blvd									South Interchange												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:																						
Base Vol:	0	110		68		286		76		0	0		0		0	67		0		579		
Growth Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		
Initial Bse:	0	110		68		286		76		0	0		0		0	67		0		579		
User Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		
PHF Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		
PHF Volume:	0	110		68		286		76		0	0		0		0	67		0		579		
Reduct Vol:	0	0		0		0		0		0	0		0		0	0		0		0		
FinalVolume:	0	110		68		286		76		0	0		0		0	67		0		579		
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	xxxx		6.2							
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx		3.3							
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx	xxxxx		178	xxxx	xxxxx	xxxx	xxxx	xxxxx		792	xxxx		144							
Potent Cap.:	xxxx	xxxx	xxxxx		1410	xxxx	xxxxx	xxxx	xxxx	xxxxx		361	xxxx		909							
Move Cap.:	xxxx	xxxx	xxxxx		1410	xxxx	xxxxx	xxxx	xxxx	xxxxx		304	xxxx		909							
Volume/Cap:	xxxx	xxxx	xxxx		0.20	xxxx	xxxx	xxxx	xxxx	xxxx		0.22	xxxx		0.64							
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx	xxxxx		0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx		0.8	xxxx		4.7							
Control Del:	xxxxx	xxxx	xxxxx		8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		20.1	xxxx		15.6							
LOS by Move:	*	*	*		A	*	*	*	*	*		C	*		C							
Movement:	LT -	LTR -	RT		LT -	LTR -	RT	LT -	LTR -	RT		LT -	LTR -		RT							
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx		xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx							
Shared LOS:	*	*	*		*	*	*	*	*	*		*	*		*							
ApproachDel:	xxxxxx				xxxxxx			xxxxxx				16.1										
ApproachLOS:	*				*			*				C										

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 7.7 Worst Case Level Of Service: B[11.1]

Street Name:	Cloverdale Blvd									South Interchange												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:																						
Base Vol:	0	54		56		270		64		0	0		0		0	40		0		332		
Growth Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		
Initial Bse:	0	54		56		270		64		0	0		0		0	40		0		332		
User Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		
PHF Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		
PHF Volume:	0	54		56		270		64		0	0		0		0	40		0		332		
Reduct Vol:	0	0		0		0		0		0	0		0		0	0		0		0		
FinalVolume:	0	54		56		270		64		0	0		0		0	40		0		332		
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	xxxx		6.2							
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx		3.3							
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx	xxxxx		110	xxxx	xxxxx	xxxx	xxxx	xxxxx		686	xxxx		82							
Potent Cap.:	xxxx	xxxx	xxxxx		1493	xxxx	xxxxx	xxxx	xxxx	xxxxx		416	xxxx		983							
Move Cap.:	xxxx	xxxx	xxxxx		1493	xxxx	xxxxx	xxxx	xxxx	xxxxx		358	xxxx		983							
Volume/Cap:	xxxx	xxxx	xxxx		0.18	xxxx	xxxx	xxxx	xxxx	xxxx		0.11	xxxx		0.34							
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx	xxxxx		0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx		0.4	xxxx		1.5							
Control Del:	xxxxx	xxxx	xxxxx		7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx		16.3	xxxx		10.5							
LOS by Move:	*	*	*		A	*	*	*	*	*		C	*		B							
Movement:	LT -	LTR -	RT		LT -	LTR -	RT	LT -	LTR -	RT		LT -	LTR -		RT							
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx		xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx							
Shared LOS:	*	*	*		*	*	*	*	*	*		*	*		*							
ApproachDel:	xxxxxx				xxxxxx			xxxxxx				11.1										
ApproachLOS:	*				*			*				B										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 2.5 Worst Case Level Of Service: C[17.3]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	44	0	67	0	147	208	113	579	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	44	0	67	0	147	208	113	579	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	44	0	67	0	147	208	113	579	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	44	0	67	0	147	208	113	579	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1056	1160	579	xxxx	xxxx	xxxxx	355	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	252	197	519	xxxx	xxxx	xxxxx	1215	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	234	179	519	xxxx	xxxx	xxxxx	1215	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.19	0.00	0.13	xxxx	xxxx	xxxx	0.09	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.4	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	13.0	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT			LT - LTR - RT							
Shared Cap.:	xxxx	xxxx	xxxxx	234	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	23.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	C	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			17.3			xxxxxx			xxxxxx										
ApproachLOS:	*			C			*			*										

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 2.3 Worst Case Level Of Service: B[12.8]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	38	0	56	0	125	232	97	324	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	38	0	56	0	125	232	97	324	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	38	0	56	0	125	232	97	324	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	38	0	56	0	125	232	97	324	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	759	875	324	xxxx	xxxx	xxxxx	357	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	377	290	722	xxxx	xxxx	xxxxx	1213	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	354	267	722	xxxx	xxxx	xxxxx	1213	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.11	0.00	0.08	xxxx	xxxx	xxxx	0.08	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.3	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.4	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT			LT - LTR - RT							
Shared Cap.:	xxxx	xxxx	xxxxx	354	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	16.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	C	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			12.8			xxxxxx			xxxxxx										
ApproachLOS:	*			B			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 30.2 Worst Case Level Of Service: F[51.9]

Street Name:	101 N Ramps												South Interchange											
Approach:	North Bound					South Bound					East Bound					West Bound								
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R				
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled								
Rights:	Include					Include					Include					Include								
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0				
Volume Module:																								
Base Vol:	489		0		99	0		0		0	84		107		0	0		203		49				
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00					
Initial Bse:	489		0		99	0		0		0	84		107		0	0		203		49				
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00					
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00					
PHF Volume:	489		0		99	0		0		0	84		107		0	0		203		49				
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0				
FinalVolume:	489		0		99	0		0		0	84		107		0	0		203		49				
Critical Gap Module:																								
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Capacity Module:																								
Cnflict Vol:	503	527			107	xxxx	xxxx	xxxxx			252	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Potent Cap.:	532	459			953	xxxx	xxxx	xxxxx			1325	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Move Cap.:	506	430			953	xxxx	xxxx	xxxxx			1325	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Volume/Cap:	0.97	0.00			0.10	xxxx	xxxx	xxxx			0.06	xxxx	xxxx	xxxx	xxxx	xxxx								
Level Of Service Module:																								
2Way95thQ:	xxxx	xxxx			0.3	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx			9.2	xxxxx	xxxx	xxxxx			7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT								
Shared Cap.:	506	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx						
SharedQueue:	12.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx												
Shrd ConDel:	60.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx												
Shared LOS:	F	*		*	*	*	*	*		*	*	*												
ApproachDel:	51.9			xxxxxx			xxxxxx			xxxxxx														
ApproachLOS:	F			*			*			*														

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 8.0 Worst Case Level Of Service: B[14.7]

Street Name:	101 N Ramps												South Interchange											
Approach:	North Bound					South Bound					East Bound					West Bound								
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R				
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled								
Rights:	Include					Include					Include					Include								
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0				
Volume Module:																								
Base Vol:	262		4		87	0		0		0	69		90		0	0		163		44				
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00					
Initial Bse:	262		4		87	0		0		0	69		90		0	0		163		44				
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00					
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00					
PHF Volume:	262		4		87	0		0		0	69		90		0	0		163		44				
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0				
FinalVolume:	262		4		87	0		0		0	69		90		0	0		163		44				
Critical Gap Module:																								
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Capacity Module:																								
Cnflict Vol:	413	435			90	xxxx	xxxx	xxxxx			207	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Potent Cap.:	599	517			973	xxxx	xxxx	xxxxx			1376	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Move Cap.:	576	492			973	xxxx	xxxx	xxxxx			1376	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Volume/Cap:	0.45	0.01			0.09	xxxx	xxxx	xxxx			0.05	xxxx	xxxx	xxxx	xxxx	xxxx								
Level Of Service Module:																								
2Way95thQ:	xxxx	xxxx			0.3	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx			9.1	xxxxx	xxxx	xxxxx			7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT								
Shared Cap.:	575	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx						
SharedQueue:	2.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx												
Shrd ConDel:	16.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx												
Shared LOS:	C	*		*	*	*	*	*		*	*	*												
ApproachDel:	14.7			xxxxxx			xxxxxx			xxxxxx														
ApproachLOS:	B			*			*			*														

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.582
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 21.9
Optimal Cycle: 32 Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0	1 0
Volume Module:												
Base Vol:	489	0	99	0	0	0	84	107	0	0	203	49
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	489	0	99	0	0	0	84	107	0	0	203	49
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	489	0	99	0	0	0	84	107	0	0	203	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	489	0	99	0	0	0	84	107	0	0	203	49
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	489	0	99	0	0	0	84	107	0	0	203	49
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.97	0.97
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.81	0.19
Final Sat.:	1343	0	1599	0	0	0	1805	1900	0	0	1491	360
Capacity Analysis Module:												
Vol/Sat:	0.36	0.00	0.06	0.00	0.00	0.00	0.05	0.06	0.00	0.00	0.14	0.14
Crit Moves:	****						****				****	
Green/Cycle:	0.63	0.00	0.63	0.00	0.00	0.00	0.08	0.31	0.00	0.00	0.23	0.23
Volume/Cap:	0.58	0.00	0.10	0.00	0.00	0.00	0.58	0.18	0.00	0.00	0.58	0.58
Delay/Veh:	12.0	0.0	7.5	0.0	0.0	0.0	50.3	25.1	0.0	0.0	36.0	36.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.0	0.0	7.5	0.0	0.0	0.0	50.3	25.1	0.0	0.0	36.0	36.0
LOS by Move:	B	A	A	A	A	A	D	C	A	A	D	D
HCM2k95thQ:	17	0	2	0	0	0	5	5	0	0	13	13

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.329
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 20.7
Optimal Cycle: 21 Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0	1 0
Volume Module:												
Base Vol:	262	4	87	0	0	0	69	90	0	0	163	44
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	262	4	87	0	0	0	69	90	0	0	163	44
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	262	4	87	0	0	0	69	90	0	0	163	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	262	4	87	0	0	0	69	90	0	0	163	44
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	262	4	87	0	0	0	69	90	0	0	163	44
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.88	0.88	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.97	0.97
Lanes:	0.98	0.02	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.79	0.21
Final Sat.:	1647	25	1599	0	0	0	1805	1900	0	0	1453	392
Capacity Analysis Module:												
Vol/Sat:	0.16	0.16	0.05	0.00	0.00	0.00	0.04	0.05	0.00	0.00	0.11	0.11
Crit Moves:		****					****				****	
Green/Cycle:	0.48	0.48	0.48	0.00	0.00	0.00	0.12	0.46	0.00	0.00	0.34	0.34
Volume/Cap:	0.33	0.33	0.11	0.00	0.00	0.00	0.33	0.10	0.00	0.00	0.33	0.33
Delay/Veh:	16.1	16.1	14.2	0.0	0.0	0.0	41.5	15.5	0.0	0.0	24.8	24.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	16.1	16.1	14.2	0.0	0.0	0.0	41.5	15.5	0.0	0.0	24.8	24.8
LOS by Move:	B	B	B	A	A	A	D	B	A	A	C	C
HCM2k95thQ:	10	10	3	0	0	0	4	3	0	0	9	9

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 7.9 Worst Case Level Of Service: B[13.5]

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	108	51	1	10	31	91	79	43	81	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	108	51	1	10	31	91	79	43	81	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	108	51	1	10	31	91	79	43	81	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	108	51	1	10	31	91	79	43	81	1	47	10
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	122	xxxx	xxxxx	52	xxxx	xxxxx	393	365	77	426	410	52
Potent Cap.:	1478	xxxx	xxxxx	1567	xxxx	xxxxx	571	567	990	542	535	1022
Move Cap.:	1478	xxxx	xxxxx	1567	xxxx	xxxxx	490	519	990	437	490	1022
Volume/Cap:	0.07	xxxx	xxxx	0.01	xxxx	xxxx	0.16	0.08	0.08	0.00	0.10	0.01
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.6	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	623	xxxxx	xxxx	537	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.4	xxxxx	xxxxx	0.4	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	13.5	xxxxx	xxxxx	12.5	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			13.5			12.5		
ApproachLOS:	*			*			B			B		

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 7.6 Worst Case Level Of Service: B[12.0]

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	94	31	1	10	28	73	55	43	77	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	31	1	10	28	73	55	43	77	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	94	31	1	10	28	73	55	43	77	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	94	31	1	10	28	73	55	43	77	1	47	10
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	101	xxxx	xxxxx	32	xxxx	xxxxx	333	305	65	364	341	32
Potent Cap.:	1504	xxxx	xxxxx	1593	xxxx	xxxxx	625	612	1005	596	585	1048
Move Cap.:	1504	xxxx	xxxxx	1593	xxxx	xxxxx	547	568	1005	490	543	1048
Volume/Cap:	0.06	xxxx	xxxx	0.01	xxxx	xxxx	0.10	0.08	0.08	0.00	0.09	0.01
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.6	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	692	xxxxx	xxxx	591	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.0	xxxxx	xxxxx	0.3	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.0	xxxxx	xxxxx	11.8	xxxxx
Shared LOS:	*	*	*	*	*	*	*	B	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			12.0			11.8		
ApproachLOS:	*			*			B			B		

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

PM Short-term

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	22	4.3	0.204	11.4	LOS B	27	0.56	0.79	23.9
16T	T	92	2.2	0.204	4.3	LOS A	27	0.56	0.46	27.5
16R	R	55	1.8	0.204	5.9	LOS A	27	0.56	0.58	26.4
Approach		**170**	**2.4**	**0.204**	**5.7**	**LOS A**	**27**	**0.56**	**0.54**	**26.5**
WB AV Resort										
1L	L	1	50.0	0.083	14.1	LOS B	11	0.56	0.84	23.2
6T	T	40	2.5	0.082	4.6	LOS A	11	0.56	0.49	27.5
6R	R	20	4.8	0.082	5.9	LOS A	11	0.56	0.59	26.5
Approach		**63**	**4.8**	**0.082**	**5.3**	**LOS A**	**11**	**0.56**	**0.53**	**27.0**
SB Asti										
17L	L	43	2.3	0.171	13.1	LOS B	23	0.56	0.81	23.4
14T	T	77	2.6	0.171	4.4	LOS A	23	0.56	0.47	27.5
14R	R	19	5.0	0.171	6.0	LOS A	23	0.56	0.59	26.4
Approach		**140**	**2.9**	**0.171**	**7.3**	**LOS A**	**23**	**0.56**	**0.59**	**25.7**
EB South Interchange										
5L	L	133	2.3	0.136	10.8	LOS B	24	0.16	0.60	24.7
2T	T	24	4.0	0.136	1.8	LOS A	24	0.16	0.20	30.9
2R	R	45	2.2	0.136	1.8	LOS A	24	0.16	0.20	30.9
Approach		**203**	**2.5**	**0.136**	**7.7**	**LOS A**	**24**	**0.16**	**0.46**	**26.3**
101 NB Offramp										
13L	L	515	1.9	0.264	12.5	LOS B	44	0.39	0.67	23.7
18T	T	41	2.4	0.265	2.8	LOS A	44	0.39	0.30	28.8
18R	R	64	1.6	0.264	4.0	LOS A	44	0.39	0.40	27.8
Approach		**619**	**1.9**	**0.264**	**11.0**	**LOS B**	**44**	**0.39**	**0.62**	**24.2**
All Vehicles		**1195**	**2.3**	**0.265**	**8.9**	**LOS A**	**44**	**0.41**	**0.57**	**25.1**

Symbols which may appear in this table:

Movement Summary Page 1 of 2

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

Weekend Midday Short-term

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	22	4.3	0.181	10.7	LOS B	24	0.47	0.73	24.2
16T	T	92	2.2	0.181	3.6	LOS A	24	0.47	0.38	28.1
16R	R	55	1.8	0.182	5.2	LOS A	24	0.47	0.51	26.9
Approach		**170**	**2.4**	**0.181**	**5.1**	**LOS A**	**24**	**0.47**	**0.47**	**27.1**
WB AV Resort										
1L	L	1	50.0	0.074	13.5	LOS B	9	0.49	0.79	23.4
6T	T	40	2.5	0.073	3.9	LOS A	9	0.49	0.42	28.0
6R	R	20	4.8	0.073	5.3	LOS A	9	0.49	0.52	27.0
Approach		**63**	**4.8**	**0.073**	**4.7**	**LOS A**	**9**	**0.49**	**0.47**	**27.5**
SB Asti										
17L	L	43	2.3	0.151	12.4	LOS B	20	0.48	0.74	23.7
14T	T	77	2.6	0.152	3.7	LOS A	20	0.48	0.40	28.1
14R	R	19	5.0	0.152	5.3	LOS A	20	0.48	0.52	26.9
Approach		**140**	**2.9**	**0.152**	**6.6**	**LOS A**	**20**	**0.48**	**0.52**	**26.2**
EB South Interchange										
5L	L	133	2.3	0.136	10.8	LOS B	24	0.16	0.60	24.7
2T	T	24	4.0	0.136	1.8	LOS A	24	0.16	0.20	30.9
2R	R	45	2.2	0.136	1.8	LOS A	24	0.16	0.20	31.0
Approach		**203**	**2.5**	**0.136**	**7.7**	**LOS A**	**24**	**0.16**	**0.46**	**26.3**
101 NB Offramp										
13L	L	276	2.2	0.164	12.4	LOS B	25	0.36	0.66	23.8
18T	T	41	2.4	0.163	2.7	LOS A	25	0.36	0.29	29.0
18R	R	64	1.6	0.164	3.9	LOS A	25	0.36	0.39	28.0
Approach		**381**	**2.1**	**0.163**	**9.9**	**LOS A**	**25**	**0.36**	**0.58**	**24.7**
All Vehicles		**957**	**2.5**	**0.182**	**7.8**	**LOS A**	**25**	**0.36**	**0.52**	**25.7**

Symbols which may appear in this table:

about:blank 1/14/2009

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt A

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	489.00	419.00	489	419	908	100.0
	Zone 38 Subtotal					489	419	908	100.0
TOTAL						489	419	908	100.0

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt A

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	732.00	585.00	732	585	1317	100.0
	Zone 38 Subtotal					732	585	1317	100.0
TOTAL						732	585	1317	100.0

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.371
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.7
Optimal Cycle:	18	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	76	380	100	44	257	17	18	43	98	147	44	51
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	76	380	100	44	257	17	18	43	98	147	44	51
Added Vol:	0	4	27	0	5	0	0	0	0	29	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	76	384	127	44	262	17	18	43	98	176	44	51
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	76	384	127	44	262	17	18	43	98	176	44	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	76	384	127	44	262	17	18	43	98	176	44	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	76	384	127	44	262	17	18	43	98	176	44	51
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.81	0.81	0.85	0.81	0.81	0.81	0.88	0.88	0.88	0.72	0.72	0.72
Lanes:	0.33	1.67	1.00	0.27	1.62	0.11	0.11	0.27	0.62	0.65	0.16	0.19
Final Sat.:	506	2559	1615	421	2510	163	190	453	1032	883	221	256
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.08	0.10	0.10	0.10	0.09	0.09	0.09	0.20	0.20	0.20
Crit Moves:		****									****	
Green/Cycle:	0.41	0.41	0.41	0.41	0.41	0.41	0.54	0.54	0.54	0.54	0.54	0.54
Volume/Cap:	0.37	0.37	0.19	0.26	0.26	0.26	0.18	0.18	0.18	0.37	0.37	0.37
Delay/Veh:	14.8	14.8	13.6	13.9	13.9	13.9	8.4	8.4	8.4	9.7	9.7	9.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.8	14.8	13.6	13.9	13.9	13.9	8.4	8.4	8.4	9.7	9.7	9.7
LOS by Move:	B	B	B	B	B	B	A	A	A	A	A	A
HCM2kAvgQ:	4	4	2	3	3	3	2	2	2	4	4	4

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.351
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.7
Optimal Cycle:	17	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	88	322	121	46	315	17	18	43	86	126	44	48
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	88	322	121	46	315	17	18	43	86	126	44	48
Added Vol:	0	6	38	0	7	0	0	0	0	41	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	88	328	159	46	322	17	18	43	86	167	44	48
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	88	328	159	46	322	17	18	43	86	167	44	48
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	88	328	159	46	322	17	18	43	86	167	44	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	88	328	159	46	322	17	18	43	86	167	44	48
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.77	0.77	0.85	0.83	0.83	0.83	0.88	0.88	0.88	0.73	0.73	0.73
Lanes:	0.42	1.58	1.00	0.24	1.67	0.09	0.12	0.29	0.59	0.64	0.17	0.19
Final Sat.:	617	2300	1615	375	2626	139	206	491	983	889	234	255
Capacity Analysis Module:												
Vol/Sat:	0.14	0.14	0.10	0.12	0.12	0.12	0.09	0.09	0.09	0.19	0.19	0.19
Crit Moves:		****									****	
Green/Cycle:	0.41	0.41	0.41	0.41	0.41	0.41	0.54	0.54	0.54	0.54	0.54	0.54
Volume/Cap:	0.35	0.35	0.24	0.30	0.30	0.30	0.16	0.16	0.16	0.35	0.35	0.35
Delay/Veh:	14.5	14.5	13.9	14.2	14.2	14.2	8.3	8.3	8.3	9.6	9.6	9.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.5	14.5	13.9	14.2	14.2	14.2	8.3	8.3	8.3	9.6	9.6	9.6
LOS by Move:	B	B	B	B	B	B	A	A	A	A	A	A
HCM2kAvgQ:	3	3	2	3	3	3	2	2	2	3	3	3

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: C[21.6]

Street Name:	Cloverdale Blvd									Lake St								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	542	113	46	472	0	0	0	0	0	76	0	34							
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00							
Initial Bse:	0	542	113	46	472	0	0	0	0	0	76	0	34							
Added Vol:	0	31	0	0	34	0	0	0	0	0	0	0	0							
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0							
Initial Fut:	0	573	113	46	506	0	0	0	0	0	76	0	34							
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00							
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00							
PHF Volume:	0	573	113	46	506	0	0	0	0	0	76	0	34							
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0							
FinalVolume:	0	573	113	46	506	0	0	0	0	0	76	0	34							
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	686	xxxx	xxxxx	xxxx	xxxx	xxxxx	975	xxxx	343								
Potent Cap.:	xxxx	xxxx	xxxxx	917	xxxx	xxxxx	xxxx	xxxx	xxxxx	253	xxxx	659								
Move Cap.:	xxxx	xxxx	xxxxx	917	xxxx	xxxxx	xxxx	xxxx	xxxxx	243	xxxx	659								
Volume/Cap:	xxxx	xxxx	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx	0.31	xxxx	0.05								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	1.3	xxxx	0.2								
Control Del:	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	26.5	xxxx	10.8								
LOS by Move:	*	*	*	A	*	*	*	*	*	D	*	B								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			21.6										
ApproachLOS:	*			*			*			C										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: C[15.1]

Street Name:	Cloverdale Blvd									Lake St								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	371	71	28	367	0	0	0	0	68	0	27								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	371	71	28	367	0	0	0	0	68	0	27								
Added Vol:	0	44	0	0	48	0	0	0	0	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	415	71	28	415	0	0	0	0	68	0	27								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	415	71	28	415	0	0	0	0	68	0	27								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	415	71	28	415	0	0	0	0	68	0	27								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	486	xxxx	xxxxx	xxxx	xxxx	xxxxx	714	xxxx	243								
Potent Cap.:	xxxx	xxxx	xxxxx	1087	xxxx	xxxxx	xxxx	xxxx	xxxxx	370	xxxx	764								
Move Cap.:	xxxx	xxxx	xxxxx	1087	xxxx	xxxxx	xxxx	xxxx	xxxxx	363	xxxx	764								
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.19	xxxx	0.04								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.7	xxxx	0.1								
Control Del:	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	17.2	xxxx	9.9								
LOS by Move:	*	*	*	A	*	*	*	*	*	C	*	A								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			15.1										
ApproachLOS:	*			*			*			C										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.401
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	14.8
Optimal Cycle:	23	Level Of Service:	B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1	1 0	1 0	1	1 0	0 0	1!	0 0	1 1	0	0 1
Volume Module:												
Base Vol:	15	465	133	152	446	6	5	14	25	194	25	241
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	465	133	152	446	6	5	14	25	194	25	241
Added Vol:	0	0	4	34	0	0	0	0	0	4	0	31
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	15	465	137	186	446	6	5	14	25	198	25	272
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	15	465	137	186	446	6	5	14	25	198	25	272
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	15	465	137	186	446	6	5	14	25	198	25	272
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	15	465	137	186	446	6	5	14	25	198	25	272
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.96	0.96	0.85
Lanes:	1.00	1.54	0.46	1.00	1.97	0.03	0.11	0.32	0.57	1.78	0.22	1.00
Final Sat.:	1805	2694	794	1805	3555	48	198	555	990	3229	408	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.17	0.17	0.10	0.13	0.13	0.03	0.03	0.03	0.06	0.06	0.17
Crit Moves:		****		****				****				****
Green/Cycle:	0.04	0.43	0.43	0.26	0.65	0.65	0.06	0.06	0.06	0.16	0.16	0.42
Volume/Cap:	0.19	0.40	0.40	0.40	0.19	0.19	0.40	0.40	0.40	0.38	0.38	0.40
Delay/Veh:	33.6	13.9	13.9	22.1	5.1	5.1	33.9	33.9	33.9	26.5	26.5	14.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	33.6	13.9	13.9	22.1	5.1	5.1	33.9	33.9	33.9	26.5	26.5	14.5
LOS by Move:	C	B	B	C	A	A	C	C	C	C	C	B
HCM2kAvgQ:	1	5	5	4	2	2	1	1	1	3	3	4

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.379
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	22.0
Optimal Cycle:	22	Level Of Service:	C

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1	1 0	1 0	1	1 0	0 0	1!	0 0	1 1	0	0 1
Volume Module:												
Base Vol:	53	50	136	45	44	10	8	175	42	135	158	45
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	53	50	136	45	44	10	8	175	42	135	158	45
Added Vol:	0	0	5	48	0	0	0	0	0	5	0	44
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	53	50	141	93	44	10	8	175	42	140	158	89
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	53	50	141	93	44	10	8	175	42	140	158	89
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	53	50	141	93	44	10	8	175	42	140	158	89
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	53	50	141	93	44	10	8	175	42	140	158	89
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.84	0.84	0.95	0.92	0.92	0.97	0.97	0.97	0.98	0.98	0.85
Lanes:	1.00	1.00	1.00	1.00	1.63	0.37	0.03	0.78	0.19	1.00	1.00	1.00
Final Sat.:	1805	1605	1605	1805	2859	650	66	1438	345	1856	1856	1615
Capacity Analysis Module:												
Vol/Sat:	0.03	0.03	0.09	0.05	0.02	0.02	0.12	0.12	0.12	0.08	0.09	0.06
Crit Moves:			****	****			****				****	
Green/Cycle:	0.24	0.23	0.23	0.14	0.13	0.13	0.32	0.32	0.32	0.22	0.22	0.36
Volume/Cap:	0.12	0.13	0.38	0.38	0.12	0.12	0.38	0.38	0.38	0.34	0.38	0.15
Delay/Veh:	20.9	21.3	23.1	28.5	27.2	27.2	18.8	18.8	18.8	23.0	23.3	15.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	20.9	21.3	23.1	28.5	27.2	27.2	18.8	18.8	18.8	23.0	23.3	15.3
LOS by Move:	C	C	C	C	C	C	B	B	B	C	C	B
HCM2kAvgQ:	1	1	3	2	1	1	4	4	4	3	3	1

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.3 Worst Case Level Of Service: B[14.6]

Street Name:	US 101 South Ramps									Citrus Fair Dr							
Approach:	North Bound				South Bound				East Bound				West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module:																				
Base Vol:	0	0	0	8	0	41	0	70	192	46	455	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	8	0	41	0	70	192	46	455	0								
Added Vol:	0	0	0	34	0	0	0	15	23	91	35	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	42	0	41	0	85	215	137	490	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	42	0	41	0	85	215	137	490	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	42	0	41	0	85	215	137	490	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	807	1064	245	xxxx	xxxx	xxxxx	300	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	323	225	762	xxxx	xxxx	xxxxx	1273	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	297	201	762	xxxx	xxxx	xxxxx	1273	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.14	0.00	0.05	xxxx	xxxx	xxxx	0.11	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.4	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	19.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx								
LOS by Move:	*	*	*	C	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT			LT - LTR - RT							
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	762	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.0	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*								
ApproachDel:	xxxxxx			14.6			xxxxxx			xxxxxx										
ApproachLOS:	*			B			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 3.1 Worst Case Level Of Service: B[13.7]

Street Name:	US 101 South Ramps									Citrus Fair Dr							
Approach:	North Bound				South Bound				East Bound				West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module:																				
Base Vol:	0	0	0	6	0	33	0	56	175	34	230	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	6	0	33	0	56	175	34	230	0								
Added Vol:	0	0	0	51	0	0	0	22	32	126	49	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	57	0	33	0	78	207	160	279	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	57	0	33	0	78	207	160	279	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	57	0	33	0	78	207	160	279	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	638	884	140	xxxx	xxxx	xxxxx	285	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	414	286	889	xxxx	xxxx	xxxxx	1289	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	374	251	889	xxxx	xxxx	xxxxx	1289	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.15	0.00	0.04	xxxx	xxxx	xxxx	0.12	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.4	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	16.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx								
LOS by Move:	*	*	*	C	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT			LT - LTR - RT							
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	889	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*								
ApproachDel:	xxxxxx			13.7			xxxxxx			xxxxxx										
ApproachLOS:	*			B			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 8.3 Worst Case Level Of Service: B[13.5]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R						
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled								
Rights:	Include			Include			Include			Include								
Lanes:	0 1	0 0	1	0 0	0 0	0	1 0	2 0	0	0 0	1 1	0						
Volume Module:																		
Base Vol:	361	0	79	0	0	0	38	31	0	0	99	16						
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Initial Bse:	361	0	79	0	0	0	38	31	0	0	99	16						
Added Vol:	0	0	132	0	0	0	0	49	0	0	126	29						
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0						
Initial Fut:	361	0	211	0	0	0	38	80	0	0	225	45						
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
PHF Volume:	361	0	211	0	0	0	38	80	0	0	225	45						
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0						
FinalVolume:	361	0	211	0	0	0	38	80	0	0	225	45						
Critical Gap Module:																		
Critical Gp:	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Capacity Module:																		
Cnflict Vol:	269	426	40	xxxx	xxxx	xxxxx	270	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Potent Cap.:	704	524	1029	xxxx	xxxx	xxxxx	1305	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Move Cap.:	688	508	1029	xxxx	xxxx	xxxxx	1305	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Volume/Cap:	0.52	0.00	0.21	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx						
Level Of Service Module:																		
2Way95thQ:	xxxx	xxxx	0.8	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Control Del:	xxxxx	xxxx	9.4	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
LOS by Move:	*	*	A	*	*	*	A	*	*	*	*	*						
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT						
Shared Cap.:	688	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx						
SharedQueue:	3.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Shrd ConDel:	15.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Shared LOS:	C	*	*	*	*	*	*	*	*	*	*	*						
ApproachDel:	13.5			xxxxxx			xxxxxx			xxxxxx								
ApproachLOS:	B			*			*			*								

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 5.6 Worst Case Level Of Service: B[10.9]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R						
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled								
Rights:	Include			Include			Include			Include								
Lanes:	0 1	0 0	1	0 0	0 0	0	1 0	2 0	0	0 0	1 1	0						
Volume Module:																		
Base Vol:	187	0	42	0	0	0	33	30	0	0	82	16						
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Initial Bse:	187	0	42	0	0	0	33	30	0	0	82	16						
Added Vol:	0	0	198	0	0	0	0	73	0	0	175	41						
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0						
Initial Fut:	187	0	240	0	0	0	33	103	0	0	257	57						
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
PHF Volume:	187	0	240	0	0	0	33	103	0	0	257	57						
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0						
FinalVolume:	187	0	240	0	0	0	33	103	0	0	257	57						
Critical Gap Module:																		
Critical Gp:	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Capacity Module:																		
Cnflict Vol:	298	483	52	xxxx	xxxx	xxxxx	314	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Potent Cap.:	675	486	1012	xxxx	xxxx	xxxxx	1258	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Move Cap.:	662	473	1012	xxxx	xxxx	xxxxx	1258	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Volume/Cap:	0.28	0.00	0.24	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx						
Level Of Service Module:																		
2Way95thQ:	xxxx	xxxx	0.9	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Control Del:	xxxxx	xxxx	9.7	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
LOS by Move:	*	*	A	*	*	*	A	*	*	*	*	*						
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT						
Shared Cap.:	662	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx						
SharedQueue:	1.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Shrd ConDel:	12.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Shared LOS:	B	*	*	*	*	*	*	*	*	*	*	*						
ApproachDel:	10.9			xxxxxx			xxxxxx			xxxxxx								
ApproachLOS:	B			*			*			*								

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.4 Worst Case Level Of Service: B[11.3]

Street Name:	Asti (Frontage) Rd									Citrus Fair Dr		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1 0 0			0 0 1 0 1			1 0 0 0 1			0 0 0 0 0		
Volume Module:												
Base Vol:	69	76	0	0	52	41	88	0	26	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	69	76	0	0	52	41	88	0	26	0	0	0
Added Vol:	155	0	0	0	0	0	0	0	181	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	224	76	0	0	52	41	88	0	207	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	224	76	0	0	52	41	88	0	207	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	224	76	0	0	52	41	88	0	207	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	93	xxxx	xxxxx	xxxx	xxxx	xxxxx	576	xxxx	52	xxxx	xxxx	xxxxx
Potent Cap.:	1514	xxxx	xxxxx	xxxx	xxxx	xxxxx	482	xxxx	1021	xxxx	xxxx	xxxxx
Move Cap.:	1514	xxxx	xxxxx	xxxx	xxxx	xxxxx	428	xxxx	1021	xxxx	xxxx	xxxxx
Volume/Cap:	0.15	xxxx	xxxx	xxxx	xxxx	xxxx	0.21	xxxx	0.20	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.8	xxxx	0.8	xxxx	xxxx	xxxxx
Control Del:	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	15.6	xxxx	9.4	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	C	*	A	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			11.3			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.7 Worst Case Level Of Service: B[10.5]

Street Name:	Asti (Frontage) Rd									Citrus Fair Dr		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1 0 0			0 0 1 0 1			1 0 0 0 1			0 0 0 0 0		
Volume Module:												
Base Vol:	45	50	0	0	43	34	41	0	27	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	45	50	0	0	43	34	41	0	27	0	0	0
Added Vol:	216	0	0	0	0	0	0	0	271	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	261	50	0	0	43	34	41	0	298	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	261	50	0	0	43	34	41	0	298	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	261	50	0	0	43	34	41	0	298	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	77	xxxx	xxxxx	xxxx	xxxx	xxxxx	615	xxxx	43	xxxx	xxxx	xxxxx
Potent Cap.:	1535	xxxx	xxxxx	xxxx	xxxx	xxxxx	458	xxxx	1033	xxxx	xxxx	xxxxx
Move Cap.:	1535	xxxx	xxxxx	xxxx	xxxx	xxxxx	398	xxxx	1033	xxxx	xxxx	xxxxx
Volume/Cap:	0.17	xxxx	xxxx	xxxx	xxxx	xxxx	0.10	xxxx	0.29	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	1.2	xxxx	xxxx	xxxxx
Control Del:	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	15.1	xxxx	9.9	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	C	*	A	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			10.5			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 25.6 Worst Case Level Of Service: F[63.5]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	119	0	0	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	119	0	0	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	308	181	0	0	0	0	0	264	0	155	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	119	308	181	72	0	0	0	0	264	0	155	0	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	119	308	181	72	0	0	0	0	264	0	155	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	119	308	181	72	0	0	0	0	264	0	155	0	0	0	0	0	0	0	0
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	427	xxxx	xxxxx	xxxx	xxxx	xxxxx	707	707	273								
Potent Cap.:	xxxx	xxxx	xxxxx	1143	xxxx	xxxxx	xxxx	xxxx	xxxxx	405	363	771								
Move Cap.:	xxxx	xxxx	xxxxx	1143	xxxx	xxxxx	xxxx	xxxx	xxxxx	350	299	771								
Volume/Cap:	xxxx	xxxx	xxxx	0.16	xxxx	xxxx	xxxx	xxxx	xxxx	0.75	0.00	0.20								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	8.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	438	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.4	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	63.5	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	F	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx				63.5									
ApproachLOS:	*			*			*				F									

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 174.6 Worst Case Level Of Service: F[429.6]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	77	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	461	271	0	0	0	0	0	369	0	216	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	461	271	60	0	0	0	0	369	0	216	0	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	77	461	271	60	0	0	0	0	369	0	216	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	77	461	271	60	0	0	0	0	369	0	216	0	0	0	0	0	0	0	0
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	538	xxxx	xxxxx	xxxx	xxxx	xxxxx	910	910	308								
Potent Cap.:	xxxx	xxxx	xxxxx	1040	xxxx	xxxxx	xxxx	xxxx	xxxxx	308	277	737								
Move Cap.:	xxxx	xxxx	xxxxx	1040	xxxx	xxxxx	xxxx	xxxx	xxxxx	235	192	737								
Volume/Cap:	xxxx	xxxx	xxxx	0.26	xxxx	xxxx	xxxx	xxxx	xxxx	1.57	0.00	0.29								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	1.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	9.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	313	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	1.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	39.5	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	430	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	F	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx				429.6									
ApproachLOS:	*			*			*				F									

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.502
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 20.6
Optimal Cycle: 27 | Level Of Service: C

Street Name:	Asti (Frontage) Rd						Project Access					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1	0 1	1 0	1	0 0	0 0	0	0 0	1 0	0	0 1
Volume Module:												
Base Vol:	0	119	0	0	72	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	119	0	0	72	0	0	0	0	0	0	0
Added Vol:	0	0	308	181	0	0	0	0	0	264	0	155
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	119	308	181	72	0	0	0	0	264	0	155
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	119	308	181	72	0	0	0	0	264	0	155
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	119	308	181	72	0	0	0	0	264	0	155
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	119	308	181	72	0	0	0	0	264	0	155
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.85	0.95	1.00	1.00	1.00	1.00	1.00	0.77	1.00	0.85
Lanes:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1900	1615	1805	1900	0	0	0	0	1461	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.06	0.19	0.10	0.04	0.00	0.00	0.00	0.00	0.18	0.00	0.10
Crit Moves:			****	****						****		
Green/Cycle:	0.00	0.38	0.38	0.60	0.58	0.00	0.00	0.00	0.00	0.36	0.00	0.36
Volume/Cap:	0.00	0.16	0.50	0.22	0.07	0.00	0.00	0.00	0.00	0.50	0.00	0.27
Delay/Veh:	0.0	20.6	24.4	9.1	9.2	0.0	0.0	0.0	0.0	25.8	0.0	22.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	20.6	24.4	9.1	9.2	0.0	0.0	0.0	0.0	25.8	0.0	22.9
LOS by Move:	A	C	C	A	A	A	A	A	A	C	A	C
HCM2k95thQ:	0	5	14	5	2	0	0	0	0	13	0	7

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.732
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 25.1
Optimal Cycle: 46 | Level Of Service: C

Street Name:	Asti (Frontage) Rd						Project Access					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1	0 1	1 0	1	0 0	0 0	0	0 0	1 0	0	0 1
Volume Module:												
Base Vol:	0	77	0	0	60	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	0	0	60	0	0	0	0	0	0	0
Added Vol:	0	0	461	271	0	0	0	0	0	369	0	216
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	461	271	60	0	0	0	0	369	0	216
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	77	461	271	60	0	0	0	0	369	0	216
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	77	461	271	60	0	0	0	0	369	0	216
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	77	461	271	60	0	0	0	0	369	0	216
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.85	0.95	1.00	1.00	1.00	1.00	1.00	0.77	1.00	0.85
Lanes:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1900	1615	1805	1900	0	0	0	0	1461	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.04	0.29	0.15	0.03	0.00	0.00	0.00	0.00	0.25	0.00	0.13
Crit Moves:			****	****						****		
Green/Cycle:	0.00	0.39	0.39	0.62	0.60	0.00	0.00	0.00	0.00	0.34	0.00	0.34
Volume/Cap:	0.00	0.10	0.73	0.31	0.05	0.00	0.00	0.00	0.00	0.73	0.00	0.39
Delay/Veh:	0.0	19.5	30.5	9.0	8.5	0.0	0.0	0.0	0.0	34.2	0.0	25.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	19.5	30.5	9.0	8.5	0.0	0.0	0.0	0.0	34.2	0.0	25.2
LOS by Move:	A	B	C	A	A	A	A	A	A	C	A	C
HCM2k95thQ:	0	3	24	8	2	0	0	0	0	21	0	10

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: C[15.3]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	106		16		5	86		0		0	0		0		27	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	106		16		5	86		0		0	0		0		27	0		3	
Added Vol:	0	308		0		0	264		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	414		16		5	350		0		0	0		0		27	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	414		16		5	350		0		0	0		0		27	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	414		16		5	350		0		0	0		0		27	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		430	xxxx		xxxxx		xxxx	xxxx		xxxxx		782	782		422	
Potent Cap.:	xxxx	xxxx		xxxxx		1140	xxxx		xxxxx		xxxx	xxxx		xxxxx		366	328		636	
Move Cap.:	xxxx	xxxx		xxxxx		1140	xxxx		xxxxx		xxxx	xxxx		xxxxx		364	327		636	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		0.07	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		8.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	381		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	0.3		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	15.3		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	C		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						15.3			
ApproachLOS:	*					*					*						C			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: B[11.5]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Volume Module:																				
Base Vol:	0	65		1		4	75		0		0	0		0		0	0		2	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	65		1		4	75		0		0	0		0		0	0		2	
Added Vol:	0	461		0		0	369		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	526		1		4	444		0		0	0		0		0	0		2	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	526		1		4	444		0		0	0		0		0	0		2	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	526		1		4	444		0		0	0		0		0	0		2	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		527	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		527	
Potent Cap.:	xxxx	xxxx		xxxxx		1050	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		555	
Move Cap.:	xxxx	xxxx		xxxxx		1050	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		555	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		xxxx	xxxx		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		0.0	
Control Del:	xxxxx	xxxx		xxxxx		8.4	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		11.5	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		B	
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.4	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						11.5			
ApproachLOS:	*					*					*						B			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[12.3]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0
Volume Module:																	
Base Vol:	199	444		0	0	214	50		36	0	91		0	0	0		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	199	444		0	0	214	50		36	0	91		0	0	0		
Added Vol:	11	4		0	0	4	0		0	0	11		0	0	0		
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0		
Initial Fut:	210	448		0	0	218	50		36	0	102		0	0	0		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
PHF Volume:	210	448		0	0	218	50		36	0	102		0	0	0		
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0		
FinalVolume:	210	448		0	0	218	50		36	0	102		0	0	0		
Critical Gap Module:																	
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5	6.2	xxxxx	xxxx	xxxxx			
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0	3.3	xxxxx	xxxx	xxxxx			
Capacity Module:																	
Cnflict Vol:	268	xxxx	xxxxx	xxxx	xxxx	xxxxx			1086	1086	218	xxxx	xxxx	xxxxx			
Potent Cap.:	1307	xxxx	xxxxx	xxxx	xxxx	xxxxx			242	218	827	xxxx	xxxx	xxxxx			
Move Cap.:	1307	xxxx	xxxxx	xxxx	xxxx	xxxxx			212	183	827	xxxx	xxxx	xxxxx			
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			295	263	xxxxx	216	245	xxxxx			
Volume/Cap:	0.16	xxxx	xxxx	xxxx	xxxx	xxxx			0.12	0.00	0.12	xxxx	xxxx	xxxx			
Level Of Service Module:																	
2Way95thQ:	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	xxxx	0.4	xxxx	xxxx	xxxxx			
Control Del:	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	xxxx	10.0	xxxxx	xxxx	xxxxx			
LOS by Move:	A	*	*	*	*	*			*	*	A	*	*	*			
Movement:	LT -	LTR -	RT	LT -	LTR -	RT			LT -	LTR -	RT	LT -	LTR -	RT			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			295	xxxx	xxxxx	xxxx	xxxx	xxxxx			
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			0.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			18.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
Shared LOS:	*	*	*	*	*	*			C	*	*	*	*	*			
ApproachDel:	xxxxxx			xxxxxx					12.3			xxxxxx					
ApproachLOS:	*			*					B			*					

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.6 Worst Case Level Of Service: B[12.5]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0
Volume Module:																	
Base Vol:	146	340		0	0	318	43		43	0	144		0	0	0		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	146	340		0	0	318	43		43	0	144		0	0	0		
Added Vol:	16	5		0	0	5	0		0	0	16		0	0	0		
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0		
Initial Fut:	162	345		0	0	323	43		43	0	160		0	0	0		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
PHF Volume:	162	345		0	0	323	43		43	0	160		0	0	0		
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0		
FinalVolume:	162	345		0	0	323	43		43	0	160		0	0	0		
Critical Gap Module:																	
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5	6.2	xxxxx	xxxx	xxxxx			
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0	3.3	xxxxx	xxxx	xxxxx			
Capacity Module:																	
Cnflict Vol:	366	xxxx	xxxxx	xxxx	xxxx	xxxxx			992	992	323	xxxx	xxxx	xxxxx			
Potent Cap.:	1204	xxxx	xxxxx	xxxx	xxxx	xxxxx			275	248	723	xxxx	xxxx	xxxxx			
Move Cap.:	1204	xxxx	xxxxx	xxxx	xxxx	xxxxx			246	214	723	xxxx	xxxx	xxxxx			
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			354	314	xxxxx	219	287	xxxxx			
Volume/Cap:	0.13	xxxx	xxxx	xxxx	xxxx	xxxx			0.12	0.00	0.22	xxxx	xxxx	xxxx			
Level Of Service Module:																	
2Way95thQ:	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	xxxx	0.8	xxxx	xxxx	xxxxx			
Control Del:	8.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	xxxx	11.4	xxxxx	xxxx	xxxxx			
LOS by Move:	A	*	*	*	*	*			*	*	B	*	*	*			
Movement:	LT -	LTR -	RT	LT -	LTR -	RT			LT -	LTR -	RT	LT -	LTR -	RT			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			354	xxxx	xxxxx	xxxx	xxxx	xxxxx			
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			0.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			16.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
Shared LOS:	*	*	*	*	*	*			C	*	*	*	*	*			
ApproachDel:	xxxxxx			xxxxxx					12.5			xxxxxx					
ApproachLOS:	*			*					B			*					

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 11.1 Worst Case Level Of Service: C[16.6]

Street Name:	Cloverdale Blvd									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	110		68	286	76	0		0	0	0		67	0	579					
Growth Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00					
Initial Bse:	0	110		68	286	76	0		0	0	0		67	0	579					
Added Vol:	0	0		0	15	0	0		0	0	0		0	0	15					
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0					
Initial Fut:	0	110		68	301	76	0		0	0	0		67	0	594					
User Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00					
PHF Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00					
PHF Volume:	0	110		68	301	76	0		0	0	0		67	0	594					
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0					
FinalVolume:	0	110		68	301	76	0		0	0	0		67	0	594					
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx	4.1	xxxx	xxxxx		xxxxx	xxxx	xxxxx		6.4	xxxx	6.2					
FollowUpTim:	xxxxx	xxxx		xxxxx	2.2	xxxx	xxxxx		xxxxx	xxxx	xxxxx		3.5	xxxx	3.3					
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx	178	xxxx	xxxxx		xxxx	xxxx	xxxxx		822	xxxx	144					
Potent Cap.:	xxxx	xxxx		xxxxx	1410	xxxx	xxxxx		xxxx	xxxx	xxxxx		346	xxxx	909					
Move Cap.:	xxxx	xxxx		xxxxx	1410	xxxx	xxxxx		xxxx	xxxx	xxxxx		290	xxxx	909					
Volume/Cap:	xxxx	xxxx		xxxx	0.21	xxxx	xxxx		xxxx	xxxx	xxxx		0.23	xxxx	0.65					
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx	0.8	xxxx	xxxxx		xxxx	xxxx	xxxxx		0.9	xxxx	5.0					
Control Del:	xxxxx	xxxx		xxxxx	8.2	xxxx	xxxxx		xxxxx	xxxx	xxxxx		21.1	xxxx	16.1					
LOS by Move:	*	*		*	A	*	*		*	*	*		C	*	C					
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					
SharedQueue:	xxxxx	xxxx		xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shrd ConDel:	xxxxx	xxxx		xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shared LOS:	*	*		*	*	*	*		*	*	*		*	*	*					
ApproachDel:	xxxxxx				xxxxxx				xxxxxx				16.6							
ApproachLOS:	*				*				*				C							

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 7.9 Worst Case Level Of Service: B[11.4]

Street Name:	Cloverdale Blvd									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	54		56	270	64	0		0	0	0		40	0	332					
Growth Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00					
Initial Bse:	0	54		56	270	64	0		0	0	0		40	0	332					
Added Vol:	0	0		0	21	0	0		0	0	0		0	0	21					
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0					
Initial Fut:	0	54		56	291	64	0		0	0	0		40	0	353					
User Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00					
PHF Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00					
PHF Volume:	0	54		56	291	64	0		0	0	0		40	0	353					
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0					
FinalVolume:	0	54		56	291	64	0		0	0	0		40	0	353					
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx	4.1	xxxx	xxxxx		xxxxx	xxxx	xxxxx		6.4	xxxx	6.2					
FollowUpTim:	xxxxx	xxxx		xxxxx	2.2	xxxx	xxxxx		xxxxx	xxxx	xxxxx		3.5	xxxx	3.3					
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx	110	xxxx	xxxxx		xxxx	xxxx	xxxxx		728	xxxx	82					
Potent Cap.:	xxxx	xxxx		xxxxx	1493	xxxx	xxxxx		xxxx	xxxx	xxxxx		393	xxxx	983					
Move Cap.:	xxxx	xxxx		xxxxx	1493	xxxx	xxxxx		xxxx	xxxx	xxxxx		334	xxxx	983					
Volume/Cap:	xxxx	xxxx		xxxx	0.19	xxxx	xxxx		xxxx	xxxx	xxxx		0.12	xxxx	0.36					
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx	0.7	xxxx	xxxxx		xxxx	xxxx	xxxxx		0.4	xxxx	1.6					
Control Del:	xxxxx	xxxx		xxxxx	8.0	xxxx	xxxxx		xxxxx	xxxx	xxxxx		17.2	xxxx	10.7					
LOS by Move:	*	*		*	A	*	*		*	*	*		C	*	B					
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					
SharedQueue:	xxxxx	xxxx		xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shrd ConDel:	xxxxx	xxxx		xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shared LOS:	*	*		*	*	*	*		*	*	*		*	*	*					
ApproachDel:	xxxxxx				xxxxxx				xxxxxx				11.4							
ApproachLOS:	*				*				*				B							

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 5.2 Worst Case Level Of Service: E[37.2]

Street Name:	101 S Ramps								South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled			
Rights:	Include				Include				Include				Include			
Lanes:	0	0	0	0 0	0	1	0	0 1	0	0	0	1 0	1	0	1	0 0
Volume Module:																
Base Vol:	0	0	0	44	0	67	0	147	208	113	579	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	0	0	0	44	0	67	0	147	208	113	579	0				
Added Vol:	0	0	0	0	0	0	0	0	15	249	15	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	0	0	0	44	0	67	0	147	223	362	594	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	0	0	0	44	0	67	0	147	223	362	594	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	0	0	0	44	0	67	0	147	223	362	594	0				
Critical Gap Module:																
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx				
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	xxxx	xxxx	xxxxx	1577	1688	594	xxxx	xxxx	xxxxx	370	xxxx	xxxxx				
Potent Cap.:	xxxx	xxxx	xxxxx	122	95	509	xxxx	xxxx	xxxxx	1200	xxxx	xxxxx				
Move Cap.:	xxxx	xxxx	xxxxx	93	66	509	xxxx	xxxx	xxxxx	1200	xxxx	xxxxx				
Volume/Cap:	xxxx	xxxx	xxxx	0.47	0.00	0.13	xxxx	xxxx	xxxx	0.30	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.5	xxxx	xxxx	xxxxx	1.3	xxxx	xxxxx				
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	13.1	xxxxx	xxxx	xxxxx	9.3	xxxx	xxxxx				
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	93	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	2.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	73.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*				
ApproachDel:	xxxxxx			37.2			xxxxxx			xxxxxx						
ApproachLOS:	*			E			*			*						

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 5.8 Worst Case Level Of Service: D[31.7]

Street Name:	101 S Ramps								South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled			
Rights:	Include				Include				Include				Include			
Lanes:	0	0	0	0 0	0	1	0	0 1	0	0	0	1 0	1	0	1	0 0
Volume Module:																
Base Vol:	0	0	0	38	0	56	0	125	232	97	324	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	0	0	0	38	0	56	0	125	232	97	324	0				
Added Vol:	0	0	0	0	0	0	0	0	21	347	21	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	0	0	0	38	0	56	0	125	253	444	345	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	0	0	0	38	0	56	0	125	253	444	345	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	0	0	0	38	0	56	0	125	253	444	345	0				
Critical Gap Module:																
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx				
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	xxxx	xxxx	xxxxx	1485	1611	345	xxxx	xxxx	xxxxx	378	xxxx	xxxxx				
Potent Cap.:	xxxx	xxxx	xxxxx	139	105	702	xxxx	xxxx	xxxxx	1192	xxxx	xxxxx				
Move Cap.:	xxxx	xxxx	xxxxx	99	66	702	xxxx	xxxx	xxxxx	1192	xxxx	xxxxx				
Volume/Cap:	xxxx	xxxx	xxxx	0.39	0.00	0.08	xxxx	xxxx	xxxx	0.37	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.3	xxxx	xxxx	xxxxx	1.7	xxxx	xxxxx				
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.6	xxxxx	xxxx	xxxxx	9.8	xxxx	xxxxx				
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	99	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	1.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	62.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*				
ApproachDel:	xxxxxx			31.7			xxxxxx			xxxxxx						
ApproachLOS:	*			D			*			*						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 71.5 Worst Case Level Of Service: F[127.2]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	489	0	99	0	0	0	84	107	0	0	203	49								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	489	0	99	0	0	0	84	107	0	0	203	49								
Added Vol:	0	0	308	0	0	0	0	0	0	0	264	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	489	0	407	0	0	0	84	107	0	0	467	49								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	489	0	407	0	0	0	84	107	0	0	467	49								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	489	0	407	0	0	0	84	107	0	0	467	49								
Critical Gap Module:																				
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	767	791	107	xxxx	xxxx	xxxxx	516	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Potent Cap.:	373	324	953	xxxx	xxxx	xxxxx	1060	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Move Cap.:	351	299	953	xxxx	xxxx	xxxxx	1060	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Volume/Cap:	1.39	0.00	0.43	xxxx	xxxx	xxxx	0.08	xxxx	xxxx	xxxx	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	2.2	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	11.6	xxxxx	xxxx	xxxxx	8.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*	B	*	*	*	A	*	*	*	*	*								
Movement:	LT - LTR - RT																			
Shared Cap.:	351	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	24.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	223.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	F	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	127.2			xxxxxx			xxxxxx			xxxxxx										
ApproachLOS:	F			*			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 12.5 Worst Case Level Of Service: C[23.0]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	262	4	87	0	0	0	69	90	0	0	163	44								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	262	4	87	0	0	0	69	90	0	0	163	44								
Added Vol:	0	0	461	0	0	0	0	0	0	0	369	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	262	4	548	0	0	0	69	90	0	0	532	44								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	262	4	548	0	0	0	69	90	0	0	532	44								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	262	4	548	0	0	0	69	90	0	0	532	44								
Critical Gap Module:																				
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	782	804	90	xxxx	xxxx	xxxxx	576	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Potent Cap.:	366	319	973	xxxx	xxxx	xxxxx	1007	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Move Cap.:	347	297	973	xxxx	xxxx	xxxxx	1007	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Volume/Cap:	0.76	0.01	0.56	xxxx	xxxx	xxxx	0.07	xxxx	xxxx	xxxx	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	3.6	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	13.4	xxxxx	xxxx	xxxxx	8.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*	B	*	*	*	A	*	*	*	*	*								
Movement:	LT - LTR - RT																			
Shared Cap.:	346	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	6.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	42.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	E	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	23.0			xxxxxx			xxxxxx			xxxxxx										
ApproachLOS:	C			*			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.730
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 26.2
Optimal Cycle: 46 | Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Volume Module:												
Base Vol:	489	0	99	0	0	0	84	107	0	0	203	49
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	489	0	99	0	0	0	84	107	0	0	203	49
Added Vol:	0	0	308	0	0	0	0	0	0	0	264	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	489	0	407	0	0	0	84	107	0	0	467	49
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	489	0	407	0	0	0	84	107	0	0	467	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	489	0	407	0	0	0	84	107	0	0	467	49
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	489	0	407	0	0	0	84	107	0	0	467	49
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.99	0.99
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.91	0.09
Final Sat.:	1343	0	1599	0	0	0	1805	1900	0	0	1697	178
Capacity Analysis Module:												
Vol/Sat:	0.36	0.00	0.25	0.00	0.00	0.00	0.05	0.06	0.00	0.00	0.28	0.28
Crit Moves:	****						****				****	
Green/Cycle:	0.50	0.00	0.50	0.00	0.00	0.00	0.06	0.44	0.00	0.00	0.38	0.38
Volume/Cap:	0.73	0.00	0.51	0.00	0.00	0.00	0.73	0.13	0.00	0.00	0.73	0.73
Delay/Veh:	23.8	0.0	17.4	0.0	0.0	0.0	66.9	16.6	0.0	0.0	30.6	30.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	23.8	0.0	17.4	0.0	0.0	0.0	66.9	16.6	0.0	0.0	30.6	30.6
LOS by Move:	C	A	B	A	A	A	E	B	A	A	C	C
HCM2k95thQ:	24	0	16	0	0	0	5	4	0	0	24	24

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.731
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 26.2
Optimal Cycle: 46 | Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Volume Module:												
Base Vol:	262	4	87	0	0	0	69	90	0	0	163	44
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	262	4	87	0	0	0	69	90	0	0	163	44
Added Vol:	0	0	461	0	0	0	0	0	0	0	369	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	262	4	548	0	0	0	69	90	0	0	532	44
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	262	4	548	0	0	0	69	90	0	0	532	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	262	4	548	0	0	0	69	90	0	0	532	44
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	262	4	548	0	0	0	69	90	0	0	532	44
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	0.94	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.99	0.99
Lanes:	0.98	0.02	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.92	0.08
Final Sat.:	1764	27	1599	0	0	0	1805	1900	0	0	1737	144
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.34	0.00	0.00	0.00	0.04	0.05	0.00	0.00	0.31	0.31
Crit Moves:			****				****				****	
Green/Cycle:	0.47	0.47	0.47	0.00	0.00	0.00	0.05	0.47	0.00	0.00	0.42	0.42
Volume/Cap:	0.32	0.32	0.73	0.00	0.00	0.00	0.73	0.10	0.00	0.00	0.73	0.73
Delay/Veh:	16.8	16.8	25.2	0.0	0.0	0.0	71.8	14.7	0.0	0.0	27.9	27.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	16.8	16.8	25.2	0.0	0.0	0.0	71.8	14.7	0.0	0.0	27.9	27.9
LOS by Move:	B	B	C	A	A	A	E	B	A	A	C	C
HCM2k95thQ:	10	10	26	0	0	0	5	3	0	0	25	25

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 67.3 Worst Case Level Of Service: F[144.5]

Street Name:	Asti (Frontage) Rd									South Interchange								
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	108	51	1	10	31	91	79	43	81	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	108	51	1	10	31	91	79	43	81	1	47	10
Added Vol:	0	0	0	0	0	264	308	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	108	51	1	10	31	355	387	43	81	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	108	51	1	10	31	355	387	43	81	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	108	51	1	10	31	355	387	43	81	1	47	10
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	386	xxxx	xxxxx	52	xxxx	xxxxx	525	497	209	558	674	52
Potent Cap.:	1184	xxxx	xxxxx	1567	xxxx	xxxxx	467	478	837	443	379	1022
Move Cap.:	1184	xxxx	xxxxx	1567	xxxx	xxxxx	381	429	837	341	340	1022
Volume/Cap:	0.09	xxxx	xxxx	0.01	xxxx	xxxx	1.01	0.10	0.10	0.00	0.14	0.01
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.3	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	422	xxxxx	xxxx	384	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	20.5	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	144	xxxxx	xxxxx	16.0	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	C	*
ApproachDel:	xxxxxx			xxxxxx			144.5			16.0		
ApproachLOS:	*			*			F			C		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 136.3 Worst Case Level Of Service: F[275.7]

Street Name:	Asti (Frontage) Rd									South Interchange								
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	94	31	1	10	28	73	55	43	77	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	31	1	10	28	73	55	43	77	1	47	10
Added Vol:	0	0	0	0	0	369	461	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	94	31	1	10	28	442	516	43	77	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	94	31	1	10	28	442	516	43	77	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	94	31	1	10	28	442	516	43	77	1	47	10
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	470	xxxx	xxxxx	32	xxxx	xxxxx	517	489	249	549	710	32
Potent Cap.:	1102	xxxx	xxxxx	1593	xxxx	xxxxx	472	482	795	450	361	1048
Move Cap.:	1102	xxxx	xxxxx	1593	xxxx	xxxxx	386	436	795	349	327	1048
Volume/Cap:	0.09	xxxx	xxxx	0.01	xxxx	xxxx	1.34	0.10	0.10	0.00	0.14	0.01
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.6	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	415	xxxxx	xxxx	371	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	34.5	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	276	xxxxx	xxxxx	16.5	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	C	*
ApproachDel:	xxxxxx			xxxxxx			275.7			16.5		
ApproachLOS:	*			*			F			C		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec):	100	Critical Vol./Cap.(X):	0.682
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	33.4
Optimal Cycle:	40	Level Of Service:	C

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	108	51	1	10	31	91	79	43	81	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	108	51	1	10	31	91	79	43	81	1	47	10
Added Vol:	0	0	0	0	0	264	308	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	108	51	1	10	31	355	387	43	81	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	108	51	1	10	31	355	387	43	81	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	108	51	1	10	31	355	387	43	81	1	47	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	108	51	1	10	31	355	387	43	81	1	47	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.97	0.97	0.97	0.88	0.88	0.88	0.94	0.94	0.94	0.98	0.98	0.98
Lanes:	0.67	0.32	0.01	0.02	0.08	0.90	0.76	0.08	0.16	0.02	0.81	0.17
Final Sat.:	1239	585	11	42	131	1496	1358	151	284	32	1503	320
Capacity Analysis Module:												
Vol/Sat:	0.09	0.09	0.09	0.24	0.24	0.24	0.28	0.28	0.28	0.03	0.03	0.03
Crit Moves:		****		****			****					****
Green/Cycle:	0.13	0.13	0.13	0.35	0.35	0.35	0.42	0.42	0.42	0.05	0.05	0.05
Volume/Cap:	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Delay/Veh:	49.6	49.6	49.6	31.2	31.2	31.2	26.3	26.3	26.3	67.3	67.3	67.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	49.6	49.6	49.6	31.2	31.2	31.2	26.3	26.3	26.3	67.3	67.3	67.3
LOS by Move:	D	D	D	C	C	C	C	C	C	E	E	E
HCM2k95thQ:	12	12	12	21	21	21	23	23	23	6	6	6

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec):	100	Critical Vol./Cap.(X):	0.790
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	37.7
Optimal Cycle:	56	Level Of Service:	D

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	94	31	1	10	28	73	55	43	77	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	31	1	10	28	73	55	43	77	1	47	10
Added Vol:	0	0	0	0	0	369	461	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	94	31	1	10	28	442	516	43	77	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	94	31	1	10	28	442	516	43	77	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	94	31	1	10	28	442	516	43	77	1	47	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	94	31	1	10	28	442	516	43	77	1	47	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.96	0.96	0.96	0.88	0.88	0.88	0.95	0.95	0.95	0.98	0.98	0.98
Lanes:	0.75	0.24	0.01	0.02	0.06	0.92	0.81	0.07	0.12	0.02	0.81	0.17
Final Sat.:	1365	450	15	35	97	1531	1458	121	218	32	1503	320
Capacity Analysis Module:												
Vol/Sat:	0.07	0.07	0.07	0.29	0.29	0.29	0.35	0.35	0.35	0.03	0.03	0.03
Crit Moves:		****		****			****					****
Green/Cycle:	0.09	0.09	0.09	0.37	0.37	0.37	0.45	0.45	0.45	0.04	0.04	0.04
Volume/Cap:	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Delay/Veh:	67.6	67.6	67.6	35.2	35.2	35.2	28.9	28.9	28.9	90.1	90.1	90.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	67.6	67.6	67.6	35.2	35.2	35.2	28.9	28.9	28.9	90.1	90.1	90.1
LOS by Move:	E	E	E	D	D	D	C	C	C	F	F	F
HCM2k95thQ:	11	11	11	26	26	26	30	30	30	7	7	7

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

PM Short-term + Project A Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	22	4.3	0.242	12.4	LOS B	34	0.65	0.86	23.5
16T	T	92	2.2	0.241	5.3	LOS A	34	0.65	0.57	26.8
16R	R	55	1.8	0.241	6.9	LOS A	34	0.65	0.68	25.8
Approach		**170**	**2.4**	**0.241**	**6.7**	**LOS A**	**34**	**0.65**	**0.64**	**25.9**
WB AV Resort										
1L	L	1	50.0	0.095	15.2	LOS B	13	0.65	0.89	22.8
6T	T	40	2.5	0.097	5.6	LOS A	13	0.65	0.60	26.8
6R	R	20	4.8	0.097	7.0	LOS A	13	0.65	0.67	26.0
Approach		**63**	**4.8**	**0.097**	**6.4**	**LOS A**	**13**	**0.65**	**0.63**	**26.4**
SB Asti										
17L	L	43	2.3	0.512	15.1	LOS B	101	0.70	0.95	22.6
14T	T	355	2.0	0.512	6.4	LOS A	101	0.70	0.74	26.4
14R	R	19	5.0	0.513	8.0	LOS A	101	0.70	0.81	25.5
Approach		**418**	**2.2**	**0.512**	**7.4**	**LOS A**	**101**	**0.70**	**0.77**	**25.9**
EB South Interchange										
5L	L	133	2.3	0.136	10.8	LOS B	25	0.17	0.60	24.7
2T	T	24	4.0	0.137	1.8	LOS A	25	0.17	0.20	30.9
2R	R	45	2.2	0.136	1.8	LOS A	25	0.17	0.20	30.9
Approach		**203**	**2.5**	**0.136**	**7.7**	**LOS A**	**25**	**0.17**	**0.46**	**26.2**
101 NB Offramp										
13L	L	515	1.9	0.397	12.7	LOS B	75	0.44	0.69	23.5
18T	T	365	1.9	0.397	3.0	LOS A	75	0.44	0.32	28.4
18R	R	64	1.6	0.398	4.1	LOS A	75	0.44	0.41	27.5
Approach		**943**	**1.9**	**0.397**	**8.4**	**LOS A**	**75**	**0.44**	**0.53**	**25.2**
All Vehicles		**1797**	**2.2**	**0.513**	**7.8**	**LOS A**	**101**	**0.50**	**0.59**	**25.5**

Symbols which may appear in this table:

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

Weekend Midday Short-term+ Project A Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	21	4.5	0.182	12.2	LOS B	26	0.62	0.84	23.6
16T	T	78	2.6	0.183	5.1	LOS A	26	0.62	0.55	27.0
16R	R	34	2.9	0.183	6.7	LOS A	26	0.62	0.66	26.0
Approach		**134**	**3.0**	**0.182**	**6.7**	**LOS A**	**26**	**0.62**	**0.62**	**26.0**
WB AV Resort										
1L	L	1	50.0	0.091	15.0	LOS B	13	0.62	0.88	22.9
6T	T	39	2.6	0.092	5.4	LOS A	13	0.62	0.58	27.0
6R	R	21	4.5	0.092	6.7	LOS A	13	0.62	0.64	26.2
Approach		**63**	**4.8**	**0.092**	**6.1**	**LOS A**	**13**	**0.62**	**0.61**	**26.5**
SB Asti										
17L	L	40	2.5	0.526	13.4	LOS B	97	0.59	0.85	23.3
14T	T	448	2.0	0.526	4.7	LOS A	97	0.59	0.53	27.2
14R	R	17	5.6	0.529	6.3	LOS A	97	0.59	0.65	26.2
Approach		**506**	**2.2**	**0.526**	**5.4**	**LOS A**	**97**	**0.59**	**0.56**	**26.8**
EB South Interchange										
5L	L	102	2.0	0.113	10.9	LOS B	20	0.16	0.61	24.7
2T	T	23	4.2	0.113	1.8	LOS A	20	0.16	0.19	31.0
2R	R	42	2.4	0.113	1.8	LOS A	20	0.16	0.19	31.0
Approach		**168**	**2.4**	**0.113**	**7.3**	**LOS A**	**20**	**0.16**	**0.44**	**26.5**
101 NB Offramp										
13L	L	276	2.2	0.287	12.6	LOS B	42	0.39	0.67	23.7
18T	T	518	1.9	0.430	2.9	LOS A	84	0.42	0.30	28.5
18R	R	62	1.6	0.431	4.0	LOS A	84	0.42	0.40	27.6
Approach		**856**	**2.0**	**0.430**	**6.1**	**LOS A**	**84**	**0.41**	**0.43**	**26.4**
All Vehicles		**1727**	**2.3**	**0.529**	**6.1**	**LOS A**	**97**	**0.46**	**0.49**	**26.5**

Symbols which may appear in this table:

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt B

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	363.00	323.00	363	323	686	100.0
	Zone 38 Subtotal					363	323	686	100.0
TOTAL						363	323	686	100.0

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt B

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	545.00	439.00	545	439	984	100.0
	Zone 38 Subtotal					545	439	984	100.0
TOTAL						545	439	984	100.0

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.364
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.5
Optimal Cycle:	18	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	76	380	100	44	257	17	18	43	98	147	44	51
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	76	380	100	44	257	17	18	43	98	147	44	51
Added Vol:	0	3	21	0	4	0	0	0	0	22	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	76	383	121	44	261	17	18	43	98	169	44	51
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	76	383	121	44	261	17	18	43	98	169	44	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	76	383	121	44	261	17	18	43	98	169	44	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	76	383	121	44	261	17	18	43	98	169	44	51
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.81	0.81	0.85	0.81	0.81	0.81	0.88	0.88	0.88	0.72	0.72	0.72
Lanes:	0.33	1.67	1.00	0.27	1.62	0.11	0.11	0.27	0.62	0.64	0.17	0.19
Final Sat.:	507	2557	1615	423	2508	163	190	453	1033	875	228	264
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.07	0.10	0.10	0.10	0.09	0.09	0.09	0.19	0.19	0.19
Crit Moves:		****									****	
Green/Cycle:	0.41	0.41	0.41	0.41	0.41	0.41	0.53	0.53	0.53	0.53	0.53	0.53
Volume/Cap:	0.36	0.36	0.18	0.25	0.25	0.25	0.18	0.18	0.18	0.36	0.36	0.36
Delay/Veh:	14.4	14.4	13.2	13.6	13.6	13.6	8.6	8.6	8.6	9.9	9.9	9.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.4	14.4	13.2	13.6	13.6	13.6	8.6	8.6	8.6	9.9	9.9	9.9
LOS by Move:	B	B	B	B	B	B	A	A	A	A	A	A
HCM2kAvgQ:	4	4	2	2	2	2	2	2	2	4	4	4

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.341
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.5
Optimal Cycle:	17	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	88	322	121	46	315	17	18	43	86	126	44	48
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	88	322	121	46	315	17	18	43	86	126	44	48
Added Vol:	0	4	29	0	5	0	0	0	0	31	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	88	326	150	46	320	17	18	43	86	157	44	48
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	88	326	150	46	320	17	18	43	86	157	44	48
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	88	326	150	46	320	17	18	43	86	157	44	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	88	326	150	46	320	17	18	43	86	157	44	48
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.77	0.77	0.85	0.83	0.83	0.83	0.88	0.88	0.88	0.73	0.73	0.73
Lanes:	0.43	1.57	1.00	0.24	1.67	0.09	0.12	0.29	0.59	0.63	0.18	0.19
Final Sat.:	620	2297	1615	377	2624	139	206	491	983	875	245	268
Capacity Analysis Module:												
Vol/Sat:	0.14	0.14	0.09	0.12	0.12	0.12	0.09	0.09	0.09	0.18	0.18	0.18
Crit Moves:		****									****	
Green/Cycle:	0.42	0.42	0.42	0.42	0.42	0.42	0.53	0.53	0.53	0.53	0.53	0.53
Volume/Cap:	0.34	0.34	0.22	0.29	0.29	0.29	0.17	0.17	0.17	0.34	0.34	0.34
Delay/Veh:	14.1	14.1	13.3	13.7	13.7	13.7	8.7	8.7	8.7	9.8	9.8	9.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.1	14.1	13.3	13.7	13.7	13.7	8.7	8.7	8.7	9.8	9.8	9.8
LOS by Move:	B	B	B	B	B	B	A	A	A	A	A	A
HCM2kAvgQ:	3	3	2	3	3	3	2	2	2	3	3	3

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: C[21.2]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	542	113	46	472	0	0	0	0	76	0	34								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	542	113	46	472	0	0	0	0	76	0	34								
Added Vol:	0	24	0	0	25	0	0	0	0	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	566	113	46	497	0	0	0	0	76	0	34								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	566	113	46	497	0	0	0	0	76	0	34								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	566	113	46	497	0	0	0	0	76	0	34								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	679	xxxx	xxxxx	xxxx	xxxx	xxxxx	963	xxxx	340								
Potent Cap.:	xxxx	xxxx	xxxxx	923	xxxx	xxxxx	xxxx	xxxx	xxxxx	257	xxxx	662								
Move Cap.:	xxxx	xxxx	xxxxx	923	xxxx	xxxxx	xxxx	xxxx	xxxxx	247	xxxx	662								
Volume/Cap:	xxxx	xxxx	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx	0.31	xxxx	0.05								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	1.3	xxxx	0.2								
Control Del:	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	25.9	xxxx	10.7								
LOS by Move:	*	*	*	A	*	*	*	*	*	D	*	B								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			21.2										
ApproachLOS:	*			*			*			C										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: B[14.8]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	371	71	28	367	0	0	0	0	68	0	27								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	371	71	28	367	0	0	0	0	68	0	27								
Added Vol:	0	33	0	0	36	0	0	0	0	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	404	71	28	403	0	0	0	0	68	0	27								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	404	71	28	403	0	0	0	0	68	0	27								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	404	71	28	403	0	0	0	0	68	0	27								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	475	xxxx	xxxxx	xxxx	xxxx	xxxxx	697	xxxx	238								
Potent Cap.:	xxxx	xxxx	xxxxx	1098	xxxx	xxxxx	xxxx	xxxx	xxxxx	380	xxxx	770								
Move Cap.:	xxxx	xxxx	xxxxx	1098	xxxx	xxxxx	xxxx	xxxx	xxxxx	372	xxxx	770								
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.18	xxxx	0.04								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.7	xxxx	0.1								
Control Del:	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	16.8	xxxx	9.8								
LOS by Move:	*	*	*	A	*	*	*	*	*	C	*	A								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			14.8										
ApproachLOS:	*			*			*			B										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.396
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	14.8
Optimal Cycle:	23	Level Of Service:	B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	15	465	133	152	446	6	5	14	25	194	25	241
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	465	133	152	446	6	5	14	25	194	25	241
Added Vol:	0	0	3	25	0	0	0	0	0	3	0	24
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	15	465	136	177	446	6	5	14	25	197	25	265
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	15	465	136	177	446	6	5	14	25	197	25	265
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	15	465	136	177	446	6	5	14	25	197	25	265
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	15	465	136	177	446	6	5	14	25	197	25	265
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.96	0.96	0.85
Lanes:	1.00	1.55	0.45	1.00	1.97	0.03	0.11	0.32	0.57	1.77	0.23	1.00
Final Sat.:	1805	2698	789	1805	3555	48	198	555	990	3230	410	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.17	0.17	0.10	0.13	0.13	0.03	0.03	0.03	0.06	0.06	0.16
Crit Moves:		****		****				****				****
Green/Cycle:	0.04	0.44	0.44	0.25	0.64	0.64	0.06	0.06	0.06	0.17	0.17	0.41
Volume/Cap:	0.20	0.40	0.40	0.40	0.20	0.20	0.40	0.40	0.40	0.37	0.37	0.40
Delay/Veh:	33.6	13.6	13.6	22.5	5.2	5.2	33.8	33.8	33.8	26.2	26.2	14.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	33.6	13.6	13.6	22.5	5.2	5.2	33.8	33.8	33.8	26.2	26.2	14.7
LOS by Move:	C	B	B	C	A	A	C	C	C	C	C	B
HCM2kAvgQ:	1	5	5	4	2	2	1	1	1	2	2	4

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.371
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	21.9
Optimal Cycle:	22	Level Of Service:	C

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	53	50	136	45	44	10	8	175	42	135	158	45
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	53	50	136	45	44	10	8	175	42	135	158	45
Added Vol:	0	0	4	36	0	0	0	0	0	4	0	33
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	53	50	140	81	44	10	8	175	42	139	158	78
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	53	50	140	81	44	10	8	175	42	139	158	78
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	53	50	140	81	44	10	8	175	42	139	158	78
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	53	50	140	81	44	10	8	175	42	139	158	78
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.84	0.84	0.95	0.92	0.92	0.97	0.97	0.97	0.98	0.98	0.85
Lanes:	1.00	1.00	1.00	1.00	1.63	0.37	0.03	0.78	0.19	1.00	1.00	1.00
Final Sat.:	1805	1605	1605	1805	2859	650	66	1438	345	1856	1856	1615
Capacity Analysis Module:												
Vol/Sat:	0.03	0.03	0.09	0.04	0.02	0.02	0.12	0.12	0.12	0.07	0.09	0.05
Crit Moves:			****	****			****				****	
Green/Cycle:	0.23	0.24	0.24	0.12	0.12	0.12	0.33	0.33	0.33	0.23	0.23	0.35
Volume/Cap:	0.13	0.13	0.37	0.37	0.13	0.13	0.37	0.37	0.37	0.33	0.37	0.14
Delay/Veh:	21.3	21.2	22.9	29.4	27.5	27.5	18.4	18.4	18.4	22.7	23.0	15.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.3	21.2	22.9	29.4	27.5	27.5	18.4	18.4	18.4	22.7	23.0	15.6
LOS by Move:	C	C	C	C	C	C	B	B	B	C	C	B
HCM2kAvgQ:	1	1	3	2	1	1	4	4	4	3	3	1

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.0 Worst Case Level Of Service: B[13.2]

Street Name:	US 101 South Ramps									Citrus Fair Dr							
Approach:	North Bound					South Bound				East Bound					West Bound		
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module:																				
Base Vol:	0	0	0	8	0	41	0	70	192	46	455	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	8	0	41	0	70	192	46	455	0								
Added Vol:	0	0	0	25	0	0	0	11	17	70	27	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	33	0	41	0	81	209	116	482	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	33	0	41	0	81	209	116	482	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	33	0	41	0	81	209	116	482	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	755	1004	241	xxxx	xxxx	xxxxx	290	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	349	244	766	xxxx	xxxx	xxxxx	1283	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	325	222	766	xxxx	xxxx	xxxxx	1283	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.10	0.00	0.05	xxxx	xxxx	xxxx	0.09	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	17.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx								
LOS by Move:	*	*	*	C	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT			LT - LTR - RT							
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	766	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.0	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*								
ApproachDel:	xxxxxx			13.2			xxxxxx			xxxxxx										
ApproachLOS:	*			B			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.7 Worst Case Level Of Service: B[12.1]

Street Name:	US 101 South Ramps									Citrus Fair Dr							
Approach:	North Bound					South Bound				East Bound					West Bound		
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module:																				
Base Vol:	0	0	0	6	0	33	0	56	175	34	230	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	6	0	33	0	56	175	34	230	0								
Added Vol:	0	0	0	38	0	0	0	16	24	95	37	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	44	0	33	0	72	199	129	267	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	44	0	33	0	72	199	129	267	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	44	0	33	0	72	199	129	267	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	561	796	134	xxxx	xxxx	xxxxx	271	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	462	322	897	xxxx	xxxx	xxxxx	1304	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	427	290	897	xxxx	xxxx	xxxxx	1304	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.10	0.00	0.04	xxxx	xxxx	xxxx	0.10	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	14.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx								
LOS by Move:	*	*	*	B	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT			LT - LTR - RT							
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	897	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*								
ApproachDel:	xxxxxx			12.1			xxxxxx			xxxxxx										
ApproachLOS:	*			B			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 8.4 Worst Case Level Of Service: B[13.1]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R						
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled								
Rights:	Include			Include			Include			Include								
Lanes:	0 1	0 0	1	0 0	0 0	0	1 0	2 0	0	0 0	1 1	0						
Volume Module:																		
Base Vol:	361	0	79	0	0	0	38	31	0	0	99	16						
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Initial Bse:	361	0	79	0	0	0	38	31	0	0	99	16						
Added Vol:	0	0	98	0	0	0	0	36	0	0	97	23						
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0						
Initial Fut:	361	0	177	0	0	0	38	67	0	0	196	39						
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
PHF Volume:	361	0	177	0	0	0	38	67	0	0	196	39						
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0						
FinalVolume:	361	0	177	0	0	0	38	67	0	0	196	39						
Critical Gap Module:																		
Critical Gp:	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Capacity Module:																		
Cnflict Vol:	241	378	34	xxxx	xxxx	xxxxx	235	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Potent Cap.:	732	557	1039	xxxx	xxxx	xxxxx	1344	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Move Cap.:	716	541	1039	xxxx	xxxx	xxxxx	1344	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Volume/Cap:	0.50	0.00	0.17	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx						
Level Of Service Module:																		
2Way95thQ:	xxxx	xxxx	0.6	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Control Del:	xxxxx	xxxx	9.2	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
LOS by Move:	*	*	A	*	*	*	A	*	*	*	*	*						
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT						
Shared Cap.:	716	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx						
SharedQueue:	2.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Shrd ConDel:	15.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Shared LOS:	C	*	*	*	*	*	*	*	*	*	*	*						
ApproachDel:	13.1			xxxxxx			xxxxxx			xxxxxx								
ApproachLOS:	B			*			*			*								

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 5.6 Worst Case Level Of Service: B[10.6]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R						
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled								
Rights:	Include			Include			Include			Include								
Lanes:	0 1	0 0	1	0 0	0 0	0	1 0	2 0	0	0 0	1 1	0						
Volume Module:																		
Base Vol:	187	0	42	0	0	0	33	30	0	0	82	16						
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Initial Bse:	187	0	42	0	0	0	33	30	0	0	82	16						
Added Vol:	0	0	147	0	0	0	0	55	0	0	132	31						
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0						
Initial Fut:	187	0	189	0	0	0	33	85	0	0	214	47						
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
PHF Volume:	187	0	189	0	0	0	33	85	0	0	214	47						
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0						
FinalVolume:	187	0	189	0	0	0	33	85	0	0	214	47						
Critical Gap Module:																		
Critical Gp:	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Capacity Module:																		
Cnflict Vol:	258	412	43	xxxx	xxxx	xxxxx	261	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Potent Cap.:	714	533	1025	xxxx	xxxx	xxxxx	1315	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Move Cap.:	701	520	1025	xxxx	xxxx	xxxxx	1315	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Volume/Cap:	0.27	0.00	0.18	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx						
Level Of Service Module:																		
2Way95thQ:	xxxx	xxxx	0.7	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Control Del:	xxxxx	xxxx	9.3	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
LOS by Move:	*	*	A	*	*	*	A	*	*	*	*	*						
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT						
Shared Cap.:	701	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx						
SharedQueue:	1.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Shrd ConDel:	12.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Shared LOS:	B	*	*	*	*	*	*	*	*	*	*	*						
ApproachDel:	10.6			xxxxxx			xxxxxx			xxxxxx								
ApproachLOS:	B			*			*			*								

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 6.9 Worst Case Level Of Service: B[11.0]

Street Name:	Asti (Frontage) Rd									Citrus Fair Dr		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1 0 0			0 0 1 0 1			1 0 0 0 1			0 0 0 0 0		
Volume Module:												
Base Vol:	69	76	0	0	52	41	88	0	26	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	69	76	0	0	52	41	88	0	26	0	0	0
Added Vol:	120	0	0	0	0	0	0	0	134	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	189	76	0	0	52	41	88	0	160	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	189	76	0	0	52	41	88	0	160	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	189	76	0	0	52	41	88	0	160	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	93	xxxx	xxxxx	xxxx	xxxx	xxxxx	506	xxxx	52	xxxx	xxxx	xxxxx
Potent Cap.:	1514	xxxx	xxxxx	xxxx	xxxx	xxxxx	530	xxxx	1021	xxxx	xxxx	xxxxx
Move Cap.:	1514	xxxx	xxxxx	xxxx	xxxx	xxxxx	479	xxxx	1021	xxxx	xxxx	xxxxx
Volume/Cap:	0.12	xxxx	xxxx	xxxx	xxxx	xxxx	0.18	xxxx	0.16	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.7	xxxx	0.6	xxxx	xxxx	xxxxx
Control Del:	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	14.2	xxxx	9.2	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	B	*	A	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			11.0			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.1 Worst Case Level Of Service: B[10.1]

Street Name:	Asti (Frontage) Rd									Citrus Fair Dr		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1 0 0			0 0 1 0 1			1 0 0 0 1			0 0 0 0 0		
Volume Module:												
Base Vol:	45	50	0	0	43	34	41	0	27	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	45	50	0	0	43	34	41	0	27	0	0	0
Added Vol:	162	0	0	0	0	0	0	0	202	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	207	50	0	0	43	34	41	0	229	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	207	50	0	0	43	34	41	0	229	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	207	50	0	0	43	34	41	0	229	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	77	xxxx	xxxxx	xxxx	xxxx	xxxxx	507	xxxx	43	xxxx	xxxx	xxxxx
Potent Cap.:	1535	xxxx	xxxxx	xxxx	xxxx	xxxxx	529	xxxx	1033	xxxx	xxxx	xxxxx
Move Cap.:	1535	xxxx	xxxxx	xxxx	xxxx	xxxxx	474	xxxx	1033	xxxx	xxxx	xxxxx
Volume/Cap:	0.13	xxxx	xxxx	xxxx	xxxx	xxxx	0.09	xxxx	0.22	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	0.8	xxxx	xxxx	xxxxx
Control Del:	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	13.3	xxxx	9.5	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	B	*	A	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			10.1			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 9.3 Worst Case Level Of Service: C[21.8]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	119	0	0	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	119	0	0	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	229	134	0	0	0	0	0	203	0	120	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	119	229	134	72	0	0	0	0	203	0	120	0	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	119	229	134	72	0	0	0	0	203	0	120	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	119	229	134	72	0	0	0	0	203	0	120	0	0	0	0	0	0	0	0
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	348	xxxx	xxxxx	xxxx	xxxx	xxxxx	574	574	234								
Potent Cap.:	xxxx	xxxx	xxxxx	1222	xxxx	xxxxx	xxxx	xxxx	xxxxx	484	432	811								
Move Cap.:	xxxx	xxxx	xxxxx	1222	xxxx	xxxxx	xxxx	xxxx	xxxxx	440	381	811								
Volume/Cap:	xxxx	xxxx	xxxx	0.11	xxxx	xxxx	xxxx	xxxx	xxxx	0.46	0.00	0.15								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*								
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT							
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	530	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	4.0	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	21.8	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	C	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx				21.8									
ApproachLOS:	*			*			*				C									

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 32.6 Worst Case Level Of Service: F[79.1]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	77	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	343	202	0	0	0	0	0	277	0	162	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	343	202	60	0	0	0	0	277	0	162	0	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	77	343	202	60	0	0	0	0	277	0	162	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	77	343	202	60	0	0	0	0	277	0	162	0	0	0	0	0	0	0	0
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	420	xxxx	xxxxx	xxxx	xxxx	xxxxx	713	713	249								
Potent Cap.:	xxxx	xxxx	xxxxx	1150	xxxx	xxxxx	xxxx	xxxx	xxxxx	402	360	795								
Move Cap.:	xxxx	xxxx	xxxxx	1150	xxxx	xxxxx	xxxx	xxxx	xxxxx	341	289	795								
Volume/Cap:	xxxx	xxxx	xxxx	0.18	xxxx	xxxx	xxxx	xxxx	xxxx	0.81	0.00	0.20								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	8.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*								
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT							
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	432	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	13.3	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	79.1	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	F	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx				79.1									
ApproachLOS:	*			*			*				F									

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.378
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 19.5
Optimal Cycle: 22 | Level Of Service: B

Street Name:	Asti (Frontage) Rd						Project Access					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1	0	1	1	0	1	0	0	0	0	0	0	1	0	0	1
Volume Module:												
Base Vol:	0	119	0	0	72	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	119	0	0	72	0	0	0	0	0	0	0
Added Vol:	0	0	229	134	0	0	0	0	0	203	0	120
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	119	229	134	72	0	0	0	0	203	0	120
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	119	229	134	72	0	0	0	0	203	0	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	119	229	134	72	0	0	0	0	203	0	120
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	119	229	134	72	0	0	0	0	203	0	120
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.85	0.95	1.00	1.00	1.00	1.00	1.00	0.77	1.00	0.85
Lanes:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1900	1615	1805	1900	0	0	0	0	1461	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.06	0.14	0.07	0.04	0.00	0.00	0.00	0.00	0.14	0.00	0.07
Crit Moves:			****	****						****		
Green/Cycle:	0.00	0.38	0.38	0.59	0.57	0.00	0.00	0.00	0.00	0.37	0.00	0.37
Volume/Cap:	0.00	0.17	0.38	0.17	0.07	0.00	0.00	0.00	0.00	0.38	0.00	0.20
Delay/Veh:	0.0	20.9	23.1	9.2	9.5	0.0	0.0	0.0	0.0	23.6	0.0	21.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	20.9	23.1	9.2	9.5	0.0	0.0	0.0	0.0	23.6	0.0	21.7
LOS by Move:	A	C	C	A	A	A	A	A	A	C	A	C
HCM2k95thQ:	0	5	10	4	2	0	0	0	0	9	0	5

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.547
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 21.2
Optimal Cycle: 30 | Level Of Service: C

Street Name:	Asti (Frontage) Rd						Project Access					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1	0	1	1	0	1	0	0	0	0	0	0	1	0	0	1
Volume Module:												
Base Vol:	0	77	0	0	60	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	0	0	60	0	0	0	0	0	0	0
Added Vol:	0	0	343	202	0	0	0	0	0	277	0	162
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	343	202	60	0	0	0	0	277	0	162
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	77	343	202	60	0	0	0	0	277	0	162
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	77	343	202	60	0	0	0	0	277	0	162
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	77	343	202	60	0	0	0	0	277	0	162
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.85	0.95	1.00	1.00	1.00	1.00	1.00	0.77	1.00	0.85
Lanes:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1900	1615	1805	1900	0	0	0	0	1461	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.04	0.21	0.11	0.03	0.00	0.00	0.00	0.00	0.19	0.00	0.10
Crit Moves:			****	****						****		
Green/Cycle:	0.00	0.39	0.39	0.61	0.59	0.00	0.00	0.00	0.00	0.35	0.00	0.35
Volume/Cap:	0.00	0.10	0.55	0.23	0.05	0.00	0.00	0.00	0.00	0.55	0.00	0.29
Delay/Veh:	0.0	19.5	24.8	8.6	8.6	0.0	0.0	0.0	0.0	27.6	0.0	24.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	19.5	24.8	8.6	8.6	0.0	0.0	0.0	0.0	27.6	0.0	24.0
LOS by Move:	A	B	C	A	A	A	A	A	A	C	A	C
HCM2k95thQ:	0	3	16	6	2	0	0	0	0	14	0	7

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: B[13.4]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	106		16		5	86		0		0	0		0		27	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	106		16		5	86		0		0	0		0		27	0		3	
Added Vol:	0	229		0		0	203		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	335		16		5	289		0		0	0		0		27	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	335		16		5	289		0		0	0		0		27	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	335		16		5	289		0		0	0		0		27	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		351	xxxx		xxxxx		xxxx	xxxx		xxxxx		642	642		343	
Potent Cap.:	xxxx	xxxx		xxxxx		1219	xxxx		xxxxx		xxxx	xxxx		xxxxx		442	395		704	
Move Cap.:	xxxx	xxxx		xxxxx		1219	xxxx		xxxxx		xxxx	xxxx		xxxxx		440	393		704	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		0.06	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		8.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	457		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	0.2		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	13.4		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	B		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						13.4			
ApproachLOS:	*					*					*						B			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: B[10.6]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Volume Module:																				
Base Vol:	0	65		1		4	75		0		0	0		0		0	0		2	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	65		1		4	75		0		0	0		0		0	0		2	
Added Vol:	0	343		0		0	277		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	408		1		4	352		0		0	0		0		0	0		2	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	408		1		4	352		0		0	0		0		0	0		2	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	408		1		4	352		0		0	0		0		0	0		2	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		409	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		409	
Potent Cap.:	xxxx	xxxx		xxxxx		1161	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		647	
Move Cap.:	xxxx	xxxx		xxxxx		1161	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		647	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		xxxx	xxxx		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		0.0	
Control Del:	xxxxx	xxxx		xxxxx		8.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		10.6	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		B	
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						10.6			
ApproachLOS:	*					*					*						B			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[12.3]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0
Volume Module:																	
Base Vol:	199	444		0	0	214	50		36	0	91		0	0	0		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	199	444		0	0	214	50		36	0	91		0	0	0		
Added Vol:	9	3		0	0	3	0		0	0	9		0	0	0		
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0		
Initial Fut:	208	447		0	0	217	50		36	0	100		0	0	0		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Volume:	208	447		0	0	217	50		36	0	100		0	0	0		
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0		
FinalVolume:	208	447		0	0	217	50		36	0	100		0	0	0		
Critical Gap Module:																	
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5		6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																	
Cnflict Vol:	267	xxxx	xxxxx	xxxx	xxxx	xxxxx			1080	1080		217	xxxx	xxxx	xxxxx		
Potent Cap.:	1308	xxxx	xxxxx	xxxx	xxxx	xxxxx			244	220		828	xxxx	xxxx	xxxxx		
Move Cap.:	1308	xxxx	xxxxx	xxxx	xxxx	xxxxx			214	185		828	xxxx	xxxx	xxxxx		
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			297	264		xxxxx	218	247	xxxxx		
Volume/Cap:	0.16	xxxx	xxxx	xxxx	xxxx	xxxx			0.12	0.00		0.12	xxxx	xxxx	xxxx		
Level Of Service Module:																	
2Way95thQ:	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	xxxx		0.4	xxxx	xxxx	xxxxx		
Control Del:	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	xxxx		9.9	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*		*	*		*		*	*		A	*	*	*		
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			297	xxxx	xxxxx		xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			0.4	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			18.8	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shared LOS:	*	*		*	*		*		C	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx					12.3				xxxxxx				
ApproachLOS:	*			*					B				*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.6 Worst Case Level Of Service: B[12.4]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0
Volume Module:																	
Base Vol:	146	340		0	0	318	43		43	0	144		0	0	0		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	146	340		0	0	318	43		43	0	144		0	0	0		
Added Vol:	12	4		0	0	4	0		0	0	12		0	0	0		
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0		
Initial Fut:	158	344		0	0	322	43		43	0	156		0	0	0		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Volume:	158	344		0	0	322	43		43	0	156		0	0	0		
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0		
FinalVolume:	158	344		0	0	322	43		43	0	156		0	0	0		
Critical Gap Module:																	
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5		6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																	
Cnflict Vol:	365	xxxx	xxxxx	xxxx	xxxx	xxxxx			982	982		322	xxxx	xxxx	xxxxx		
Potent Cap.:	1205	xxxx	xxxxx	xxxx	xxxx	xxxxx			279	251		724	xxxx	xxxx	xxxxx		
Move Cap.:	1205	xxxx	xxxxx	xxxx	xxxx	xxxxx			251	218		724	xxxx	xxxx	xxxxx		
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			358	317		xxxxx	225	291	xxxxx		
Volume/Cap:	0.13	xxxx	xxxx	xxxx	xxxx	xxxx			0.12	0.00		0.22	xxxx	xxxx	xxxx		
Level Of Service Module:																	
2Way95thQ:	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	xxxx		0.8	xxxx	xxxx	xxxxx		
Control Del:	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	xxxx		11.3	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*		*	*		*		*	*		B	*	*	*		
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			358	xxxx	xxxxx		xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			0.4	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			16.4	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shared LOS:	*	*		*	*		*		C	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx					12.4				xxxxxx				
ApproachLOS:	*			*					B				*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 11.0 Worst Case Level Of Service: C[16.5]

Street Name:	Cloverdale Blvd									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	110		68		286		76		0	0		0		0	67		0		579
Growth Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	110		68		286		76		0	0		0		0	67		0		579
Added Vol:	0	0		0		12		0		0	0		0		0	0		0		12
PasserByVol:	0	0		0		0		0		0	0		0		0	0		0		0
Initial Fut:	0	110		68		298		76		0	0		0		0	67		0		591
User Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	110		68		298		76		0	0		0		0	67		0		591
Reduct Vol:	0	0		0		0		0		0	0		0		0	0		0		0
FinalVolume:	0	110		68		298		76		0	0		0		0	67		0		591
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	xxxx		6.2					
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx		3.3					
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		178	xxxx	xxxxx	xxxx	xxxx	xxxxx		816	xxxx		144					
Potent Cap.:	xxxx	xxxx	xxxxx		1410	xxxx	xxxxx	xxxx	xxxx	xxxxx		349	xxxx		909					
Move Cap.:	xxxx	xxxx	xxxxx		1410	xxxx	xxxxx	xxxx	xxxx	xxxxx		292	xxxx		909					
Volume/Cap:	xxxx	xxxx	xxxx		0.21	xxxx	xxxx	xxxx	xxxx	xxxx		0.23	xxxx		0.65					
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx		0.9	xxxx		5.0					
Control Del:	xxxxx	xxxx	xxxxx		8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		20.9	xxxx		16.0					
LOS by Move:	*	*	*		A	*	*	*	*	*		C	*		C					
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx		xxxxx					
SharedQueue:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx					
Shrd ConDel:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx					
Shared LOS:	*	*	*		*	*	*	*	*	*		*	*		*					
ApproachDel:	xxxxxx				xxxxxx				xxxxxx					16.5						
ApproachLOS:	*				*				*					C						

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 7.9 Worst Case Level Of Service: B[11.3]

Street Name:	Cloverdale Blvd									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	54		56		270		64		0	0		0		0	40		0		332
Growth Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	54		56		270		64		0	0		0		0	40		0		332
Added Vol:	0	0		0		16		0		0	0		0		0	0		0		16
PasserByVol:	0	0		0		0		0		0	0		0		0	0		0		0
Initial Fut:	0	54		56		286		64		0	0		0		0	40		0		348
User Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	54		56		286		64		0	0		0		0	40		0		348
Reduct Vol:	0	0		0		0		0		0	0		0		0	0		0		0
FinalVolume:	0	54		56		286		64		0	0		0		0	40		0		348
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	xxxx		6.2					
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx		3.3					
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		110	xxxx	xxxxx	xxxx	xxxx	xxxxx		718	xxxx		82					
Potent Cap.:	xxxx	xxxx	xxxxx		1493	xxxx	xxxxx	xxxx	xxxx	xxxxx		399	xxxx		983					
Move Cap.:	xxxx	xxxx	xxxxx		1493	xxxx	xxxxx	xxxx	xxxx	xxxxx		340	xxxx		983					
Volume/Cap:	xxxx	xxxx	xxxx		0.19	xxxx	xxxx	xxxx	xxxx	xxxx		0.12	xxxx		0.35					
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx		0.4	xxxx		1.6					
Control Del:	xxxxx	xxxx	xxxxx		8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx		17.0	xxxx		10.7					
LOS by Move:	*	*	*		A	*	*	*	*	*		C	*		B					
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx		xxxxx					
SharedQueue:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx					
Shrd ConDel:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx					
Shared LOS:	*	*	*		*	*	*	*	*	*		*	*		*					
ApproachDel:	xxxxxx				xxxxxx				xxxxxx					11.3						
ApproachLOS:	*				*				*					B						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 4.4 Worst Case Level Of Service: D[29.3]

Street Name:	101 S Ramps								South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	44	0	67	0	147	208	113	579	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	44	0	67	0	147	208	113	579	0								
Added Vol:	0	0	0	0	0	0	0	0	12	192	12	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	44	0	67	0	147	220	305	591	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	44	0	67	0	147	220	305	591	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	44	0	67	0	147	220	305	591	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1458	1568	591	xxxx	xxxx	xxxxx	367	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	144	112	511	xxxx	xxxx	xxxxx	1203	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	116	84	511	xxxx	xxxx	xxxxx	1203	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.38	0.00	0.13	xxxx	xxxx	xxxx	0.25	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.4	xxxx	xxxx	xxxxx	1.0	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	13.1	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*								
Movement:	LT - LTR - RT																			
Shared Cap.:	xxxx	xxxx	xxxxx	116	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	1.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	53.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			29.3			xxxxxx			xxxxxx										
ApproachLOS:	*			D			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 4.7 Worst Case Level Of Service: C[22.9]

Street Name:	101 S Ramps								South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	38	0	56	0	125	232	97	324	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	38	0	56	0	125	232	97	324	0								
Added Vol:	0	0	0	0	0	0	0	0	16	261	16	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	38	0	56	0	125	248	358	340	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	38	0	56	0	125	248	358	340	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	38	0	56	0	125	248	358	340	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1305	1429	340	xxxx	xxxx	xxxxx	373	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	178	136	707	xxxx	xxxx	xxxxx	1197	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	137	95	707	xxxx	xxxx	xxxxx	1197	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.28	0.00	0.08	xxxx	xxxx	xxxx	0.30	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.3	xxxx	xxxx	xxxxx	1.3	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.5	xxxxx	xxxx	xxxxx	9.3	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*								
Movement:	LT - LTR - RT																			
Shared Cap.:	xxxx	xxxx	xxxxx	137	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	1.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	41.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	E	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			22.9			xxxxxx			xxxxxx										
ApproachLOS:	*			C			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 61.1 Worst Case Level Of Service: F[108.6]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	489		0		99		0		0		0	84	107		0		0	203		49
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	489		0		99		0		0		0	84	107		0		0	203		49
Added Vol:	0		0		229		0		0		0	0	0		0		0	203		0
PasserByVol:	0		0		0		0		0		0	0	0		0		0	0		0
Initial Fut:	489		0		328		0		0		0	84	107		0		0	406		49
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	489		0		328		0		0		0	84	107		0		0	406		49
Reduct Vol:	0		0		0		0		0		0	0	0		0		0	0		0
FinalVolume:	489		0		328		0		0		0	84	107		0		0	406		49
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	706	730			107	xxxx	xxxx	xxxxx			455	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	406	352			953	xxxx	xxxx	xxxxx			1116	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	382	325			953	xxxx	xxxx	xxxxx			1116	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	1.28	0.00			0.34	xxxx	xxxx	xxxx			0.08	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			1.5	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			10.8	xxxxx	xxxx	xxxxx			8.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			B	*	*	*			A	*	*	*	*	*				
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	382	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	21.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	174.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	F	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	108.6					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 10.4 Worst Case Level Of Service: C[19.1]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	262		4		87		0		0		0	69	90		0		0	163		44
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	262		4		87		0		0		0	69	90		0		0	163		44
Added Vol:	0		0		343		0		0		0	0	0		0		0	277		0
PasserByVol:	0		0		0		0		0		0	0	0		0		0	0		0
Initial Fut:	262		4		430		0		0		0	69	90		0		0	440		44
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	262		4		430		0		0		0	69	90		0		0	440		44
Reduct Vol:	0		0		0		0		0		0	0	0		0		0	0		0
FinalVolume:	262		4		430		0		0		0	69	90		0		0	440		44
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	690	712			90	xxxx	xxxx	xxxxx			484	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	414	360			973	xxxx	xxxx	xxxxx			1089	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	394	337			973	xxxx	xxxx	xxxxx			1089	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.66	0.01			0.44	xxxx	xxxx	xxxx			0.06	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			2.3	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			11.6	xxxxx	xxxx	xxxxx			8.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			B	*	*	*			A	*	*	*	*	*				
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	393	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	4.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	31.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	D	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	19.1					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	C					*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.695
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 24.8
Optimal Cycle: 42 | Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Volume Module:												
Base Vol:	489	0	99	0	0	0	84	107	0	0	203	49
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	489	0	99	0	0	0	84	107	0	0	203	49
Added Vol:	0	0	229	0	0	0	0	0	0	0	203	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	489	0	328	0	0	0	84	107	0	0	406	49
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	489	0	328	0	0	0	84	107	0	0	406	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	489	0	328	0	0	0	84	107	0	0	406	49
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	489	0	328	0	0	0	84	107	0	0	406	49
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.99	0.99
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.89	0.11
Final Sat.:	1343	0	1599	0	0	0	1805	1900	0	0	1670	202
Capacity Analysis Module:												
Vol/Sat:	0.36	0.00	0.21	0.00	0.00	0.00	0.05	0.06	0.00	0.00	0.24	0.24
Crit Moves:	****						****				****	
Green/Cycle:	0.52	0.00	0.52	0.00	0.00	0.00	0.07	0.42	0.00	0.00	0.35	0.35
Volume/Cap:	0.70	0.00	0.39	0.00	0.00	0.00	0.70	0.14	0.00	0.00	0.70	0.70
Delay/Veh:	20.9	0.0	14.6	0.0	0.0	0.0	61.9	18.1	0.0	0.0	31.2	31.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	20.9	0.0	14.6	0.0	0.0	0.0	61.9	18.1	0.0	0.0	31.2	31.2
LOS by Move:	C	A	B	A	A	A	E	B	A	A	C	C
HCM2k95thQ:	22	0	12	0	0	0	5	4	0	0	21	21

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.601
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 22.9
Optimal Cycle: 33 | Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Volume Module:												
Base Vol:	262	4	87	0	0	0	69	90	0	0	163	44
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	262	4	87	0	0	0	69	90	0	0	163	44
Added Vol:	0	0	343	0	0	0	0	0	0	0	277	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	262	4	430	0	0	0	69	90	0	0	440	44
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	262	4	430	0	0	0	69	90	0	0	440	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	262	4	430	0	0	0	69	90	0	0	440	44
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	262	4	430	0	0	0	69	90	0	0	440	44
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.93	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.99	0.99
Lanes:	0.98	0.02	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.91	0.09
Final Sat.:	1749	27	1599	0	0	0	1805	1900	0	0	1707	171
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.27	0.00	0.00	0.00	0.04	0.05	0.00	0.00	0.26	0.26
Crit Moves:			****				****				****	
Green/Cycle:	0.45	0.45	0.45	0.00	0.00	0.00	0.06	0.49	0.00	0.00	0.43	0.43
Volume/Cap:	0.33	0.33	0.60	0.00	0.00	0.00	0.60	0.10	0.00	0.00	0.60	0.60
Delay/Veh:	18.2	18.2	22.3	0.0	0.0	0.0	54.2	13.6	0.0	0.0	23.2	23.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	18.2	18.2	22.3	0.0	0.0	0.0	54.2	13.6	0.0	0.0	23.2	23.2
LOS by Move:	B	B	C	A	A	A	D	B	A	A	C	C
HCM2k95thQ:	10	10	19	0	0	0	4	3	0	0	20	20

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 28.5 Worst Case Level Of Service: F[60.8]

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	108	51	1	10	31	91	79	43	81	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	108	51	1	10	31	91	79	43	81	1	47	10
Added Vol:	0	0	0	0	0	203	229	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	108	51	1	10	31	294	308	43	81	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	108	51	1	10	31	294	308	43	81	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	108	51	1	10	31	294	308	43	81	1	47	10
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	325	xxxx	xxxxx	52	xxxx	xxxxx	494	466	178	528	613	52
Potent Cap.:	1246	xxxx	xxxxx	1567	xxxx	xxxxx	489	497	870	465	411	1022
Move Cap.:	1246	xxxx	xxxxx	1567	xxxx	xxxxx	405	448	870	362	370	1022
Volume/Cap:	0.09	xxxx	xxxx	0.01	xxxx	xxxx	0.76	0.10	0.09	0.00	0.13	0.01
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.2	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	455	xxxxx	xxxx	416	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.4	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	60.8	xxxxx	xxxxx	15.1	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	C	*
ApproachDel:	xxxxxx			xxxxxx			60.8			15.1		
ApproachLOS:	*			*			F			C		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 53.8 Worst Case Level Of Service: F[109.9]

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	94	31	1	10	28	73	55	43	77	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	31	1	10	28	73	55	43	77	1	47	10
Added Vol:	0	0	0	0	0	277	343	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	94	31	1	10	28	350	398	43	77	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	94	31	1	10	28	350	398	43	77	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	94	31	1	10	28	350	398	43	77	1	47	10
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	378	xxxx	xxxxx	32	xxxx	xxxxx	471	443	203	503	618	32
Potent Cap.:	1192	xxxx	xxxxx	1593	xxxx	xxxxx	506	512	843	483	408	1048
Move Cap.:	1192	xxxx	xxxxx	1593	xxxx	xxxxx	423	467	843	380	372	1048
Volume/Cap:	0.08	xxxx	xxxx	0.01	xxxx	xxxx	0.94	0.09	0.09	0.00	0.13	0.01
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.3	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	460	xxxxx	xxxx	418	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	18.0	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	110	xxxxx	xxxxx	15.0	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			109.9			15.0		
ApproachLOS:	*			*			F			B		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec):	100	Critical Vol./Cap.(X):	0.596
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	31.2
Optimal Cycle:	33	Level Of Service:	C

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	108	51	1	10	31	91	79	43	81	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	108	51	1	10	31	91	79	43	81	1	47	10
Added Vol:	0	0	0	0	0	203	229	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	108	51	1	10	31	294	308	43	81	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	108	51	1	10	31	294	308	43	81	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	108	51	1	10	31	294	308	43	81	1	47	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	108	51	1	10	31	294	308	43	81	1	47	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.97	0.97	0.97	0.88	0.88	0.88	0.94	0.94	0.94	0.98	0.98	0.98
Lanes:	0.67	0.32	0.01	0.03	0.09	0.88	0.71	0.10	0.19	0.02	0.81	0.17
Final Sat.:	1239	585	11	50	155	1468	1276	178	336	32	1503	320
Capacity Analysis Module:												
Vol/Sat:	0.09	0.09	0.09	0.20	0.20	0.20	0.24	0.24	0.24	0.03	0.03	0.03
Crit Moves:		****		****					****			****
Green/Cycle:	0.15	0.15	0.15	0.34	0.34	0.34	0.41	0.41	0.41	0.05	0.05	0.05
Volume/Cap:	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Delay/Veh:	43.5	43.5	43.5	29.3	29.3	29.3	24.7	24.7	24.7	56.0	56.0	56.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	43.5	43.5	43.5	29.3	29.3	29.3	24.7	24.7	24.7	56.0	56.0	56.0
LOS by Move:	D	D	D	C	C	C	C	C	C	E	E	E
HCM2k95thQ:	11	11	11	17	17	17	19	19	19	6	6	6

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec):	100	Critical Vol./Cap.(X):	0.662
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	31.7
Optimal Cycle:	38	Level Of Service:	C

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	94	31	1	10	28	73	55	43	77	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	31	1	10	28	73	55	43	77	1	47	10
Added Vol:	0	0	0	0	0	277	343	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	94	31	1	10	28	350	398	43	77	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	94	31	1	10	28	350	398	43	77	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	94	31	1	10	28	350	398	43	77	1	47	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	94	31	1	10	28	350	398	43	77	1	47	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.96	0.96	0.96	0.88	0.88	0.88	0.94	0.94	0.94	0.98	0.98	0.98
Lanes:	0.75	0.24	0.01	0.03	0.07	0.90	0.77	0.08	0.15	0.02	0.81	0.17
Final Sat.:	1365	450	15	43	120	1503	1378	149	267	32	1503	320
Capacity Analysis Module:												
Vol/Sat:	0.07	0.07	0.07	0.23	0.23	0.23	0.29	0.29	0.29	0.03	0.03	0.03
Crit Moves:		****		****					****			****
Green/Cycle:	0.10	0.10	0.10	0.35	0.35	0.35	0.44	0.44	0.44	0.05	0.05	0.05
Volume/Cap:	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Delay/Veh:	51.5	51.5	51.5	30.2	30.2	30.2	24.4	24.4	24.4	64.1	64.1	64.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.5	51.5	51.5	30.2	30.2	30.2	24.4	24.4	24.4	64.1	64.1	64.1
LOS by Move:	D	D	D	C	C	C	C	C	C	E	E	E
HCM2k95thQ:	10	10	10	20	20	20	23	23	23	6	6	6

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

PM Short-term+ Project B Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	22	4.3	0.230	12.1	LOS B	32	0.63	0.84	23.6
16T	T	92	2.2	0.229	5.0	LOS A	32	0.63	0.53	27.0
16R	R	55	1.8	0.229	6.5	LOS A	32	0.63	0.65	26.0
Approach		**170**	**2.4**	**0.230**	**6.4**	**LOS A**	**32**	**0.63**	**0.61**	**26.1**
WB AV Resort										
1L	L	1	50.0	0.091	14.9	LOS B	13	0.62	0.88	23.0
6T	T	40	2.5	0.093	5.3	LOS A	13	0.62	0.57	27.0
6R	R	20	4.8	0.093	6.7	LOS A	13	0.62	0.65	26.1
Approach		**63**	**4.8**	**0.093**	**6.1**	**LOS A**	**13**	**0.62**	**0.61**	**26.5**
SB Asti										
17L	L	41	2.4	0.441	14.4	LOS B	80	0.69	0.92	22.9
14T	T	291	2.1	0.442	6.0	LOS A	80	0.69	0.67	26.6
14R	R	19	5.0	0.444	7.5	LOS A	80	0.69	0.77	25.6
Approach		**352**	**2.3**	**0.443**	**7.0**	**LOS A**	**80**	**0.69**	**0.71**	**25.9**
EB South Interchange										
5L	L	133	2.3	0.136	10.8	LOS B	25	0.16	0.60	24.7
2T	T	24	4.0	0.136	1.8	LOS A	25	0.16	0.20	30.9
2R	R	45	2.2	0.136	1.8	LOS A	25	0.16	0.20	30.9
Approach		**203**	**2.5**	**0.136**	**7.7**	**LOS A**	**25**	**0.16**	**0.46**	**26.3**
101 NB Offramp										
13L	L	515	1.9	0.363	12.6	LOS B	66	0.43	0.68	23.6
18T	T	282	2.1	0.363	2.9	LOS A	66	0.42	0.31	28.5
18R	R	64	1.6	0.364	4.1	LOS A	66	0.42	0.41	27.6
Approach		**860**	**2.0**	**0.363**	**8.8**	**LOS A**	**66**	**0.43**	**0.54**	**25.0**
All Vehicles		**1648**	**2.2**	**0.444**	**7.9**	**LOS A**	**80**	**0.48**	**0.58**	**25.5**

Symbols which may appear in this table:

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

Weekend Midday Short-term+ Project B Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	21	4.5	0.168	11.6	LOS B	23	0.57	0.81	23.8
16T	T	78	2.6	0.168	4.5	LOS A	23	0.57	0.48	27.4
16R	R	34	2.9	0.168	6.1	LOS A	23	0.57	0.60	26.3
Approach		**134**	**3.0**	**0.168**	**6.1**	**LOS A**	**23**	**0.57**	**0.57**	**26.4**
WB AV Resort										
1L	L	1	50.0	0.083	14.3	LOS B	11	0.58	0.85	23.1
6T	T	40	2.5	0.084	4.7	LOS A	11	0.58	0.51	27.4
6R	R	20	4.8	0.084	6.1	LOS A	11	0.58	0.60	26.4
Approach		**63**	**4.8**	**0.084**	**5.5**	**LOS A**	**11**	**0.58**	**0.55**	**26.8**
SB Asti										
17L	L	40	2.5	0.440	13.0	LOS B	72	0.57	0.81	23.4
14T	T	352	2.0	0.437	4.3	LOS A	72	0.57	0.47	27.4
14R	R	17	5.6	0.439	5.9	LOS A	72	0.57	0.59	26.3
Approach		**410**	**2.2**	**0.437**	**5.2**	**LOS A**	**72**	**0.57**	**0.51**	**26.8**
EB South Interchange										
5L	L	102	2.0	0.113	10.9	LOS B	20	0.15	0.61	24.7
2T	T	23	4.2	0.113	1.8	LOS A	20	0.15	0.19	31.0
2R	R	42	2.4	0.113	1.8	LOS A	20	0.15	0.19	31.0
Approach		**168**	**2.4**	**0.113**	**7.3**	**LOS A**	**20**	**0.15**	**0.44**	**26.5**
101 NB Offramp										
13L	L	276	2.2	0.272	12.5	LOS B	40	0.37	0.67	23.8
18T	T	394	2.0	0.341	2.8	LOS A	61	0.38	0.29	28.8
18R	R	62	1.6	0.341	3.9	LOS A	61	0.38	0.39	27.9
Approach		**732**	**2.0**	**0.341**	**6.5**	**LOS A**	**61**	**0.38**	**0.44**	**26.3**
All Vehicles		**1507**	**2.3**	**0.440**	**6.2**	**LOS A**	**72**	**0.43**	**0.48**	**26.5**

Symbols which may appear in this table:

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt C

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	344.00	305.00	344	305	649	100.0
	Zone 38 Subtotal					344	305	649	100.0
TOTAL						344	305	649	100.0

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt C

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	504.00	402.00	504	402	906	100.0
	Zone 38 Subtotal					504	402	906	100.0
TOTAL						504	402	906	100.0

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.363
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.5
Optimal Cycle:	18	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	76	380	100	44	257	17	18	43	98	147	44	51
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	76	380	100	44	257	17	18	43	98	147	44	51
Added Vol:	0	3	20	0	3	0	0	0	0	21	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	76	383	120	44	260	17	18	43	98	168	44	51
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	76	383	120	44	260	17	18	43	98	168	44	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	76	383	120	44	260	17	18	43	98	168	44	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	76	383	120	44	260	17	18	43	98	168	44	51
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.81	0.81	0.85	0.81	0.81	0.81	0.88	0.88	0.88	0.72	0.72	0.72
Lanes:	0.33	1.67	1.00	0.27	1.62	0.11	0.11	0.27	0.62	0.64	0.17	0.19
Final Sat.:	508	2560	1615	424	2506	164	190	453	1033	874	229	265
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.07	0.10	0.10	0.10	0.09	0.09	0.09	0.19	0.19	0.19
Crit Moves:		****									****	
Green/Cycle:	0.41	0.41	0.41	0.41	0.41	0.41	0.53	0.53	0.53	0.53	0.53	0.53
Volume/Cap:	0.36	0.36	0.18	0.25	0.25	0.25	0.18	0.18	0.18	0.36	0.36	0.36
Delay/Veh:	14.4	14.4	13.2	13.6	13.6	13.6	8.6	8.6	8.6	9.9	9.9	9.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.4	14.4	13.2	13.6	13.6	13.6	8.6	8.6	8.6	9.9	9.9	9.9
LOS by Move:	B	B	B	B	B	B	A	A	A	A	A	A
HCM2kAvgQ:	4	4	2	2	2	2	2	2	2	4	4	4

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.338
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.4
Optimal Cycle:	17	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	88	322	121	46	315	17	18	43	86	126	44	48
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	88	322	121	46	315	17	18	43	86	126	44	48
Added Vol:	0	4	26	0	5	0	0	0	0	28	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	88	326	147	46	320	17	18	43	86	154	44	48
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	88	326	147	46	320	17	18	43	86	154	44	48
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	88	326	147	46	320	17	18	43	86	154	44	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	88	326	147	46	320	17	18	43	86	154	44	48
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.77	0.77	0.85	0.83	0.83	0.83	0.88	0.88	0.88	0.73	0.73	0.73
Lanes:	0.43	1.57	1.00	0.24	1.67	0.09	0.12	0.29	0.59	0.63	0.18	0.19
Final Sat.:	620	2297	1615	377	2624	139	206	491	983	872	249	272
Capacity Analysis Module:												
Vol/Sat:	0.14	0.14	0.09	0.12	0.12	0.12	0.09	0.09	0.09	0.18	0.18	0.18
Crit Moves:		****									****	
Green/Cycle:	0.42	0.42	0.42	0.42	0.42	0.42	0.52	0.52	0.52	0.52	0.52	0.52
Volume/Cap:	0.34	0.34	0.22	0.29	0.29	0.29	0.17	0.17	0.17	0.34	0.34	0.34
Delay/Veh:	13.9	13.9	13.1	13.5	13.5	13.5	8.8	8.8	8.8	10.0	10.0	10.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	13.9	13.9	13.1	13.5	13.5	13.5	8.8	8.8	8.8	10.0	10.0	10.0
LOS by Move:	B	B	B	B	B	B	A	A	A	A	A	A
HCM2kAvgQ:	3	3	2	3	3	3	2	2	2	3	3	3

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: C[21.2]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	542	113	46	472	0	0	0	0	76	0	34								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	542	113	46	472	0	0	0	0	76	0	34								
Added Vol:	0	23	0	0	24	0	0	0	0	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	565	113	46	496	0	0	0	0	76	0	34								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	565	113	46	496	0	0	0	0	76	0	34								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	565	113	46	496	0	0	0	0	76	0	34								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	678	xxxx	xxxxx	xxxx	xxxx	xxxxx	962	xxxx	339								
Potent Cap.:	xxxx	xxxx	xxxxx	923	xxxx	xxxxx	xxxx	xxxx	xxxxx	257	xxxx	663								
Move Cap.:	xxxx	xxxx	xxxxx	923	xxxx	xxxxx	xxxx	xxxx	xxxxx	247	xxxx	663								
Volume/Cap:	xxxx	xxxx	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx	0.31	xxxx	0.05								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	1.3	xxxx	0.2								
Control Del:	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	25.9	xxxx	10.7								
LOS by Move:	*	*	*	A	*	*	*	*	*	D	*	B								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			21.2										
ApproachLOS:	*			*			*			C										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: B[14.8]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	371	71	28	367	0	0	0	0	68	0	27								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	371	71	28	367	0	0	0	0	68	0	27								
Added Vol:	0	30	0	0	33	0	0	0	0	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	401	71	28	400	0	0	0	0	68	0	27								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	401	71	28	400	0	0	0	0	68	0	27								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	401	71	28	400	0	0	0	0	68	0	27								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	472	xxxx	xxxxx	xxxx	xxxx	xxxxx	693	xxxx	236								
Potent Cap.:	xxxx	xxxx	xxxxx	1100	xxxx	xxxxx	xxxx	xxxx	xxxxx	382	xxxx	772								
Move Cap.:	xxxx	xxxx	xxxxx	1100	xxxx	xxxxx	xxxx	xxxx	xxxxx	375	xxxx	772								
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.18	xxxx	0.03								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.7	xxxx	0.1								
Control Del:	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	16.7	xxxx	9.8								
LOS by Move:	*	*	*	A	*	*	*	*	*	C	*	A								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			14.8										
ApproachLOS:	*			*			*			B										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.395
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	14.8
Optimal Cycle:	23	Level Of Service:	B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	15	465	133	152	446	6	5	14	25	194	25	241
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	465	133	152	446	6	5	14	25	194	25	241
Added Vol:	0	0	3	24	0	0	0	0	0	3	0	23
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	15	465	136	176	446	6	5	14	25	197	25	264
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	15	465	136	176	446	6	5	14	25	197	25	264
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	15	465	136	176	446	6	5	14	25	197	25	264
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	15	465	136	176	446	6	5	14	25	197	25	264
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.96	0.96	0.85
Lanes:	1.00	1.55	0.45	1.00	1.97	0.03	0.11	0.32	0.57	1.77	0.23	1.00
Final Sat.:	1805	2698	789	1805	3555	48	198	555	990	3230	410	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.17	0.17	0.10	0.13	0.13	0.03	0.03	0.03	0.06	0.06	0.16
Crit Moves:		****		****				****				****
Green/Cycle:	0.04	0.44	0.44	0.25	0.64	0.64	0.06	0.06	0.06	0.17	0.17	0.41
Volume/Cap:	0.20	0.39	0.39	0.39	0.20	0.20	0.39	0.39	0.39	0.37	0.37	0.39
Delay/Veh:	33.6	13.6	13.6	22.6	5.2	5.2	33.8	33.8	33.8	26.2	26.2	14.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	33.6	13.6	13.6	22.6	5.2	5.2	33.8	33.8	33.8	26.2	26.2	14.8
LOS by Move:	C	B	B	C	A	A	C	C	C	C	C	B
HCM2kAvgQ:	1	5	5	3	2	2	1	1	1	2	2	4

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.369
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	21.8
Optimal Cycle:	22	Level Of Service:	C

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	53	50	136	45	44	10	8	175	42	135	158	45
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	53	50	136	45	44	10	8	175	42	135	158	45
Added Vol:	0	0	4	33	0	0	0	0	0	4	0	30
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	53	50	140	78	44	10	8	175	42	139	158	75
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	53	50	140	78	44	10	8	175	42	139	158	75
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	53	50	140	78	44	10	8	175	42	139	158	75
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	53	50	140	78	44	10	8	175	42	139	158	75
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.84	0.84	0.95	0.92	0.92	0.97	0.97	0.97	0.98	0.98	0.85
Lanes:	1.00	1.00	1.00	1.00	1.63	0.37	0.03	0.78	0.19	1.00	1.00	1.00
Final Sat.:	1805	1605	1605	1805	2859	650	66	1438	345	1856	1856	1615
Capacity Analysis Module:												
Vol/Sat:	0.03	0.03	0.09	0.04	0.02	0.02	0.12	0.12	0.12	0.07	0.09	0.05
Crit Moves:			****	****			****				****	
Green/Cycle:	0.23	0.24	0.24	0.12	0.12	0.12	0.33	0.33	0.33	0.23	0.23	0.35
Volume/Cap:	0.13	0.13	0.37	0.37	0.13	0.13	0.37	0.37	0.37	0.32	0.37	0.13
Delay/Veh:	21.4	21.1	22.8	29.6	27.6	27.6	18.3	18.3	18.3	22.6	22.9	15.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.4	21.1	22.8	29.6	27.6	27.6	18.3	18.3	18.3	22.6	22.9	15.7
LOS by Move:	C	C	C	C	C	C	B	B	B	C	C	B
HCM2kAvgQ:	1	1	3	2	1	1	4	4	4	3	3	1

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.9 Worst Case Level Of Service: B[13.1]

Street Name:	US 101 South Ramps									Citrus Fair Dr		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	0	0	1 0	0	1	0 0	1	0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	8	0	41	0	70	192	46	455	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	8	0	41	0	70	192	46	455	0
Added Vol:	0	0	0	24	0	0	0	10	16	66	26	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	32	0	41	0	80	208	112	481	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	32	0	41	0	80	208	112	481	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	32	0	41	0	80	208	112	481	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	745	993	241	xxxx	xxxx	xxxxx	288	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	354	247	767	xxxx	xxxx	xxxxx	1286	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	330	226	767	xxxx	xxxx	xxxxx	1286	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.10	0.00	0.05	xxxx	xxxx	xxxx	0.09	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	17.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	*	*	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	767	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.0	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*
ApproachDel:	xxxxxx			13.1			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.5 Worst Case Level Of Service: B[11.8]

Street Name:	US 101 South Ramps									Citrus Fair Dr		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	0	0	1 0	0	1	0 0	1	0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	6	0	33	0	56	175	34	230	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	6	0	33	0	56	175	34	230	0
Added Vol:	0	0	0	35	0	0	0	15	22	87	34	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	41	0	33	0	71	197	121	264	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	41	0	33	0	71	197	121	264	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	41	0	33	0	71	197	121	264	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	542	774	132	xxxx	xxxx	xxxxx	268	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	476	332	899	xxxx	xxxx	xxxxx	1307	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	442	301	899	xxxx	xxxx	xxxxx	1307	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.09	0.00	0.04	xxxx	xxxx	xxxx	0.09	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	14.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	*	*	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	899	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*
ApproachDel:	xxxxxx			11.8			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 8.4 Worst Case Level Of Service: B[13.0]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled								
Rights:	Include			Include			Include			Include								
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module:																				
Base Vol:	361		0	79		0	0		0		38	31		0		0	99		16	
Growth Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	
Initial Bse:	361		0	79		0	0		0		38	31		0		0	99		16	
Added Vol:	0		0	93		0	0		0		0	34		0		0	91		21	
PasserByVol:	0		0	0		0	0		0		0	0		0		0	0		0	
Initial Fut:	361		0	172		0	0		0		38	65		0		0	190		37	
User Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	
PHF Volume:	361		0	172		0	0		0		38	65		0		0	190		37	
Reduct Vol:	0		0	0		0	0		0		0	0		0		0	0		0	
FinalVolume:	361		0	172		0	0		0		38	65		0		0	190		37	
Critical Gap Module:																				
Critical Gp:	6.8	6.5		6.9	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
FollowUpTim:	3.5	4.0		3.3	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Capacity Module:																				
Cnflict Vol:	236	368		33	xxxx	xxxx	xxxxx		227	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Potent Cap.:	737	564		1040	xxxx	xxxx	xxxxx		1353	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Move Cap.:	721	548		1040	xxxx	xxxx	xxxxx		1353	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Volume/Cap:	0.50	0.00		0.17	xxxx	xxxx	xxxx		0.03	xxxx	xxxx	xxxx	xxxx	xxxx						
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		0.6	xxxx	xxxx	xxxxx		0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Control Del:	xxxxx	xxxx		9.1	xxxxx	xxxx	xxxxx		7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
LOS by Move:	*	*		A	*	*	*		A	*	*	*	*	*						
Movement:	LT - LTR - RT																			
Shared Cap.:	721	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx						
SharedQueue:	2.8	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Shrd ConDel:	14.9	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Shared LOS:	B	*	*		*	*	*		*	*	*	*	*	*						
ApproachDel:	13.0				xxxxxx				xxxxxx				xxxxxx							
ApproachLOS:	B				*				*				*							

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 5.7 Worst Case Level Of Service: B[10.6]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled								
Rights:	Include			Include			Include			Include								
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module:																				
Base Vol:	187		0	42		0	0		0		33	30		0		0	82		16	
Growth Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	
Initial Bse:	187		0	42		0	0		0		33	30		0		0	82		16	
Added Vol:	0		0	136		0	0		0		0	50		0		0	121		28	
PasserByVol:	0		0	0		0	0		0		0	0		0		0	0		0	
Initial Fut:	187		0	178		0	0		0		33	80		0		0	203		44	
User Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	
PHF Volume:	187		0	178		0	0		0		33	80		0		0	203		44	
Reduct Vol:	0		0	0		0	0		0		0	0		0		0	0		0	
FinalVolume:	187		0	178		0	0		0		33	80		0		0	203		44	
Critical Gap Module:																				
Critical Gp:	6.8	6.5		6.9	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
FollowUpTim:	3.5	4.0		3.3	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Capacity Module:																				
Cnflict Vol:	248	393		40	xxxx	xxxx	xxxxx		247	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Potent Cap.:	725	546		1029	xxxx	xxxx	xxxxx		1331	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Move Cap.:	711	533		1029	xxxx	xxxx	xxxxx		1331	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Volume/Cap:	0.26	0.00		0.17	xxxx	xxxx	xxxx		0.02	xxxx	xxxx	xxxx	xxxx	xxxx						
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		0.6	xxxx	xxxx	xxxxx		0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Control Del:	xxxxx	xxxx		9.2	xxxxx	xxxx	xxxxx		7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
LOS by Move:	*	*		A	*	*	*		A	*	*	*	*	*						
Movement:	LT - LTR - RT																			
Shared Cap.:	711	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx						
SharedQueue:	1.1	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Shrd ConDel:	11.9	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Shared LOS:	B	*	*		*	*	*		*	*	*	*	*	*						
ApproachDel:	10.6				xxxxxx				xxxxxx				xxxxxx							
ApproachLOS:	B				*				*				*							

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 6.8 Worst Case Level Of Service: B[10.9]

Street Name:	Asti (Frontage) Rd											
Approach:	North Bound				South Bound				East Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-
Control:	Uncontrolled					Uncontrolled					Stop Sign	
Rights:	Include					Include					Include	
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0
Volume Module:												
Base Vol:	69	76		0	0	52		41	88	0		26
Growth Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
Initial Bse:	69	76		0	0	52		41	88	0		26
Added Vol:	113	0		0	0	0		0	0	0		127
PasserByVol:	0	0		0	0	0		0	0	0		0
Initial Fut:	182	76		0	0	52		41	88	0		153
User Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Volume:	182	76		0	0	52		41	88	0		153
Reduct Vol:	0	0		0	0	0		0	0	0		0
FinalVolume:	182	76		0	0	52		41	88	0		153
Critical Gap Module:												
Critical Gp:	4.1	xxxx		xxxxx	xxxxx	xxxx		xxxxx	6.4	xxxx		6.2
FollowUpTim:	2.2	xxxx		xxxxx	xxxxx	xxxx		xxxxx	3.5	xxxx		3.3
Capacity Module:												
Cnflict Vol:	93	xxxx		xxxxx	xxxx	xxxx		xxxxx	492	xxxx		52
Potent Cap.:	1514	xxxx		xxxxx	xxxx	xxxx		xxxxx	540	xxxx		1021
Move Cap.:	1514	xxxx		xxxxx	xxxx	xxxx		xxxxx	490	xxxx		1021
Volume/Cap:	0.12	xxxx		xxxx	xxxx	xxxx		xxxx	0.18	xxxx		0.15
Level Of Service Module:												
2Way95thQ:	0.4	xxxx		xxxxx	xxxx	xxxx		xxxxx	0.6	xxxx		0.5
Control Del:	7.7	xxxx		xxxxx	xxxxx	xxxx		xxxxx	13.9	xxxx		9.1
LOS by Move:	A	*		*	*	*		*	B	*		A
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT	
Shared Cap.:	xxxx	xxxx		xxxxx	xxxx	xxxx		xxxxx	xxxx	xxxx		xxxxx
SharedQueue:	xxxxx	xxxx		xxxxx	xxxxx	xxxx		xxxxx	xxxxx	xxxx		xxxxx
Shrd ConDel:	xxxxx	xxxx		xxxxx	xxxxx	xxxx		xxxxx	xxxxx	xxxx		xxxxx
Shared LOS:	*	*		*	*	*		*	*	*		*
ApproachDel:	xxxxxx				xxxxxx				10.9			
ApproachLOS:	*				*				B			

Street Name:	Citrus Fair Dr											
Approach:	West Bound											
Movement:	-	T	-	R	L	-	T	-	R			
Control:					Stop Sign							
Rights:					Include							
Lanes:	0	0	0	0	1	0	0	0	0	0		
Volume Module:												
Base Vol:		0		0	0							
Growth Adj:		1.00		1.00	1.00							
Initial Bse:		0		0	0							
Added Vol:		0		0	0							
PasserByVol:		0		0	0							
Initial Fut:		0		0	0							
User Adj:		1.00		1.00	1.00							
PHF Adj:		1.00		1.00	1.00							
PHF Volume:		0		0	0							
Reduct Vol:		0		0	0							
FinalVolume:		0		0	0							
Critical Gap Module:												
Critical Gp:		xxxxx		xxxx	xxxxx							
FollowUpTim:		xxxxx		xxxx	xxxxx							
Capacity Module:												
Cnflict Vol:		xxxxx		xxxx	xxxxx							
Potent Cap.:		xxxxx		xxxx	xxxxx							
Move Cap.:		xxxxx		xxxx	xxxxx							
Volume/Cap:		xxxx		xxxx	xxxx							
Level Of Service Module:												
2Way95thQ:		xxxxx		xxxx	xxxxx							
Control Del:		xxxxx		xxxx	xxxxx							
LOS by Move:		*		*	*							
Movement:					LT - LTR - RT							
Shared Cap.:		xxxxx		xxxx	xxxxx							
SharedQueue:		xxxxx		xxxx	xxxxx							
Shrd ConDel:		xxxxx		xxxx	xxxxx							
Shared LOS:		*		*	*							
ApproachDel:					xxxxxx							
ApproachLOS:					*							

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.0 Worst Case Level Of Service: A[10.0]

Street Name:	Asti (Frontage) Rd											
Approach:	North Bound				South Bound				East Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-
Control:	Uncontrolled					Uncontrolled					Stop Sign	
Rights:	Include					Include					Include	
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0
Volume Module:												
Base Vol:	45	50		0	0	43		34	41	0		27
Growth Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
Initial Bse:	45	50		0	0	43		34	41	0		27
Added Vol:	149	0		0	0	0		0	0	0		186
PasserByVol:	0	0		0	0	0		0	0	0		0
Initial Fut:	194	50		0	0	43		34	41	0		213
User Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Volume:	194	50		0	0	43		34	41	0		213
Reduct Vol:	0	0		0	0	0		0	0	0		0
FinalVolume:	194	50		0	0	43		34	41	0		213
Critical Gap Module:												
Critical Gp:	4.1	xxxx		xxxxx	xxxxx	xxxx		xxxxx	6.4	xxxx		6.2
FollowUpTim:	2.2	xxxx		xxxxx	xxxxx	xxxx		xxxxx	3.5	xxxx		3.3
Capacity Module:												
Cnflict Vol:	77	xxxx		xxxxx	xxxx	xxxx		xxxxx	481	xxxx		43
Potent Cap.:	1535	xxxx		xxxxx	xxxx	xxxx		xxxxx	548	xxxx		1033
Move Cap.:	1535	xxxx		xxxxx	xxxx	xxxx		xxxxx	495	xxxx		1033
Volume/Cap:	0.13	xxxx		xxxx	xxxx	xxxx		xxxx	0.08	xxxx		0.21
Level Of Service Module:												
2Way95thQ:	0.4	xxxx		xxxxx	xxxx	xxxx		xxxxx	0.3	xxxx		0.8
Control Del:	7.7	xxxx		xxxxx	xxxxx	xxxx		xxxxx	12.9	xxxx		9.4
LOS by Move:	A	*		*	*	*		*	B	*		A
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT	
Shared Cap.:	xxxx	xxxx		xxxxx	xxxx	xxxx		xxxxx	xxxx	xxxx		xxxxx
SharedQueue:	xxxxx	xxxx		xxxxx	xxxxx	xxxx		xxxxx	xxxxx	xxxx		xxxxx
Shrd ConDel:	xxxxx	xxxx		xxxxx	xxxxx	xxxx		xxxxx	xxxxx	xxxx		xxxxx
Shared LOS:	*	*		*	*	*		*	*	*		*
ApproachDel:	xxxxxx				xxxxxx				10.0			
ApproachLOS:	*				*				A			

Street Name:	Citrus Fair Dr											
Approach:	West Bound											
Movement:	-	T	-	R	L	-	T	-	R			
Control:					Stop Sign							
Rights:					Include							
Lanes:	0	0	0	0	1	0	0	0	0	0		
Volume Module:												
Base Vol:		0		0	0							
Growth Adj:		1.00		1.00	1.00							
Initial Bse:		0		0	0							
Added Vol:		0		0	0							
PasserByVol:		0		0	0							
Initial Fut:		0		0	0							
User Adj:		1.00		1.00	1.00							
PHF Adj:		1.00		1.00	1.00							
PHF Volume:		0		0	0							
Reduct Vol:		0		0	0							
FinalVolume:		0		0	0							
Critical Gap Module:												
Critical Gp:		xxxxx		xxxx	xxxxx							
FollowUpTim:		xxxxx		xxxx	xxxxx							
Capacity Module:												
Cnflict Vol:		xxxxx		xxxx	xxxxx							
Potent Cap.:		xxxxx		xxxx	xxxxx							
Move Cap.:		xxxxx		xxxx	xxxxx							
Volume/Cap:		xxxx		xxxx	xxxx							
Level Of Service Module:												
2Way95thQ:		xxxxx		xxxx	xxxxx							
Control Del:		xxxxx		xxxx	xxxxx							
LOS by Move:		*		*	*							
Movement:					LT - LTR - RT							
Shared Cap.:		xxxxx		xxxx	xxxxx							
SharedQueue:		xxxxx		xxxx	xxxxx							
Shrd ConDel:		xxxxx		xxxx	xxxxx							
Shared LOS:		*		*	*							
ApproachDel:					xxxxxx							
ApproachLOS:					*							

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 8.4 Worst Case Level Of Service: C[19.7]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	119	0	0	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	119	0	0	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	217	127	0	0	0	0	0	192	0	113	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	119	217	127	72	0	0	0	0	192	0	113	0	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	119	217	127	72	0	0	0	0	192	0	113	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	119	217	127	72	0	0	0	0	192	0	113	0	0	0	0	0	0	0	0
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	336	xxxx	xxxxx	xxxx	xxxx	xxxxx	554	554	228								
Potent Cap.:	xxxx	xxxx	xxxxx	1235	xxxx	xxxxx	xxxx	xxxx	xxxxx	497	444	817								
Move Cap.:	xxxx	xxxx	xxxxx	1235	xxxx	xxxxx	xxxx	xxxx	xxxxx	455	394	817								
Volume/Cap:	xxxx	xxxx	xxxx	0.10	xxxx	xxxx	xxxx	xxxx	xxxx	0.42	0.00	0.14								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	544	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	3.4	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	19.7	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	C	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx				19.7									
ApproachLOS:	*			*			*				C									

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 19.3 Worst Case Level Of Service: E[46.2]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	77	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	318	186	0	0	0	0	0	253	0	149	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	318	186	60	0	0	0	0	253	0	149	0	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	77	318	186	60	0	0	0	0	253	0	149	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	77	318	186	60	0	0	0	0	253	0	149	0	0	0	0	0	0	0	0
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	395	xxxx	xxxxx	xxxx	xxxx	xxxxx	668	668	236								
Potent Cap.:	xxxx	xxxx	xxxxx	1175	xxxx	xxxxx	xxxx	xxxx	xxxxx	426	382	808								
Move Cap.:	xxxx	xxxx	xxxxx	1175	xxxx	xxxxx	xxxx	xxxx	xxxxx	369	314	808								
Volume/Cap:	xxxx	xxxx	xxxx	0.16	xxxx	xxxx	xxxx	xxxx	xxxx	0.69	0.00	0.18								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	8.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	462	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	9.1	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	46.2	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	E	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx				46.2									
ApproachLOS:	*			*			*				E									

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: B[13.2]

Street Name:	Asti (Frontage) Rd												Santana Dr											
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	106		16		5	86		0		0	0		0		27	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	106		16		5	86		0		0	0		0		27	0		3	
Added Vol:	0	217		0		0	192		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	323		16		5	278		0		0	0		0		27	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	323		16		5	278		0		0	0		0		27	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	323		16		5	278		0		0	0		0		27	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		339	xxxx		xxxxx		xxxx	xxxx		xxxxx		619	619		331	
Potent Cap.:	xxxx	xxxx		xxxxx		1231	xxxx		xxxxx		xxxx	xxxx		xxxxx		455	407		715	
Move Cap.:	xxxx	xxxx		xxxxx		1231	xxxx		xxxxx		xxxx	xxxx		xxxxx		454	405		715	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		0.06	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		7.9	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	471		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	0.2		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		7.9	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	13.2		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	B		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					13.2				
ApproachLOS:	*					*					*					B				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: B[10.4]

Street Name:	Asti (Frontage) Rd												Santana Dr											
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Volume Module:																				
Base Vol:	0	65		1		4	75		0		0	0		0		0	0		2	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	65		1		4	75		0		0	0		0		0	0		2	
Added Vol:	0	318		0		0	253		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	383		1		4	328		0		0	0		0		0	0		2	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	383		1		4	328		0		0	0		0		0	0		2	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	383		1		4	328		0		0	0		0		0	0		2	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		384	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		384	
Potent Cap.:	xxxx	xxxx		xxxxx		1186	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		668	
Move Cap.:	xxxx	xxxx		xxxxx		1186	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		668	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		xxxx	xxxx		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		0.0	
Control Del:	xxxxx	xxxx		xxxxx		8.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		10.4	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		B	
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					10.4				
ApproachLOS:	*					*					*					B				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[12.3]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0
Volume Module:																	
Base Vol:	199	444		0	0	214	50		36	0	91		0	0	0		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	199	444		0	0	214	50		36	0	91		0	0	0		
Added Vol:	8	3		0	0	3	0		0	0	8		0	0	0		
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0		
Initial Fut:	207	447		0	0	217	50		36	0	99		0	0	0		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Volume:	207	447		0	0	217	50		36	0	99		0	0	0		
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0		
FinalVolume:	207	447		0	0	217	50		36	0	99		0	0	0		
Critical Gap Module:																	
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5		6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																	
Cnflict Vol:	267	xxxx	xxxxx	xxxx	xxxx	xxxxx			1078	1078		217	xxxx	xxxx	xxxxx		
Potent Cap.:	1308	xxxx	xxxxx	xxxx	xxxx	xxxxx			244	220		828	xxxx	xxxx	xxxxx		
Move Cap.:	1308	xxxx	xxxxx	xxxx	xxxx	xxxxx			215	186		828	xxxx	xxxx	xxxxx		
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			298	265		xxxxx	219	247	xxxxx		
Volume/Cap:	0.16	xxxx	xxxx	xxxx	xxxx	xxxx			0.12	0.00		0.12	xxxx	xxxx	xxxx		
Level Of Service Module:																	
2Way95thQ:	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	xxxx		0.4	xxxx	xxxx	xxxxx		
Control Del:	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	xxxx		9.9	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*			*	*		A	*	*	*		
Movement:	LT -	LTR -	RT	LT -	LTR -	RT			LT -	LTR -	RT		LT -	LTR -	RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			298	xxxx	xxxxx		xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			0.4	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			18.7	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*			C	*	*		*	*	*		
ApproachDel:	xxxxxx			xxxxxx					12.3				xxxxxx				
ApproachLOS:	*			*					B				*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.6 Worst Case Level Of Service: B[12.4]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0
Volume Module:																	
Base Vol:	146	340		0	0	318	43		43	0	144		0	0	0		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	146	340		0	0	318	43		43	0	144		0	0	0		
Added Vol:	11	4		0	0	4	0		0	0	11		0	0	0		
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0		
Initial Fut:	157	344		0	0	322	43		43	0	155		0	0	0		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Volume:	157	344		0	0	322	43		43	0	155		0	0	0		
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0		
FinalVolume:	157	344		0	0	322	43		43	0	155		0	0	0		
Critical Gap Module:																	
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5		6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																	
Cnflict Vol:	365	xxxx	xxxxx	xxxx	xxxx	xxxxx			980	980		322	xxxx	xxxx	xxxxx		
Potent Cap.:	1205	xxxx	xxxxx	xxxx	xxxx	xxxxx			279	252		724	xxxx	xxxx	xxxxx		
Move Cap.:	1205	xxxx	xxxxx	xxxx	xxxx	xxxxx			251	219		724	xxxx	xxxx	xxxxx		
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			359	318		xxxxx	226	291	xxxxx		
Volume/Cap:	0.13	xxxx	xxxx	xxxx	xxxx	xxxx			0.12	0.00		0.21	xxxx	xxxx	xxxx		
Level Of Service Module:																	
2Way95thQ:	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	xxxx		0.8	xxxx	xxxx	xxxxx		
Control Del:	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	xxxx		11.3	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*			*	*		B	*	*	*		
Movement:	LT -	LTR -	RT	LT -	LTR -	RT			LT -	LTR -	RT		LT -	LTR -	RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			359	xxxx	xxxxx		xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			0.4	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			16.4	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*			C	*	*		*	*	*		
ApproachDel:	xxxxxx			xxxxxx					12.4				xxxxxx				
ApproachLOS:	*			*					B				*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 11.0 Worst Case Level Of Service: C[16.5]

Street Name:	Cloverdale Blvd									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	110		68		286		76		0	0		0		0	67		0		579
Growth Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	110		68		286		76		0	0		0		0	67		0		579
Added Vol:	0	0		0		11		0		0	0		0		0	0		0		11
PasserByVol:	0	0		0		0		0		0	0		0		0	0		0		0
Initial Fut:	0	110		68		297		76		0	0		0		0	67		0		590
User Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	110		68		297		76		0	0		0		0	67		0		590
Reduct Vol:	0	0		0		0		0		0	0		0		0	0		0		0
FinalVolume:	0	110		68		297		76		0	0		0		0	67		0		590
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	xxxx		6.2					
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx		3.3					
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		178	xxxx	xxxxx	xxxx	xxxx	xxxxx		814	xxxx		144					
Potent Cap.:	xxxx	xxxx	xxxxx		1410	xxxx	xxxxx	xxxx	xxxx	xxxxx		350	xxxx		909					
Move Cap.:	xxxx	xxxx	xxxxx		1410	xxxx	xxxxx	xxxx	xxxx	xxxxx		293	xxxx		909					
Volume/Cap:	xxxx	xxxx	xxxx		0.21	xxxx	xxxx	xxxx	xxxx	xxxx		0.23	xxxx		0.65					
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx		0.9	xxxx		4.9					
Control Del:	xxxxx	xxxx	xxxxx		8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		20.9	xxxx		16.0					
LOS by Move:	*	*	*		A	*	*	*	*	*		C	*		C					
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx		xxxxx					
SharedQueue:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx					
Shrd ConDel:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx					
Shared LOS:	*	*	*		*	*	*	*	*	*		*	*		*					
ApproachDel:	xxxxxx				xxxxxx				xxxxxx					16.5						
ApproachLOS:	*				*				*					C						

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 7.8 Worst Case Level Of Service: B[11.3]

Street Name:	Cloverdale Blvd									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	54		56		270		64		0	0		0		0	40		0		332
Growth Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	54		56		270		64		0	0		0		0	40		0		332
Added Vol:	0	0		0		14		0		0	0		0		0	0		0		14
PasserByVol:	0	0		0		0		0		0	0		0		0	0		0		0
Initial Fut:	0	54		56		284		64		0	0		0		0	40		0		346
User Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	54		56		284		64		0	0		0		0	40		0		346
Reduct Vol:	0	0		0		0		0		0	0		0		0	0		0		0
FinalVolume:	0	54		56		284		64		0	0		0		0	40		0		346
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	xxxx		6.2					
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx		3.3					
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		110	xxxx	xxxxx	xxxx	xxxx	xxxxx		714	xxxx		82					
Potent Cap.:	xxxx	xxxx	xxxxx		1493	xxxx	xxxxx	xxxx	xxxx	xxxxx		401	xxxx		983					
Move Cap.:	xxxx	xxxx	xxxxx		1493	xxxx	xxxxx	xxxx	xxxx	xxxxx		342	xxxx		983					
Volume/Cap:	xxxx	xxxx	xxxx		0.19	xxxx	xxxx	xxxx	xxxx	xxxx		0.12	xxxx		0.35					
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx		0.4	xxxx		1.6					
Control Del:	xxxxx	xxxx	xxxxx		8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx		16.9	xxxx		10.6					
LOS by Move:	*	*	*		A	*	*	*	*	*		C	*		B					
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx		xxxxx					
SharedQueue:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx					
Shrd ConDel:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx					
Shared LOS:	*	*	*		*	*	*	*	*	*		*	*		*					
ApproachDel:	xxxxxx				xxxxxx				xxxxxx					11.3						
ApproachLOS:	*				*				*					B						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: D[28.1]

Street Name:	101 S Ramps								South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled			
Rights:	Include				Include				Include				Include			
Lanes:	0	0	0	0 0	0	1	0	0 1	0	0	0	1 0	1	0	1	0 0
Volume Module:																
Base Vol:	0	0	0	44	0	67	0	147	208	113	579	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	0	0	0	44	0	67	0	147	208	113	579	0				
Added Vol:	0	0	0	0	0	0	0	0	11	181	11	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	0	0	0	44	0	67	0	147	219	294	590	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	0	0	0	44	0	67	0	147	219	294	590	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	0	0	0	44	0	67	0	147	219	294	590	0				
Critical Gap Module:																
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx				
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	xxxx	xxxx	xxxxx	1435	1544	590	xxxx	xxxx	xxxxx	366	xxxx	xxxxx				
Potent Cap.:	xxxx	xxxx	xxxxx	149	116	511	xxxx	xxxx	xxxxx	1204	xxxx	xxxxx				
Move Cap.:	xxxx	xxxx	xxxxx	121	88	511	xxxx	xxxx	xxxxx	1204	xxxx	xxxxx				
Volume/Cap:	xxxx	xxxx	xxxx	0.36	0.00	0.13	xxxx	xxxx	xxxx	0.24	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.4	xxxx	xxxx	xxxxx	1.0	xxxx	xxxxx				
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	13.1	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx				
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	121	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	1.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	50.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*				
ApproachDel:	xxxxxx			28.1			xxxxxx			xxxxxx						
ApproachLOS:	*			D			*			*						

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 4.5 Worst Case Level Of Service: C[21.3]

Street Name:	101 S Ramps								South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled			
Rights:	Include				Include				Include				Include			
Lanes:	0	0	0	0 0	0	1	0	0 1	0	0	0	1 0	1	0	1	0 0
Volume Module:																
Base Vol:	0	0	0	38	0	56	0	125	232	97	324	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	0	0	0	38	0	56	0	125	232	97	324	0				
Added Vol:	0	0	0	0	0	0	0	0	14	239	14	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	0	0	0	38	0	56	0	125	246	336	338	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	0	0	0	38	0	56	0	125	246	336	338	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	0	0	0	38	0	56	0	125	246	336	338	0				
Critical Gap Module:																
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx				
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	xxxx	xxxx	xxxxx	1258	1381	338	xxxx	xxxx	xxxxx	371	xxxx	xxxxx				
Potent Cap.:	xxxx	xxxx	xxxxx	190	145	709	xxxx	xxxx	xxxxx	1199	xxxx	xxxxx				
Move Cap.:	xxxx	xxxx	xxxxx	149	105	709	xxxx	xxxx	xxxxx	1199	xxxx	xxxxx				
Volume/Cap:	xxxx	xxxx	xxxx	0.25	0.00	0.08	xxxx	xxxx	xxxx	0.28	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.3	xxxx	xxxx	xxxxx	1.2	xxxx	xxxxx				
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.5	xxxxx	xxxx	xxxxx	9.2	xxxx	xxxxx				
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	149	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	1.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	37.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	E	*	*	*	*	*	*	*	*				
ApproachDel:	xxxxxx			21.3			xxxxxx			xxxxxx						
ApproachLOS:	*			C			*			*						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 59.2 Worst Case Level Of Service: F[105.0]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0 0 1			0 0 0 0 0			1 0 1 0 0			0 0 0 1 0		
Volume Module:												
Base Vol:	489	0	99	0	0	0	84	107	0	0	203	49
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	489	0	99	0	0	0	84	107	0	0	203	49
Added Vol:	0	0	217	0	0	0	0	0	0	0	192	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	489	0	316	0	0	0	84	107	0	0	395	49
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	489	0	316	0	0	0	84	107	0	0	395	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	489	0	316	0	0	0	84	107	0	0	395	49
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	695	719	107	xxxx	xxxx	xxxxx	444	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	412	357	953	xxxx	xxxx	xxxxx	1127	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	388	330	953	xxxx	xxxx	xxxxx	1127	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	1.26	0.00	0.33	xxxx	xxxx	xxxx	0.07	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	1.5	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	10.6	xxxxx	xxxx	xxxxx	8.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	388	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	21.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	166.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	F	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	105.0			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	F			*			*			*		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 10.0 Worst Case Level Of Service: C[18.4]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0 0 1			0 0 0 0 0			1 0 1 0 0			0 0 0 1 0		
Volume Module:												
Base Vol:	262	4	87	0	0	0	69	90	0	0	163	44
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	262	4	87	0	0	0	69	90	0	0	163	44
Added Vol:	0	0	318	0	0	0	0	0	0	0	253	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	262	4	405	0	0	0	69	90	0	0	416	44
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	262	4	405	0	0	0	69	90	0	0	416	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	262	4	405	0	0	0	69	90	0	0	416	44
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	666	688	90	xxxx	xxxx	xxxxx	460	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	428	372	973	xxxx	xxxx	xxxxx	1112	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	407	349	973	xxxx	xxxx	xxxxx	1112	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.64	0.01	0.42	xxxx	xxxx	xxxx	0.06	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	2.1	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	11.3	xxxxx	xxxx	xxxxx	8.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	406	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	4.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	29.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	D	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	18.4			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	C			*			*			*		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.689
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 24.6
Optimal Cycle: 41 | Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Volume Module:												
Base Vol:	489	0	99	0	0	0	84	107	0	0	203	49
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	489	0	99	0	0	0	84	107	0	0	203	49
Added Vol:	0	0	217	0	0	0	0	0	0	0	192	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	489	0	316	0	0	0	84	107	0	0	395	49
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	489	0	316	0	0	0	84	107	0	0	395	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	489	0	316	0	0	0	84	107	0	0	395	49
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	489	0	316	0	0	0	84	107	0	0	395	49
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.99	0.99
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.89	0.11
Final Sat.:	1343	0	1599	0	0	0	1805	1900	0	0	1665	207
Capacity Analysis Module:												
Vol/Sat:	0.36	0.00	0.20	0.00	0.00	0.00	0.05	0.06	0.00	0.00	0.24	0.24
Crit Moves:	****						****				****	
Green/Cycle:	0.53	0.00	0.53	0.00	0.00	0.00	0.07	0.41	0.00	0.00	0.34	0.34
Volume/Cap:	0.69	0.00	0.37	0.00	0.00	0.00	0.69	0.14	0.00	0.00	0.69	0.69
Delay/Veh:	20.4	0.0	14.1	0.0	0.0	0.0	61.0	18.4	0.0	0.0	31.4	31.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	20.4	0.0	14.1	0.0	0.0	0.0	61.0	18.4	0.0	0.0	31.4	31.4
LOS by Move:	C	A	B	A	A	A	E	B	A	A	C	C
HCM2k95thQ:	22	0	11	0	0	0	5	4	0	0	21	21

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.571
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 22.4
Optimal Cycle: 31 | Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Volume Module:												
Base Vol:	262	4	87	0	0	0	69	90	0	0	163	44
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	262	4	87	0	0	0	69	90	0	0	163	44
Added Vol:	0	0	318	0	0	0	0	0	0	0	253	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	262	4	405	0	0	0	69	90	0	0	416	44
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	262	4	405	0	0	0	69	90	0	0	416	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	262	4	405	0	0	0	69	90	0	0	416	44
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	262	4	405	0	0	0	69	90	0	0	416	44
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.93	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.99	0.99
Lanes:	0.98	0.02	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.90	0.10
Final Sat.:	1745	27	1599	0	0	0	1805	1900	0	0	1696	179
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.25	0.00	0.00	0.00	0.04	0.05	0.00	0.00	0.25	0.25
Crit Moves:			****				****				****	
Green/Cycle:	0.44	0.44	0.44	0.00	0.00	0.00	0.07	0.50	0.00	0.00	0.43	0.43
Volume/Cap:	0.34	0.34	0.57	0.00	0.00	0.00	0.57	0.10	0.00	0.00	0.57	0.57
Delay/Veh:	18.5	18.5	21.9	0.0	0.0	0.0	51.7	13.4	0.0	0.0	22.5	22.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	18.5	18.5	21.9	0.0	0.0	0.0	51.7	13.4	0.0	0.0	22.5	22.5
LOS by Move:	B	B	C	A	A	A	D	B	A	A	C	C
HCM2k95thQ:	10	10	18	0	0	0	4	3	0	0	19	19

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 24.9 Worst Case Level Of Service: F[52.8]

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	108	51	1	10	31	91	79	43	81	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	108	51	1	10	31	91	79	43	81	1	47	10
Added Vol:	0	0	0	0	0	192	217	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	108	51	1	10	31	283	296	43	81	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	108	51	1	10	31	283	296	43	81	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	108	51	1	10	31	283	296	43	81	1	47	10
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	314	xxxx	xxxxx	52	xxxx	xxxxx	489	461	173	522	602	52
Potent Cap.:	1258	xxxx	xxxxx	1567	xxxx	xxxxx	493	501	876	468	417	1022
Move Cap.:	1258	xxxx	xxxxx	1567	xxxx	xxxxx	409	452	876	365	376	1022
Volume/Cap:	0.09	xxxx	xxxx	0.01	xxxx	xxxx	0.72	0.10	0.09	0.00	0.12	0.01
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.1	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	461	xxxxx	xxxx	422	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.2	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	52.8	xxxxx	xxxxx	14.9	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			52.8			14.9		
ApproachLOS:	*			*			F			B		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 40.8 Worst Case Level Of Service: F[82.8]

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	94	31	1	10	28	73	55	43	77	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	31	1	10	28	73	55	43	77	1	47	10
Added Vol:	0	0	0	0	0	253	318	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	94	31	1	10	28	326	373	43	77	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	94	31	1	10	28	326	373	43	77	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	94	31	1	10	28	326	373	43	77	1	47	10
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	354	xxxx	xxxxx	32	xxxx	xxxxx	459	431	191	491	594	32
Potent Cap.:	1216	xxxx	xxxxx	1593	xxxx	xxxxx	516	520	856	492	421	1048
Move Cap.:	1216	xxxx	xxxxx	1593	xxxx	xxxxx	433	475	856	389	384	1048
Volume/Cap:	0.08	xxxx	xxxx	0.01	xxxx	xxxx	0.86	0.09	0.09	0.00	0.12	0.01
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.2	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	473	xxxxx	xxxx	431	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	14.9	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	82.8	xxxxx	xxxxx	14.6	xxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			82.8			14.6		
ApproachLOS:	*			*			F			B		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.582
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 30.9
Optimal Cycle: 32 | Level Of Service: C

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0 1!	0	0	0 1!	0	0	0 1!	0	0	0 1!	0
Volume Module:												
Base Vol:	108	51	1	10	31	91	79	43	81	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	108	51	1	10	31	91	79	43	81	1	47	10
Added Vol:	0	0	0	0	0	192	217	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	108	51	1	10	31	283	296	43	81	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	108	51	1	10	31	283	296	43	81	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	108	51	1	10	31	283	296	43	81	1	47	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	108	51	1	10	31	283	296	43	81	1	47	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.97	0.97	0.97	0.88	0.88	0.88	0.94	0.94	0.94	0.98	0.98	0.98
Lanes:	0.67	0.32	0.01	0.03	0.10	0.87	0.71	0.10	0.19	0.02	0.81	0.17
Final Sat.:	1239	585	11	52	160	1461	1260	183	345	32	1503	320
Capacity Analysis Module:												
Vol/Sat:	0.09	0.09	0.09	0.19	0.19	0.19	0.23	0.23	0.23	0.03	0.03	0.03
Crit Moves:		****		****				****				****
Green/Cycle:	0.15	0.15	0.15	0.33	0.33	0.33	0.40	0.40	0.40	0.05	0.05	0.05
Volume/Cap:	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
Delay/Veh:	42.7	42.7	42.7	29.2	29.2	29.2	24.5	24.5	24.5	54.7	54.7	54.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	42.7	42.7	42.7	29.2	29.2	29.2	24.5	24.5	24.5	54.7	54.7	54.7
LOS by Move:	D	D	D	C	C	C	C	C	C	D	D	D
HCM2k95thQ:	11	11	11	16	16	16	18	18	18	5	5	5

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.631
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 30.8
Optimal Cycle: 35 | Level Of Service: C

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0 1!	0	0	0 1!	0	0	0 1!	0	0	0 1!	0
Volume Module:												
Base Vol:	94	31	1	10	28	73	55	43	77	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	31	1	10	28	73	55	43	77	1	47	10
Added Vol:	0	0	0	0	0	253	318	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	94	31	1	10	28	326	373	43	77	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	94	31	1	10	28	326	373	43	77	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	94	31	1	10	28	326	373	43	77	1	47	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	94	31	1	10	28	326	373	43	77	1	47	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.96	0.96	0.96	0.88	0.88	0.88	0.94	0.94	0.94	0.98	0.98	0.98
Lanes:	0.75	0.24	0.01	0.03	0.08	0.89	0.76	0.09	0.15	0.02	0.81	0.17
Final Sat.:	1365	450	15	46	128	1494	1357	156	280	32	1503	320
Capacity Analysis Module:												
Vol/Sat:	0.07	0.07	0.07	0.22	0.22	0.22	0.27	0.27	0.27	0.03	0.03	0.03
Crit Moves:		****		****				****				****
Green/Cycle:	0.11	0.11	0.11	0.35	0.35	0.35	0.44	0.44	0.44	0.05	0.05	0.05
Volume/Cap:	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Delay/Veh:	49.0	49.0	49.0	29.6	29.6	29.6	23.6	23.6	23.6	60.0	60.0	60.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	49.0	49.0	49.0	29.6	29.6	29.6	23.6	23.6	23.6	60.0	60.0	60.0
LOS by Move:	D	D	D	C	C	C	C	C	C	E	E	E
HCM2k95thQ:	9	9	9	19	19	19	21	21	21	6	6	6

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

PM Short-term+ Project C Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	22	4.3	0.230	12.1	LOS B	32	0.63	0.84	23.6
16T	T	92	2.2	0.229	5.0	LOS A	32	0.63	0.53	27.0
16R	R	55	1.8	0.229	6.5	LOS A	32	0.63	0.65	26.0
Approach		**170**	**2.4**	**0.229**	**6.4**	**LOS A**	**32**	**0.63**	**0.61**	**26.1**
WB AV Resort										
1L	L	1	50.0	0.091	14.8	LOS B	13	0.62	0.88	23.0
6T	T	40	2.5	0.092	5.3	LOS A	13	0.62	0.57	27.0
6R	R	20	4.8	0.092	6.6	LOS A	13	0.62	0.64	26.1
Approach		**63**	**4.8**	**0.092**	**6.0**	**LOS A**	**13**	**0.62**	**0.60**	**26.5**
SB Asti										
17L	L	43	2.3	0.430	14.5	LOS B	76	0.68	0.92	22.9
14T	T	279	2.2	0.429	5.8	LOS A	76	0.68	0.65	26.6
14R	R	19	5.0	0.426	7.4	LOS A	76	0.68	0.76	25.7
Approach		**342**	**2.3**	**0.429**	**7.0**	**LOS A**	**76**	**0.68**	**0.69**	**25.9**
EB South Interchange										
5L	L	133	2.3	0.136	10.8	LOS B	25	0.17	0.60	24.7
2T	T	24	4.0	0.136	1.8	LOS A	25	0.17	0.20	30.9
2R	R	45	2.2	0.136	1.8	LOS A	25	0.17	0.20	30.9
Approach		**203**	**2.5**	**0.136**	**7.7**	**LOS A**	**25**	**0.17**	**0.46**	**26.2**
101 NB Offramp										
13L	L	515	1.9	0.358	12.7	LOS B	65	0.43	0.68	23.6
18T	T	269	1.9	0.358	2.9	LOS A	65	0.42	0.31	28.5
18R	R	64	1.6	0.358	4.1	LOS A	65	0.42	0.41	27.6
Approach		**847**	**1.9**	**0.358**	**8.9**	**LOS A**	**65**	**0.43**	**0.54**	**25.0**
All Vehicles		**1625**	**2.2**	**0.430**	**8.0**	**LOS A**	**76**	**0.48**	**0.57**	**25.5**

Symbols which may appear in this table:

Movement Summary Page 1 of 2

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

Weekend Midday Short-term+ Project C Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	21	4.5	0.165	11.5	LOS B	22	0.56	0.80	23.8
16T	T	78	2.6	0.166	4.4	LOS A	22	0.56	0.47	27.4
16R	R	34	2.9	0.166	6.0	LOS A	22	0.56	0.59	26.4
Approach		**134**	**3.0**	**0.166**	**6.0**	**LOS A**	**22**	**0.56**	**0.56**	**26.4**
WB AV Resort										
1L	L	1	50.0	0.083	14.2	LOS B	11	0.56	0.84	23.2
6T	T	39	2.6	0.083	4.6	LOS A	11	0.56	0.50	27.4
6R	R	21	4.5	0.083	5.9	LOS A	11	0.56	0.59	26.5
Approach		**63**	**4.8**	**0.083**	**5.4**	**LOS A**	**11**	**0.56**	**0.54**	**26.9**
SB Asti										
17L	L	40	2.5	0.412	12.8	LOS B	65	0.56	0.80	23.4
14T	T	326	2.1	0.410	4.1	LOS A	65	0.56	0.44	27.5
14R	R	17	5.6	0.409	5.7	LOS A	65	0.56	0.56	26.4
Approach		**385**	**2.3**	**0.410**	**5.1**	**LOS A**	**65**	**0.56**	**0.48**	**26.8**
EB South Interchange										
5L	L	102	2.0	0.113	10.9	LOS B	20	0.15	0.61	24.7
2T	T	23	4.2	0.113	1.8	LOS A	20	0.15	0.19	31.0
2R	R	42	2.4	0.113	1.8	LOS A	20	0.15	0.19	31.0
Approach		**168**	**2.4**	**0.113**	**7.3**	**LOS A**	**20**	**0.15**	**0.44**	**26.5**
101 NB Offramp										
13L	L	276	2.2	0.269	12.5	LOS B	39	0.37	0.67	23.8
18T	T	367	1.9	0.322	2.7	LOS A	56	0.37	0.29	28.9
18R	R	62	1.6	0.321	3.8	LOS A	56	0.37	0.39	27.9
Approach		**705**	**2.0**	**0.322**	**6.6**	**LOS A**	**56**	**0.37**	**0.45**	**26.2**
All Vehicles		**1455**	**2.3**	**0.412**	**6.2**	**LOS A**	**65**	**0.42**	**0.47**	**26.5**

Symbols which may appear in this table:

about:blank 1/14/2009

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt D

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	291.00	262.00	291	262	553	100.0
	Zone 38 Subtotal					291	262	553	100.0
TOTAL						291	262	553	100.0

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt D

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	448.00	354.00	448	354	802	100.0
	Zone 38 Subtotal					448	354	802	100.0
TOTAL						448	354	802	100.0

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.360
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.4
Optimal Cycle:	18	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	76	380	100	44	257	17	18	43	98	147	44	51
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	76	380	100	44	257	17	18	43	98	147	44	51
Added Vol:	0	3	17	0	3	0	0	0	0	18	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	76	383	117	44	260	17	18	43	98	165	44	51
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	76	383	117	44	260	17	18	43	98	165	44	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	76	383	117	44	260	17	18	43	98	165	44	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	76	383	117	44	260	17	18	43	98	165	44	51
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.81	0.81	0.85	0.81	0.81	0.81	0.88	0.88	0.88	0.72	0.72	0.72
Lanes:	0.33	1.67	1.00	0.27	1.62	0.11	0.11	0.27	0.62	0.63	0.17	0.20
Final Sat.:	508	2560	1615	424	2506	164	190	453	1033	870	232	269
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.07	0.10	0.10	0.10	0.09	0.09	0.09	0.19	0.19	0.19
Crit Moves:		****									****	
Green/Cycle:	0.42	0.42	0.42	0.42	0.42	0.42	0.53	0.53	0.53	0.53	0.53	0.53
Volume/Cap:	0.36	0.36	0.17	0.25	0.25	0.25	0.18	0.18	0.18	0.36	0.36	0.36
Delay/Veh:	14.2	14.2	13.0	13.4	13.4	13.4	8.7	8.7	8.7	10.0	10.0	10.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.2	14.2	13.0	13.4	13.4	13.4	8.7	8.7	8.7	10.0	10.0	10.0
LOS by Move:	B	B	B	B	B	B	A	A	A	A	A	A
HCM2kAvgQ:	4	4	2	2	2	2	2	2	2	4	4	4

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.335
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.3
Optimal Cycle:	17	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	88	322	121	46	315	17	18	43	86	126	44	48
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	88	322	121	46	315	17	18	43	86	126	44	48
Added Vol:	0	4	23	0	4	0	0	0	0	25	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	88	326	144	46	319	17	18	43	86	151	44	48
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	88	326	144	46	319	17	18	43	86	151	44	48
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	88	326	144	46	319	17	18	43	86	151	44	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	88	326	144	46	319	17	18	43	86	151	44	48
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.77	0.77	0.85	0.83	0.83	0.83	0.89	0.89	0.89	0.73	0.73	0.73
Lanes:	0.43	1.57	1.00	0.24	1.67	0.09	0.12	0.29	0.59	0.62	0.18	0.20
Final Sat.:	621	2300	1615	378	2622	140	206	492	984	867	253	276
Capacity Analysis Module:												
Vol/Sat:	0.14	0.14	0.09	0.12	0.12	0.12	0.09	0.09	0.09	0.17	0.17	0.17
Crit Moves:		****									****	
Green/Cycle:	0.42	0.42	0.42	0.42	0.42	0.42	0.52	0.52	0.52	0.52	0.52	0.52
Volume/Cap:	0.33	0.33	0.21	0.29	0.29	0.29	0.17	0.17	0.17	0.33	0.33	0.33
Delay/Veh:	13.7	13.7	12.9	13.4	13.4	13.4	8.9	8.9	8.9	10.1	10.1	10.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	13.7	13.7	12.9	13.4	13.4	13.4	8.9	8.9	8.9	10.1	10.1	10.1
LOS by Move:	B	B	B	B	B	B	A	A	A	B	B	B
HCM2kAvgQ:	3	3	2	3	3	3	2	2	2	3	3	3

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: C[21.0]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	542	113	46	472	0	0	0	0	76	0	34								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	542	113	46	472	0	0	0	0	76	0	34								
Added Vol:	0	20	0	0	21	0	0	0	0	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	562	113	46	493	0	0	0	0	76	0	34								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	562	113	46	493	0	0	0	0	76	0	34								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	562	113	46	493	0	0	0	0	76	0	34								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	675	xxxx	xxxxx	xxxx	xxxx	xxxxx	957	xxxx	338								
Potent Cap.:	xxxx	xxxx	xxxxx	926	xxxx	xxxxx	xxxx	xxxx	xxxxx	259	xxxx	664								
Move Cap.:	xxxx	xxxx	xxxxx	926	xxxx	xxxxx	xxxx	xxxx	xxxxx	249	xxxx	664								
Volume/Cap:	xxxx	xxxx	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx	0.31	xxxx	0.05								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	1.2	xxxx	0.2								
Control Del:	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	25.7	xxxx	10.7								
LOS by Move:	*	*	*	A	*	*	*	*	*	D	*	B								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			21.0										
ApproachLOS:	*			*			*			C										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: B[14.7]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	371	71	28	367	0	0	0	0	68	0	27								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	371	71	28	367	0	0	0	0	68	0	27								
Added Vol:	0	27	0	0	29	0	0	0	0	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	398	71	28	396	0	0	0	0	68	0	27								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	398	71	28	396	0	0	0	0	68	0	27								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	398	71	28	396	0	0	0	0	68	0	27								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	469	xxxx	xxxxx	xxxx	xxxx	xxxxx	688	xxxx	235								
Potent Cap.:	xxxx	xxxx	xxxxx	1103	xxxx	xxxxx	xxxx	xxxx	xxxxx	385	xxxx	773								
Move Cap.:	xxxx	xxxx	xxxxx	1103	xxxx	xxxxx	xxxx	xxxx	xxxxx	377	xxxx	773								
Volume/Cap:	xxxx	xxxx	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.18	xxxx	0.03								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.6	xxxx	0.1								
Control Del:	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	16.6	xxxx	9.8								
LOS by Move:	*	*	*	A	*	*	*	*	*	C	*	A								
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			14.7										
ApproachLOS:	*			*			*			B										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.393
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	14.7
Optimal Cycle:	22	Level Of Service:	B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	15	465	133	152	446	6	5	14	25	194	25	241
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	465	133	152	446	6	5	14	25	194	25	241
Added Vol:	0	0	2	21	0	0	0	0	0	2	0	20
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	15	465	135	173	446	6	5	14	25	196	25	261
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	15	465	135	173	446	6	5	14	25	196	25	261
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	15	465	135	173	446	6	5	14	25	196	25	261
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	15	465	135	173	446	6	5	14	25	196	25	261
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.96	0.96	0.85
Lanes:	1.00	1.55	0.45	1.00	1.97	0.03	0.11	0.32	0.57	1.77	0.23	1.00
Final Sat.:	1805	2703	785	1805	3555	48	198	555	990	3229	412	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.17	0.17	0.10	0.13	0.13	0.03	0.03	0.03	0.06	0.06	0.16
Crit Moves:		****		****				****				****
Green/Cycle:	0.04	0.44	0.44	0.24	0.64	0.64	0.06	0.06	0.06	0.17	0.17	0.41
Volume/Cap:	0.20	0.39	0.39	0.39	0.20	0.20	0.39	0.39	0.39	0.36	0.36	0.39
Delay/Veh:	33.6	13.5	13.5	22.7	5.2	5.2	33.7	33.7	33.7	26.2	26.2	14.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	33.6	13.5	13.5	22.7	5.2	5.2	33.7	33.7	33.7	26.2	26.2	14.8
LOS by Move:	C	B	B	C	A	A	C	C	C	C	C	B
HCM2kAvgQ:	1	5	5	3	2	2	1	1	1	2	2	4

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.366
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	21.8
Optimal Cycle:	22	Level Of Service:	C

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	53	50	136	45	44	10	8	175	42	135	158	45
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	53	50	136	45	44	10	8	175	42	135	158	45
Added Vol:	0	0	3	29	0	0	0	0	0	3	0	27
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	53	50	139	74	44	10	8	175	42	138	158	72
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	53	50	139	74	44	10	8	175	42	138	158	72
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	53	50	139	74	44	10	8	175	42	138	158	72
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	53	50	139	74	44	10	8	175	42	138	158	72
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.85	0.85	0.95	0.92	0.92	0.97	0.97	0.97	0.98	0.98	0.85
Lanes:	1.00	1.00	1.00	1.00	1.63	0.37	0.03	0.78	0.19	1.00	1.00	1.00
Final Sat.:	1805	1606	1606	1805	2859	650	66	1438	345	1856	1856	1615
Capacity Analysis Module:												
Vol/Sat:	0.03	0.03	0.09	0.04	0.02	0.02	0.12	0.12	0.12	0.07	0.09	0.04
Crit Moves:			****	****			****				****	
Green/Cycle:	0.23	0.24	0.24	0.11	0.12	0.12	0.33	0.33	0.33	0.23	0.23	0.34
Volume/Cap:	0.13	0.13	0.37	0.37	0.13	0.13	0.37	0.37	0.37	0.32	0.37	0.13
Delay/Veh:	21.6	21.1	22.8	29.9	27.7	27.7	18.1	18.1	18.1	22.5	22.8	15.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.6	21.1	22.8	29.9	27.7	27.7	18.1	18.1	18.1	22.5	22.8	15.8
LOS by Move:	C	C	C	C	C	C	B	B	B	C	C	B
HCM2kAvgQ:	1	1	3	2	1	1	4	4	4	3	3	1

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.8 Worst Case Level Of Service: B[12.6]

Street Name:	US 101 South Ramps									Citrus Fair Dr		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			1 0 0 1 0			0 0 1 1 0			1 0 2 0 0		
Volume Module:												
Base Vol:	0	0	0	8	0	41	0	70	192	46	455	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	8	0	41	0	70	192	46	455	0
Added Vol:	0	0	0	20	0	0	0	9	14	57	22	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	28	0	41	0	79	206	103	477	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	28	0	41	0	79	206	103	477	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	28	0	41	0	79	206	103	477	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	723	968	239	xxxx	xxxx	xxxxx	285	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	366	256	769	xxxx	xxxx	xxxxx	1289	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	343	235	769	xxxx	xxxx	xxxxx	1289	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.08	0.00	0.05	xxxx	xxxx	xxxx	0.08	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	16.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	*	*	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	769	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*
ApproachDel:	xxxxxx			12.6			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.4 Worst Case Level Of Service: B[11.4]

Street Name:	US 101 South Ramps									Citrus Fair Dr		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			1 0 0 1 0			0 0 1 1 0			1 0 2 0 0		
Volume Module:												
Base Vol:	0	0	0	6	0	33	0	56	175	34	230	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	6	0	33	0	56	175	34	230	0
Added Vol:	0	0	0	31	0	0	0	13	19	76	30	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	37	0	33	0	69	194	110	260	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	37	0	33	0	69	194	110	260	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	37	0	33	0	69	194	110	260	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	515	743	130	xxxx	xxxx	xxxxx	263	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	495	346	902	xxxx	xxxx	xxxxx	1313	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	463	317	902	xxxx	xxxx	xxxxx	1313	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.08	0.00	0.04	xxxx	xxxx	xxxx	0.08	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	13.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	*	*	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	902	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*
ApproachDel:	xxxxxx			11.4			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 8.4 Worst Case Level Of Service: B[12.9]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled								
Rights:	Include			Include			Include			Include								
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module:																				
Base Vol:	361		0	79		0	0		0		38	31		0		0	99		16	
Growth Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	361		0	79		0	0		0		38	31		0		0	99		16	
Added Vol:	0		0	79		0	0		0		0	29		0		0	79		18	
PasserByVol:	0		0	0		0	0		0		0	0		0		0	0		0	
Initial Fut:	361		0	158		0	0		0		38	60		0		0	178		34	
User Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	361		0	158		0	0		0		38	60		0		0	178		34	
Reduct Vol:	0		0	0		0	0		0		0	0		0		0	0		0	
FinalVolume:	361		0	158		0	0		0		38	60		0		0	178		34	
Critical Gap Module:																				
Critical Gp:	6.8	6.5		6.9	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
FollowUpTim:	3.5	4.0		3.3	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Capacity Module:																				
Cnflict Vol:	225	348		30	xxxx	xxxx	xxxxx		212	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Potent Cap.:	749	579		1044	xxxx	xxxx	xxxxx		1370	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Move Cap.:	733	563		1044	xxxx	xxxx	xxxxx		1370	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Volume/Cap:	0.49	0.00		0.15	xxxx	xxxx	xxxx		0.03	xxxx	xxxx	xxxx	xxxx	xxxx						
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		0.5	xxxx	xxxx	xxxxx		0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Control Del:	xxxxx	xxxx		9.1	xxxxx	xxxx	xxxxx		7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
LOS by Move:	*	*		A	*	*	*		A	*	*	*	*	*						
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT							
Shared Cap.:	733	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					
SharedQueue:	2.7	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shrd ConDel:	14.6	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shared LOS:	B	*	*		*	*	*		*	*	*		*	*	*					
ApproachDel:	12.9				xxxxxx				xxxxxx				xxxxxx							
ApproachLOS:	B				*				*				*							

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 5.7 Worst Case Level Of Service: B[10.5]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled								
Rights:	Include			Include			Include			Include								
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module:																				
Base Vol:	187		0	42		0	0		0		33	30		0		0	82		16	
Growth Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	187		0	42		0	0		0		33	30		0		0	82		16	
Added Vol:	0		0	121		0	0		0		0	45		0		0	106		25	
PasserByVol:	0		0	0		0	0		0		0	0		0		0	0		0	
Initial Fut:	187		0	163		0	0		0		33	75		0		0	188		41	
User Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	187		0	163		0	0		0		33	75		0		0	188		41	
Reduct Vol:	0		0	0		0	0		0		0	0		0		0	0		0	
FinalVolume:	187		0	163		0	0		0		33	75		0		0	188		41	
Critical Gap Module:																				
Critical Gp:	6.8	6.5		6.9	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
FollowUpTim:	3.5	4.0		3.3	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Capacity Module:																				
Cnflict Vol:	235	370		38	xxxx	xxxx	xxxxx		229	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Potent Cap.:	738	563		1033	xxxx	xxxx	xxxxx		1351	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Move Cap.:	724	549		1033	xxxx	xxxx	xxxxx		1351	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Volume/Cap:	0.26	0.00		0.16	xxxx	xxxx	xxxx		0.02	xxxx	xxxx	xxxx	xxxx	xxxx						
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		0.6	xxxx	xxxx	xxxxx		0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Control Del:	xxxxx	xxxx		9.1	xxxxx	xxxx	xxxxx		7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
LOS by Move:	*	*		A	*	*	*		A	*	*	*	*	*						
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT							
Shared Cap.:	724	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					
SharedQueue:	1.0	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shrd ConDel:	11.7	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shared LOS:	B	*	*		*	*	*		*	*	*		*	*	*					
ApproachDel:	10.5				xxxxxx				xxxxxx				xxxxxx							
ApproachLOS:	B				*				*				*							

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 6.6 Worst Case Level Of Service: B[10.8]

Street Name:	Asti (Frontage) Rd									Citrus Fair Dr								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	69	76	0	0	52	41	88	0	26	0	0	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	69	76	0	0	52	41	88	0	26	0	0	0								
Added Vol:	97	0	0	0	0	0	0	0	108	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	166	76	0	0	52	41	88	0	134	0	0	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	166	76	0	0	52	41	88	0	134	0	0	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	166	76	0	0	52	41	88	0	134	0	0	0								
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx								
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	93	xxxx	xxxxx	xxxx	xxxx	xxxxx	460	xxxx	52	xxxx	xxxx	xxxxx								
Potent Cap.:	1514	xxxx	xxxxx	xxxx	xxxx	xxxxx	563	xxxx	1021	xxxx	xxxx	xxxxx								
Move Cap.:	1514	xxxx	xxxxx	xxxx	xxxx	xxxxx	516	xxxx	1021	xxxx	xxxx	xxxxx								
Volume/Cap:	0.11	xxxx	xxxx	xxxx	xxxx	xxxx	0.17	xxxx	0.13	xxxx	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.6	xxxx	0.5	xxxx	xxxx	xxxxx								
Control Del:	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	13.4	xxxx	9.1	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	*	*	*	B	*	A	*	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			10.8			xxxxxx										
ApproachLOS:	*			*			B			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 6.8 Worst Case Level Of Service: A[9.8]

Street Name:	Asti (Frontage) Rd									Citrus Fair Dr								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	45	50	0	0	43	34	41	0	27	0	0	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	45	50	0	0	43	34	41	0	27	0	0	0								
Added Vol:	131	0	0	0	0	0	0	0	166	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	176	50	0	0	43	34	41	0	193	0	0	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	176	50	0	0	43	34	41	0	193	0	0	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	176	50	0	0	43	34	41	0	193	0	0	0								
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx								
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	77	xxxx	xxxxx	xxxx	xxxx	xxxxx	445	xxxx	43	xxxx	xxxx	xxxxx								
Potent Cap.:	1535	xxxx	xxxxx	xxxx	xxxx	xxxxx	574	xxxx	1033	xxxx	xxxx	xxxxx								
Move Cap.:	1535	xxxx	xxxxx	xxxx	xxxx	xxxxx	524	xxxx	1033	xxxx	xxxx	xxxxx								
Volume/Cap:	0.11	xxxx	xxxx	xxxx	xxxx	xxxx	0.08	xxxx	0.19	xxxx	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	0.7	xxxx	xxxx	xxxxx								
Control Del:	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	12.5	xxxx	9.3	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	*	*	*	B	*	A	*	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			9.8			xxxxxx										
ApproachLOS:	*			*			A			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 6.8 Worst Case Level Of Service: C[16.0]

Street Name:	Asti (Frontage) Rd									Project Access		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	0	119	0	0	72	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	119	0	0	72	0	0	0	0	0	0	0
Added Vol:	0	0	183	108	0	0	0	0	0	165	0	97
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	119	183	108	72	0	0	0	0	165	0	97
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	119	183	108	72	0	0	0	0	165	0	97
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	119	183	108	72	0	0	0	0	165	0	97
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	302	xxxx	xxxxx	xxxx	xxxx	xxxxx	499	499	211
Potent Cap.:	xxxx	xxxx	xxxxx	1270	xxxx	xxxxx	xxxx	xxxx	xxxxx	535	477	835
Move Cap.:	xxxx	xxxx	xxxxx	1270	xxxx	xxxxx	xxxx	xxxx	xxxxx	498	433	835
Volume/Cap:	xxxx	xxxx	xxxx	0.09	xxxx	xxxx	xxxx	xxxx	xxxx	0.33	0.00	0.12
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	585	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	2.3	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	16.0	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	C	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			16.0		
ApproachLOS:	*			*			*			C		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 11.9 Worst Case Level Of Service: D[27.6]

Street Name:	Asti (Frontage) Rd									Project Access		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	0	77	0	0	60	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	77	0	0	60	0	0	0	0	0	0	0
Added Vol:	0	0	282	166	0	0	0	0	0	223	0	131
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	77	282	166	60	0	0	0	0	223	0	131
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	77	282	166	60	0	0	0	0	223	0	131
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	77	282	166	60	0	0	0	0	223	0	131
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	359	xxxx	xxxxx	xxxx	xxxx	xxxxx	610	610	218
Potent Cap.:	xxxx	xxxx	xxxxx	1211	xxxx	xxxxx	xxxx	xxxx	xxxxx	461	412	827
Move Cap.:	xxxx	xxxx	xxxxx	1211	xxxx	xxxxx	xxxx	xxxx	xxxxx	408	350	827
Volume/Cap:	xxxx	xxxx	xxxx	0.14	xxxx	xxxx	xxxx	xxxx	xxxx	0.55	0.00	0.16
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	502	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	5.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	27.6	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	D	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			27.6		
ApproachLOS:	*			*			*			D		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: B[12.5]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	106		16		5	86		0		0	0		0		27	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	106		16		5	86		0		0	0		0		27	0		3	
Added Vol:	0	183		0		0	165		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	289		16		5	251		0		0	0		0		27	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	289		16		5	251		0		0	0		0		27	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	289		16		5	251		0		0	0		0		27	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	6.5		6.2					
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	4.0		3.3					
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		305	xxxx	xxxxx	xxxx	xxxx	xxxxx		558	558		297					
Potent Cap.:	xxxx	xxxx	xxxxx		1267	xxxx	xxxxx	xxxx	xxxx	xxxxx		494	441		747					
Move Cap.:	xxxx	xxxx	xxxxx		1267	xxxx	xxxxx	xxxx	xxxx	xxxxx		493	439		747					
Volume/Cap:	xxxx	xxxx	xxxx		0.00	xxxx	xxxx	xxxx	xxxx	xxxx		0.05	0.00		0.00					
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx							
Control Del:	xxxxx	xxxx	xxxxx		7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx							
LOS by Move:	*	*	*		A	*	*	*	*	*	*	*	*							
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	510	xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx		0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.2	xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx		7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.5	xxxxx							
Shared LOS:	*	*	*		A	*	*	*	*	*	*	B	*							
ApproachDel:	xxxxxx				xxxxxx			xxxxxx				12.5								
ApproachLOS:	*				*			*				B								

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: B[10.2]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Volume Module:																				
Base Vol:	0	65		1		4	75		0		0	0		0		0	0		2	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	65		1		4	75		0		0	0		0		0	0		2	
Added Vol:	0	282		0		0	223		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	347		1		4	298		0		0	0		0		0	0		2	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	347		1		4	298		0		0	0		0		0	0		2	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	347		1		4	298		0		0	0		0		0	0		2	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx		6.2						
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx		3.3						
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		348	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx		348						
Potent Cap.:	xxxx	xxxx	xxxxx		1222	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx		700						
Move Cap.:	xxxx	xxxx	xxxxx		1222	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx		700						
Volume/Cap:	xxxx	xxxx	xxxx		0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx		0.00						
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx		0.0						
Control Del:	xxxxx	xxxx	xxxxx		8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx		10.2						
LOS by Move:	*	*	*		A	*	*	*	*	*	*	*		B						
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx		0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx		8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx							
Shared LOS:	*	*	*		A	*	*	*	*	*	*	*	*							
ApproachDel:	xxxxxx				xxxxxx			xxxxxx				10.2								
ApproachLOS:	*				*			*				B								

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[12.3]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0
Volume Module:																	
Base Vol:	199	444		0	0	214	50		36	0	91		0	0	0		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	199	444		0	0	214	50		36	0	91		0	0	0		
Added Vol:	7	2		0	0	2	0		0	0	7		0	0	0		
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0		
Initial Fut:	206	446		0	0	216	50		36	0	98		0	0	0		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Volume:	206	446		0	0	216	50		36	0	98		0	0	0		
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0		
FinalVolume:	206	446		0	0	216	50		36	0	98		0	0	0		
Critical Gap Module:																	
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5		6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																	
Cnflict Vol:	266	xxxx	xxxxx	xxxx	xxxx	xxxxx			1074	1074		216	xxxx	xxxx	xxxxx		
Potent Cap.:	1310	xxxx	xxxxx	xxxx	xxxx	xxxxx			246	222		829	xxxx	xxxx	xxxxx		
Move Cap.:	1310	xxxx	xxxxx	xxxx	xxxx	xxxxx			216	187		829	xxxx	xxxx	xxxxx		
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			299	266	xxxxx	220	249	xxxxx			
Volume/Cap:	0.16	xxxx	xxxx	xxxx	xxxx	xxxx			0.12	0.00	0.12	xxxx	xxxx	xxxx			
Level Of Service Module:																	
2Way95thQ:	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	xxxx		0.4	xxxx	xxxx	xxxxx		
Control Del:	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	xxxx		9.9	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*			*	*		A	*	*	*		
Movement:	LT -	LTR -	RT	LT -	LTR -	RT			LT -	LTR -	RT		LT -	LTR -	RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			299	xxxx	xxxxx		xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			0.4	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			18.7	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*			C	*	*		*	*	*		
ApproachDel:	xxxxxx			xxxxxx					12.3				xxxxxx				
ApproachLOS:	*			*					B				*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.5 Worst Case Level Of Service: B[12.4]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0
Volume Module:																	
Base Vol:	146	340		0	0	318	43		43	0	144		0	0	0		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	146	340		0	0	318	43		43	0	144		0	0	0		
Added Vol:	10	3		0	0	3	0		0	0	10		0	0	0		
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0		
Initial Fut:	156	343		0	0	321	43		43	0	154		0	0	0		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Volume:	156	343		0	0	321	43		43	0	154		0	0	0		
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0		
FinalVolume:	156	343		0	0	321	43		43	0	154		0	0	0		
Critical Gap Module:																	
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5		6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																	
Cnflict Vol:	364	xxxx	xxxxx	xxxx	xxxx	xxxxx			976	976		321	xxxx	xxxx	xxxxx		
Potent Cap.:	1206	xxxx	xxxxx	xxxx	xxxx	xxxxx			281	253		724	xxxx	xxxx	xxxxx		
Move Cap.:	1206	xxxx	xxxxx	xxxx	xxxx	xxxxx			253	220		724	xxxx	xxxx	xxxxx		
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			360	320	xxxxx	228	293	xxxxx			
Volume/Cap:	0.13	xxxx	xxxx	xxxx	xxxx	xxxx			0.12	0.00	0.21	xxxx	xxxx	xxxx			
Level Of Service Module:																	
2Way95thQ:	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	xxxx		0.8	xxxx	xxxx	xxxxx		
Control Del:	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	xxxx		11.3	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*			*	*		B	*	*	*		
Movement:	LT -	LTR -	RT	LT -	LTR -	RT			LT -	LTR -	RT		LT -	LTR -	RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			360	xxxx	xxxxx		xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			0.4	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			16.3	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*			C	*	*		*	*	*		
ApproachDel:	xxxxxx			xxxxxx					12.4				xxxxxx				
ApproachLOS:	*			*					B				*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 10.9 Worst Case Level Of Service: C[16.4]

Street Name:	Cloverdale Blvd									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	110		68	286	76	0		0	0	0		0	67	0	579				
Growth Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00				
Initial Bse:	0	110		68	286	76	0		0	0	0		0	67	0	579				
Added Vol:	0	0		0	9	0	0		0	0	0		0	0	0	9				
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0	0				
Initial Fut:	0	110		68	295	76	0		0	0	0		0	67	0	588				
User Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00				
PHF Volume:	0	110		68	295	76	0		0	0	0		0	67	0	588				
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0	0				
FinalVolume:	0	110		68	295	76	0		0	0	0		0	67	0	588				
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx	4.1	xxxx	xxxxx		xxxxx	xxxx	xxxxx		6.4	xxxx	6.2					
FollowUpTim:	xxxxx	xxxx		xxxxx	2.2	xxxx	xxxxx		xxxxx	xxxx	xxxxx		3.5	xxxx	3.3					
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx	178	xxxx	xxxxx		xxxx	xxxx	xxxxx		810	xxxx	144					
Potent Cap.:	xxxx	xxxx		xxxxx	1410	xxxx	xxxxx		xxxx	xxxx	xxxxx		352	xxxx	909					
Move Cap.:	xxxx	xxxx		xxxxx	1410	xxxx	xxxxx		xxxx	xxxx	xxxxx		295	xxxx	909					
Volume/Cap:	xxxx	xxxx		xxxx	0.21	xxxx	xxxx		xxxx	xxxx	xxxx		0.23	xxxx	0.65					
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx	0.8	xxxx	xxxxx		xxxx	xxxx	xxxxx		0.9	xxxx	4.9					
Control Del:	xxxxx	xxxx		xxxxx	8.2	xxxx	xxxxx		xxxxx	xxxx	xxxxx		20.7	xxxx	15.9					
LOS by Move:	*	*		*	A	*	*		*	*	*		C	*	C					
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					
SharedQueue:	xxxxx	xxxx		xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shrd ConDel:	xxxxx	xxxx		xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shared LOS:	*	*		*	*	*	*		*	*	*		*	*	*					
ApproachDel:	xxxxxx				xxxxxx				xxxxxx				16.4							
ApproachLOS:	*				*				*				C							

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 7.8 Worst Case Level Of Service: B[11.3]

Street Name:	Cloverdale Blvd									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	54		56	270	64	0		0	0	0		40	0	332					
Growth Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00					
Initial Bse:	0	54		56	270	64	0		0	0	0		40	0	332					
Added Vol:	0	0		0	13	0	0		0	0	0		0	0	13					
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0					
Initial Fut:	0	54		56	283	64	0		0	0	0		40	0	345					
User Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00					
PHF Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00					
PHF Volume:	0	54		56	283	64	0		0	0	0		40	0	345					
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0					
FinalVolume:	0	54		56	283	64	0		0	0	0		40	0	345					
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx	4.1	xxxx	xxxxx		xxxxx	xxxx	xxxxx		6.4	xxxx	6.2					
FollowUpTim:	xxxxx	xxxx		xxxxx	2.2	xxxx	xxxxx		xxxxx	xxxx	xxxxx		3.5	xxxx	3.3					
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx	110	xxxx	xxxxx		xxxx	xxxx	xxxxx		712	xxxx	82					
Potent Cap.:	xxxx	xxxx		xxxxx	1493	xxxx	xxxxx		xxxx	xxxx	xxxxx		402	xxxx	983					
Move Cap.:	xxxx	xxxx		xxxxx	1493	xxxx	xxxxx		xxxx	xxxx	xxxxx		343	xxxx	983					
Volume/Cap:	xxxx	xxxx		xxxx	0.19	xxxx	xxxx		xxxx	xxxx	xxxx		0.12	xxxx	0.35					
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx	0.7	xxxx	xxxxx		xxxx	xxxx	xxxxx		0.4	xxxx	1.6					
Control Del:	xxxxx	xxxx		xxxxx	8.0	xxxx	xxxxx		xxxxx	xxxx	xxxxx		16.9	xxxx	10.6					
LOS by Move:	*	*		*	A	*	*		*	*	*		C	*	B					
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx		xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					
SharedQueue:	xxxxx	xxxx		xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shrd ConDel:	xxxxx	xxxx		xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shared LOS:	*	*		*	*	*	*		*	*	*		*	*	*					
ApproachDel:	xxxxxx				xxxxxx				xxxxxx				11.3							
ApproachLOS:	*				*				*				B							

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 3.9 Worst Case Level Of Service: D[25.7]

Street Name:	101 S Ramps								South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	44	0	67	0	147	208	113	579	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	44	0	67	0	147	208	113	579	0								
Added Vol:	0	0	0	0	0	0	0	0	9	156	9	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	44	0	67	0	147	217	269	588	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	44	0	67	0	147	217	269	588	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	44	0	67	0	147	217	269	588	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1382	1490	588	xxxx	xxxx	xxxxx	364	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	160	125	513	xxxx	xxxx	xxxxx	1206	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	133	97	513	xxxx	xxxx	xxxxx	1206	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.33	0.00	0.13	xxxx	xxxx	xxxx	0.22	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.4	xxxx	xxxx	xxxxx	0.9	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	13.1	xxxxx	xxxx	xxxxx	8.8	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT						LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	133	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	1.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	45.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	E	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			25.7			xxxxxx			xxxxxx										
ApproachLOS:	*			D			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: C[19.6]

Street Name:	101 S Ramps								South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	38	0	56	0	125	232	97	324	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	38	0	56	0	125	232	97	324	0								
Added Vol:	0	0	0	0	0	0	0	0	13	210	13	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	38	0	56	0	125	245	307	337	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	38	0	56	0	125	245	307	337	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	38	0	56	0	125	245	307	337	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1199	1321	337	xxxx	xxxx	xxxxx	370	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	207	158	710	xxxx	xxxx	xxxxx	1200	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	166	118	710	xxxx	xxxx	xxxxx	1200	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.23	0.00	0.08	xxxx	xxxx	xxxx	0.26	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.3	xxxx	xxxx	xxxxx	1.0	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.5	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT						LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	166	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	33.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	D	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			19.6			xxxxxx			xxxxxx										
ApproachLOS:	*			C			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 54.7 Worst Case Level Of Service: F[96.8]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	489		0		99		0		0		0	84	107		0		0	203		49
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	489		0		99		0		0		0	84	107		0		0	203		49
Added Vol:	0		0		183		0		0		0	0	0		0		0	165		0
PasserByVol:	0		0		0		0		0		0	0	0		0		0	0		0
Initial Fut:	489		0		282		0		0		0	84	107		0		0	368		49
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	489		0		282		0		0		0	84	107		0		0	368		49
Reduct Vol:	0		0		0		0		0		0	0	0		0		0	0		0
FinalVolume:	489		0		282		0		0		0	84	107		0		0	368		49
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	668	692			107	xxxx	xxxx	xxxxx			417	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	427	370			953	xxxx	xxxx	xxxxx			1153	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	403	343			953	xxxx	xxxx	xxxxx			1153	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	1.21	0.00			0.30	xxxx	xxxx	xxxx			0.07	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			1.2	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			10.4	xxxxx	xxxx	xxxxx			8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			B	*	*	*			A	*	*	*	*	*				
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	403	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	19.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	146.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	F	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	96.8					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 9.6 Worst Case Level Of Service: C[17.6]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	262		4		87		0		0		0	69	90		0		0	163		44
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	262		4		87		0		0		0	69	90		0		0	163		44
Added Vol:	0		0		282		0		0		0	0	0		0		0	223		0
PasserByVol:	0		0		0		0		0		0	0	0		0		0	0		0
Initial Fut:	262		4		369		0		0		0	69	90		0		0	386		44
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	262		4		369		0		0		0	69	90		0		0	386		44
Reduct Vol:	0		0		0		0		0		0	0	0		0		0	0		0
FinalVolume:	262		4		369		0		0		0	69	90		0		0	386		44
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	636	658			90	xxxx	xxxx	xxxxx			430	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	445	387			973	xxxx	xxxx	xxxxx			1140	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	425	363			973	xxxx	xxxx	xxxxx			1140	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.62	0.01			0.38	xxxx	xxxx	xxxx			0.06	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			1.8	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			10.9	xxxxx	xxxx	xxxxx			8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			B	*	*	*			A	*	*	*	*	*				
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	424	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	4.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	26.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	D	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	17.6					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	C					*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.674
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 24.1
Optimal Cycle: 39 | Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Volume Module:												
Base Vol:	489	0	99	0	0	0	84	107	0	0	203	49
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	489	0	99	0	0	0	84	107	0	0	203	49
Added Vol:	0	0	183	0	0	0	0	0	0	0	165	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	489	0	282	0	0	0	84	107	0	0	368	49
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	489	0	282	0	0	0	84	107	0	0	368	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	489	0	282	0	0	0	84	107	0	0	368	49
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	489	0	282	0	0	0	84	107	0	0	368	49
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.88	0.12
Final Sat.:	1343	0	1599	0	0	0	1805	1900	0	0	1650	220
Capacity Analysis Module:												
Vol/Sat:	0.36	0.00	0.18	0.00	0.00	0.00	0.05	0.06	0.00	0.00	0.22	0.22
Crit Moves:	****						****				****	
Green/Cycle:	0.54	0.00	0.54	0.00	0.00	0.00	0.07	0.40	0.00	0.00	0.33	0.33
Volume/Cap:	0.67	0.00	0.33	0.00	0.00	0.00	0.67	0.14	0.00	0.00	0.67	0.67
Delay/Veh:	19.1	0.0	13.1	0.0	0.0	0.0	59.1	19.2	0.0	0.0	31.8	31.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	19.1	0.0	13.1	0.0	0.0	0.0	59.1	19.2	0.0	0.0	31.8	31.8
LOS by Move:	B	A	B	A	A	A	E	B	A	A	C	C
HCM2k95thQ:	21	0	10	0	0	0	5	4	0	0	20	20

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.530
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 21.9
Optimal Cycle: 29 | Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Volume Module:												
Base Vol:	262	4	87	0	0	0	69	90	0	0	163	44
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	262	4	87	0	0	0	69	90	0	0	163	44
Added Vol:	0	0	282	0	0	0	0	0	0	0	223	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	262	4	369	0	0	0	69	90	0	0	386	44
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	262	4	369	0	0	0	69	90	0	0	386	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	262	4	369	0	0	0	69	90	0	0	386	44
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	262	4	369	0	0	0	69	90	0	0	386	44
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.93	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.99	0.99
Lanes:	0.98	0.02	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.90	0.10
Final Sat.:	1738	27	1599	0	0	0	1805	1900	0	0	1682	192
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.23	0.00	0.00	0.00	0.04	0.05	0.00	0.00	0.23	0.23
Crit Moves:			****				****				****	
Green/Cycle:	0.44	0.44	0.44	0.00	0.00	0.00	0.07	0.50	0.00	0.00	0.43	0.43
Volume/Cap:	0.35	0.35	0.53	0.00	0.00	0.00	0.53	0.09	0.00	0.00	0.53	0.53
Delay/Veh:	19.1	19.1	21.5	0.0	0.0	0.0	48.9	12.9	0.0	0.0	21.6	21.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	19.1	19.1	21.5	0.0	0.0	0.0	48.9	12.9	0.0	0.0	21.6	21.6
LOS by Move:	B	B	C	A	A	A	D	B	A	A	C	C
HCM2k95thQ:	11	11	16	0	0	0	4	3	0	0	17	17

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 17.9 Worst Case Level Of Service: E[37.2]

Street Name:	Asti (Frontage) Rd									South Interchange								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	108	51	1	10	31	91	79	43	81	1	47	10								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	108	51	1	10	31	91	79	43	81	1	47	10								
Added Vol:	0	0	0	0	0	165	183	0	0	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	108	51	1	10	31	256	262	43	81	1	47	10								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	108	51	1	10	31	256	262	43	81	1	47	10								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	108	51	1	10	31	256	262	43	81	1	47	10								
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2								
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3								
Capacity Module:																				
Cnflict Vol:	287	xxxx	xxxxx	52	xxxx	xxxxx	475	447	159	509	575	52								
Potent Cap.:	1287	xxxx	xxxxx	1567	xxxx	xxxxx	503	509	892	478	432	1022								
Move Cap.:	1287	xxxx	xxxxx	1567	xxxx	xxxxx	420	461	892	375	390	1022								
Volume/Cap:	0.08	xxxx	xxxx	0.01	xxxx	xxxx	0.62	0.09	0.09	0.00	0.12	0.01								
Level Of Service Module:																				
2Way95thQ:	0.3	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	8.1	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	478	xxxxx	xxxx	437	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	7.6	xxxxx	xxxxx	0.5	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	37.2	xxxxx	xxxxx	14.5	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	E	*	*	B	*								
ApproachDel:	xxxxxx			xxxxxx			37.2			14.5										
ApproachLOS:	*			*			E			B										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 27.5 Worst Case Level Of Service: F[55.1]

Street Name:	Asti (Frontage) Rd									South Interchange								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	94	31	1	10	28	73	55	43	77	1	47	10								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	94	31	1	10	28	73	55	43	77	1	47	10								
Added Vol:	0	0	0	0	0	223	282	0	0	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	94	31	1	10	28	296	337	43	77	1	47	10								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	94	31	1	10	28	296	337	43	77	1	47	10								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	94	31	1	10	28	296	337	43	77	1	47	10								
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2								
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3								
Capacity Module:																				
Cnflict Vol:	324	xxxx	xxxxx	32	xxxx	xxxxx	444	416	176	476	564	32								
Potent Cap.:	1247	xxxx	xxxxx	1593	xxxx	xxxxx	528	530	872	503	438	1048								
Move Cap.:	1247	xxxx	xxxxx	1593	xxxx	xxxxx	445	485	872	400	400	1048								
Volume/Cap:	0.08	xxxx	xxxx	0.01	xxxx	xxxx	0.76	0.09	0.09	0.00	0.12	0.01								
Level Of Service Module:																				
2Way95thQ:	0.2	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	8.1	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	489	xxxxx	xxxx	448	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.2	xxxxx	xxxxx	0.4	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	55.1	xxxxx	xxxxx	14.2	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	F	*	*	B	*								
ApproachDel:	xxxxxx			xxxxxx			55.1			14.2										
ApproachLOS:	*			*			F			B										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.544
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 30.4
Optimal Cycle: 29 | Level Of Service: C

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1! 0	0	0	1! 0	0	0	1! 0	0	0	1! 0
Volume Module:												
Base Vol:	108	51	1	10	31	91	79	43	81	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	108	51	1	10	31	91	79	43	81	1	47	10
Added Vol:	0	0	0	0	0	165	183	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	108	51	1	10	31	256	262	43	81	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	108	51	1	10	31	256	262	43	81	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	108	51	1	10	31	256	262	43	81	1	47	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	108	51	1	10	31	256	262	43	81	1	47	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.97	0.97	0.97	0.88	0.88	0.88	0.94	0.94	0.94	0.98	0.98	0.98
Lanes:	0.67	0.32	0.01	0.03	0.10	0.87	0.68	0.11	0.21	0.02	0.81	0.17
Final Sat.:	1239	585	11	56	175	1445	1212	199	375	32	1503	320
Capacity Analysis Module:												
Vol/Sat:	0.09	0.09	0.09	0.18	0.18	0.18	0.22	0.22	0.22	0.03	0.03	0.03
Crit Moves:		****		****				****				****
Green/Cycle:	0.16	0.16	0.16	0.33	0.33	0.33	0.40	0.40	0.40	0.06	0.06	0.06
Volume/Cap:	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
Delay/Veh:	40.7	40.7	40.7	28.8	28.8	28.8	24.1	24.1	24.1	51.6	51.6	51.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	40.7	40.7	40.7	28.8	28.8	28.8	24.1	24.1	24.1	51.6	51.6	51.6
LOS by Move:	D	D	D	C	C	C	C	C	C	D	D	D
HCM2k95thQ:	10	10	10	15	15	15	17	17	17	5	5	5

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.591
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 29.9
Optimal Cycle: 32 | Level Of Service: C

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1! 0	0	0	1! 0	0	0	1! 0	0	0	1! 0
Volume Module:												
Base Vol:	94	31	1	10	28	73	55	43	77	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	31	1	10	28	73	55	43	77	1	47	10
Added Vol:	0	0	0	0	0	223	282	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	94	31	1	10	28	296	337	43	77	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	94	31	1	10	28	296	337	43	77	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	94	31	1	10	28	296	337	43	77	1	47	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	94	31	1	10	28	296	337	43	77	1	47	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.96	0.96	0.96	0.88	0.88	0.88	0.94	0.94	0.94	0.98	0.98	0.98
Lanes:	0.75	0.24	0.01	0.03	0.08	0.89	0.74	0.09	0.17	0.02	0.81	0.17
Final Sat.:	1365	450	15	50	140	1480	1320	168	302	32	1503	320
Capacity Analysis Module:												
Vol/Sat:	0.07	0.07	0.07	0.20	0.20	0.20	0.26	0.26	0.26	0.03	0.03	0.03
Crit Moves:		****		****					****			****
Green/Cycle:	0.12	0.12	0.12	0.34	0.34	0.34	0.43	0.43	0.43	0.05	0.05	0.05
Volume/Cap:	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Delay/Veh:	46.3	46.3	46.3	29.0	29.0	29.0	22.9	22.9	22.9	55.5	55.5	55.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	46.3	46.3	46.3	29.0	29.0	29.0	22.9	22.9	22.9	55.5	55.5	55.5
LOS by Move:	D	D	D	C	C	C	C	C	C	E	E	E
HCM2k95thQ:	9	9	9	17	17	17	19	19	19	6	6	6

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

PM Short-term+ Project D Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	22	4.3	0.225	12.0	LOS B	31	0.62	0.83	23.6
16T	T	92	2.2	0.225	4.9	LOS A	31	0.62	0.52	27.1
16R	R	55	1.8	0.225	6.4	LOS A	31	0.62	0.64	26.0
Approach		**170**	**2.4**	**0.225**	**6.3**	**LOS A**	**31**	**0.62**	**0.60**	**26.1**
WB AV Resort										
1L	L	1	50.0	0.091	14.7	LOS B	12	0.61	0.87	23.0
6T	T	40	2.5	0.090	5.2	LOS A	12	0.61	0.55	27.1
6R	R	20	4.8	0.091	6.5	LOS A	12	0.61	0.64	26.2
Approach		**63**	**4.8**	**0.090**	**5.9**	**LOS A**	**12**	**0.61**	**0.59**	**26.6**
SB Asti										
17L	L	43	2.3	0.391	14.1	LOS B	65	0.66	0.90	23.1
14T	T	251	2.0	0.392	5.4	LOS A	65	0.66	0.60	26.7
14R	R	19	5.0	0.392	7.0	LOS A	65	0.66	0.71	25.8
Approach		**314**	**2.2**	**0.392**	**6.7**	**LOS A**	**65**	**0.66**	**0.65**	**26.0**
EB South Interchange										
5L	L	133	2.3	0.136	10.8	LOS B	25	0.17	0.60	24.7
2T	T	24	4.0	0.136	1.8	LOS A	25	0.17	0.20	30.9
2R	R	45	2.2	0.136	1.8	LOS A	25	0.17	0.20	30.9
Approach		**203**	**2.5**	**0.136**	**7.7**	**LOS A**	**25**	**0.17**	**0.46**	**26.2**
101 NB Offramp										
13L	L	515	1.9	0.344	12.6	LOS B	62	0.42	0.68	23.6
18T	T	234	2.1	0.344	2.9	LOS A	62	0.42	0.31	28.6
18R	R	64	1.6	0.344	4.1	LOS A	62	0.42	0.41	27.6
Approach		**812**	**2.0**	**0.344**	**9.2**	**LOS A**	**62**	**0.42**	**0.55**	**24.9**
All Vehicles		**1562**	**2.2**	**0.392**	**8.0**	**LOS A**	**65**	**0.46**	**0.57**	**25.4**

Symbols which may appear in this table:

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

Weekend Midday Short-term+ Project D Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	21	4.5	0.162	11.4	LOS B	21	0.55	0.79	23.9
16T	T	78	2.6	0.162	4.3	LOS A	21	0.55	0.46	27.6
16R	R	34	2.9	0.162	5.9	LOS A	21	0.55	0.58	26.5
Approach		**134**	**3.0**	**0.162**	**5.8**	**LOS A**	**21**	**0.55**	**0.54**	**26.5**
WB AV Resort										
1L	L	1	50.0	0.080	14.0	LOS B	11	0.55	0.83	23.2
6T	T	39	2.6	0.081	4.5	LOS A	11	0.55	0.48	27.5
6R	R	21	4.5	0.081	5.8	LOS A	11	0.55	0.58	26.6
Approach		**63**	**4.8**	**0.081**	**5.2**	**LOS A**	**11**	**0.55**	**0.52**	**27.0**
SB Asti										
17L	L	40	2.5	0.377	12.7	LOS B	57	0.54	0.79	23.5
14T	T	295	2.0	0.376	4.0	LOS A	57	0.54	0.43	27.6
14R	R	17	5.6	0.375	5.6	LOS A	57	0.54	0.55	26.5
Approach		**353**	**2.3**	**0.376**	**5.1**	**LOS A**	**57**	**0.54**	**0.48**	**26.9**
EB South Interchange										
5L	L	102	2.0	0.113	10.9	LOS B	20	0.15	0.61	24.7
2T	T	23	4.2	0.113	1.8	LOS A	20	0.15	0.19	31.0
2R	R	42	2.4	0.113	1.8	LOS A	20	0.15	0.19	31.0
Approach		**168**	**2.4**	**0.113**	**7.3**	**LOS A**	**20**	**0.15**	**0.44**	**26.5**
101 NB Offramp										
13L	L	276	2.2	0.265	12.4	LOS B	38	0.37	0.66	23.8
18T	T	329	2.1	0.295	2.7	LOS A	50	0.37	0.29	28.9
18R	R	62	1.6	0.295	3.8	LOS A	50	0.37	0.38	28.0
Approach		**668**	**2.1**	**0.295**	**6.8**	**LOS A**	**50**	**0.37**	**0.45**	**26.2**
All Vehicles		**1386**	**2.4**	**0.377**	**6.3**	**LOS A**	**57**	**0.41**	**0.47**	**26.4**

Symbols which may appear in this table:

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt E

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	281.00	474.00	281	474	755	100.0
	Zone 38 Subtotal					281	474	755	100.0
TOTAL						281	474	755	100.0

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt E

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	374.00	358.00	374	358	732	100.0
	Zone 38 Subtotal					374	358	732	100.0
TOTAL						374	358	732	100.0

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.386
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	11.8
Optimal Cycle:	18	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	76	380	100	44	257	17	18	43	98	147	44	51
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	76	380	100	44	257	17	18	43	98	147	44	51
Added Vol:	24	47	24	0	28	0	0	0	14	14	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	100	427	124	44	285	17	18	43	112	161	44	51
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	100	427	124	44	285	17	18	43	112	161	44	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	100	427	124	44	285	17	18	43	112	161	44	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	100	427	124	44	285	17	18	43	112	161	44	51
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.78	0.78	0.85	0.81	0.81	0.81	0.88	0.88	0.88	0.72	0.72	0.72
Lanes:	0.38	1.62	1.00	0.25	1.65	0.10	0.10	0.25	0.65	0.63	0.17	0.20
Final Sat.:	562	2401	1615	393	2548	152	174	416	1083	864	236	274
Capacity Analysis Module:												
Vol/Sat:	0.18	0.18	0.08	0.11	0.11	0.11	0.10	0.10	0.10	0.19	0.19	0.19
Crit Moves:		****									****	
Green/Cycle:	0.46	0.46	0.46	0.46	0.46	0.46	0.48	0.48	0.48	0.48	0.48	0.48
Volume/Cap:	0.39	0.39	0.17	0.24	0.24	0.24	0.21	0.21	0.21	0.39	0.39	0.39
Delay/Veh:	12.6	12.6	11.1	11.6	11.6	11.6	10.6	10.6	10.6	11.9	11.9	11.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.6	12.6	11.1	11.6	11.6	11.6	10.6	10.6	10.6	11.9	11.9	11.9
LOS by Move:	B	B	B	B	B	B	B	B	B	B	B	B
HCM2kAvgQ:	4	4	2	2	2	2	2	2	2	4	4	4

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.355
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	11.8
Optimal Cycle:	17	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	88	322	121	46	315	17	18	43	86	126	44	48
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	88	322	121	46	315	17	18	43	86	126	44	48
Added Vol:	18	36	18	0	37	0	0	0	19	19	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	106	358	139	46	352	17	18	43	105	145	44	48
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	106	358	139	46	352	17	18	43	105	145	44	48
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	106	358	139	46	352	17	18	43	105	145	44	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	106	358	139	46	352	17	18	43	105	145	44	48
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.75	0.75	0.85	0.83	0.83	0.83	0.88	0.88	0.88	0.73	0.73	0.73
Lanes:	0.46	1.54	1.00	0.22	1.70	0.08	0.11	0.26	0.63	0.61	0.19	0.20
Final Sat.:	647	2186	1615	348	2660	128	182	435	1061	848	257	281
Capacity Analysis Module:												
Vol/Sat:	0.16	0.16	0.09	0.13	0.13	0.13	0.10	0.10	0.10	0.17	0.17	0.17
Crit Moves:		****									****	
Green/Cycle:	0.46	0.46	0.46	0.46	0.46	0.46	0.48	0.48	0.48	0.48	0.48	0.48
Volume/Cap:	0.35	0.35	0.19	0.29	0.29	0.29	0.21	0.21	0.21	0.35	0.35	0.35
Delay/Veh:	12.3	12.3	11.2	11.8	11.8	11.8	10.6	10.6	10.6	11.7	11.7	11.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.3	12.3	11.2	11.8	11.8	11.8	10.6	10.6	10.6	11.7	11.7	11.7
LOS by Move:	B	B	B	B	B	B	B	B	B	B	B	B
HCM2kAvgQ:	4	4	2	3	3	3	2	2	2	3	3	3

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.2 Worst Case Level Of Service: C[24.4]

Street Name:	Cloverdale Blvd									Lake St												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:																						
Base Vol:	0	542	113		46	472		0		0	0		0		76		0		34			
Growth Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00			
Initial Bse:	0	542	113		46	472		0		0	0		0		76		0		34			
Added Vol:	0	95	0		0	56		0		0	0		0		0		0		0			
PasserByVol:	0	0	0		0	0		0		0	0		0		0		0		0			
Initial Fut:	0	637	113		46	528		0		0	0		0		76		0		34			
User Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00			
PHF Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00			
PHF Volume:	0	637	113		46	528		0		0	0		0		76		0		34			
Reduct Vol:	0	0	0		0	0		0		0	0		0		0		0		0			
FinalVolume:	0	637	113		46	528		0		0	0		0		76		0		34			
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.8	xxxx		6.9							
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx		3.3							
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx	xxxxx		750	xxxx	xxxxx	xxxx	xxxx	xxxxx		1050	xxxx		375							
Potent Cap.:	xxxx	xxxx	xxxxx		868	xxxx	xxxxx	xxxx	xxxx	xxxxx		226	xxxx		628							
Move Cap.:	xxxx	xxxx	xxxxx		868	xxxx	xxxxx	xxxx	xxxx	xxxxx		217	xxxx		628							
Volume/Cap:	xxxx	xxxx	xxxx		0.05	xxxx	xxxx	xxxx	xxxx	xxxx		0.35	xxxx		0.05							
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx	xxxxx		0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx		1.5	xxxx		0.2							
Control Del:	xxxxx	xxxx	xxxxx		9.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx		30.3	xxxx		11.1							
LOS by Move:	*	*	*		A	*	*	*	*	*		D	*		B							
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx		xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx		0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx		9.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx							
Shared LOS:	*	*	*		A	*	*	*	*	*		*	*		*							
ApproachDel:	xxxxxx				xxxxxx				xxxxxx						24.4							
ApproachLOS:	*				*				*						C							

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: C[15.8]

Street Name:	Cloverdale Blvd									Lake St												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:																						
Base Vol:	0	371	71		28	367		0		0	0		0		68		0		27			
Growth Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00			
Initial Bse:	0	371	71		28	367		0		0	0		0		68		0		27			
Added Vol:	0	72	0		0	75		0		0	0		0		0		0		0			
PasserByVol:	0	0	0		0	0		0		0	0		0		0		0		0			
Initial Fut:	0	443	71		28	442		0		0	0		0		68		0		27			
User Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00			
PHF Adj:	1.00	1.00	1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00			
PHF Volume:	0	443	71		28	442		0		0	0		0		68		0		27			
Reduct Vol:	0	0	0		0	0		0		0	0		0		0		0		0			
FinalVolume:	0	443	71		28	442		0		0	0		0		68		0		27			
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.8	xxxx		6.9							
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx		3.3							
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx	xxxxx		514	xxxx	xxxxx	xxxx	xxxx	xxxxx		756	xxxx		257							
Potent Cap.:	xxxx	xxxx	xxxxx		1062	xxxx	xxxxx	xxxx	xxxx	xxxxx		349	xxxx		748							
Move Cap.:	xxxx	xxxx	xxxxx		1062	xxxx	xxxxx	xxxx	xxxx	xxxxx		341	xxxx		748							
Volume/Cap:	xxxx	xxxx	xxxx		0.03	xxxx	xxxx	xxxx	xxxx	xxxx		0.20	xxxx		0.04							
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx	xxxxx		0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx		0.7	xxxx		0.1							
Control Del:	xxxxx	xxxx	xxxxx		8.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx		18.1	xxxx		10.0							
LOS by Move:	*	*	*		A	*	*	*	*	*		C	*		A							
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx		xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx		0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx		8.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx							
Shared LOS:	*	*	*		A	*	*	*	*	*		*	*		*							
ApproachDel:	xxxxxx				xxxxxx				xxxxxx						15.8							
ApproachLOS:	*				*				*						C							

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.448
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	15.4
Optimal Cycle:	24	Level Of Service:	B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	15	465	133	152	446	6	5	14	25	194	25	241
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	465	133	152	446	6	5	14	25	194	25	241
Added Vol:	0	0	14	56	0	0	0	0	0	24	0	95
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	15	465	147	208	446	6	5	14	25	218	25	336
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	15	465	147	208	446	6	5	14	25	218	25	336
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	15	465	147	208	446	6	5	14	25	218	25	336
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	15	465	147	208	446	6	5	14	25	218	25	336
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.96	0.96	0.85
Lanes:	1.00	1.52	0.48	1.00	1.97	0.03	0.11	0.32	0.57	1.79	0.21	1.00
Final Sat.:	1805	2644	836	1805	3555	48	198	555	990	3262	374	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.18	0.18	0.12	0.13	0.13	0.03	0.03	0.03	0.07	0.07	0.21
Crit Moves:		****		****				****				****
Green/Cycle:	0.04	0.39	0.39	0.26	0.61	0.61	0.06	0.06	0.06	0.21	0.21	0.46
Volume/Cap:	0.21	0.45	0.45	0.45	0.21	0.21	0.45	0.45	0.45	0.32	0.32	0.45
Delay/Veh:	33.9	15.9	15.9	22.5	6.1	6.1	35.2	35.2	35.2	23.8	23.8	13.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	33.9	15.9	15.9	22.5	6.1	6.1	35.2	35.2	35.2	23.8	23.8	13.1
LOS by Move:	C	B	B	C	A	A	D	D	D	C	C	B
HCM2kAvgQ:	1	5	5	4	2	2	2	2	2	2	2	5

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.405
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	22.2
Optimal Cycle:	23	Level Of Service:	C

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	53	50	136	45	44	10	8	175	42	135	158	45
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	53	50	136	45	44	10	8	175	42	135	158	45
Added Vol:	0	0	19	75	0	0	0	0	0	18	0	72
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	53	50	155	120	44	10	8	175	42	153	158	117
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	53	50	155	120	44	10	8	175	42	153	158	117
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	53	50	155	120	44	10	8	175	42	153	158	117
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	53	50	155	120	44	10	8	175	42	153	158	117
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.84	0.84	0.95	0.92	0.92	0.97	0.97	0.97	0.98	0.98	0.85
Lanes:	1.00	1.00	1.00	1.00	1.63	0.37	0.03	0.78	0.19	1.00	1.00	1.00
Final Sat.:	1805	1601	1601	1805	2859	650	66	1438	345	1854	1854	1615
Capacity Analysis Module:												
Vol/Sat:	0.03	0.03	0.10	0.07	0.02	0.02	0.12	0.12	0.12	0.08	0.09	0.07
Crit Moves:			****	****			****				****	
Green/Cycle:	0.26	0.24	0.24	0.16	0.14	0.14	0.30	0.30	0.30	0.21	0.21	0.37
Volume/Cap:	0.11	0.13	0.40	0.40	0.11	0.11	0.40	0.40	0.40	0.39	0.40	0.19
Delay/Veh:	19.6	21.0	23.0	27.1	26.5	26.5	20.0	20.0	20.0	24.1	24.2	14.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	19.6	21.0	23.0	27.1	26.5	26.5	20.0	20.0	20.0	24.1	24.2	14.9
LOS by Move:	B	C	C	C	C	C	B	B	B	C	C	B
HCM2kAvgQ:	1	1	3	3	1	1	4	4	4	3	3	2

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.8 Worst Case Level Of Service: B[14.8]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module:																				
Base Vol:	0	0	0	8	0	41	0	70	192	46	455	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	8	0	41	0	70	192	46	455	0								
Added Vol:	0	0	0	56	0	0	0	70	0	0	119	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	64	0	41	0	140	192	46	574	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	64	0	41	0	140	192	46	574	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	64	0	41	0	140	192	46	574	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	736	998	287	xxxx	xxxx	xxxxx	332	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	359	246	716	xxxx	xxxx	xxxxx	1239	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	348	237	716	xxxx	xxxx	xxxxx	1239	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.18	0.00	0.06	xxxx	xxxx	xxxx	0.04	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	17.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx								
LOS by Move:	*	*	*	C	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT						LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	716	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	B	*	*	*	*	*	*								
ApproachDel:	xxxxxx			14.8			xxxxxx			xxxxxx										
ApproachLOS:	*			B			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: B[12.1]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module:																				
Base Vol:	0	0	0	6	0	33	0	56	175	34	230	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	6	0	33	0	56	175	34	230	0								
Added Vol:	0	0	0	75	0	0	0	94	0	0	90	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	81	0	33	0	150	175	34	320	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	81	0	33	0	150	175	34	320	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	81	0	33	0	150	175	34	320	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	463	713	160	xxxx	xxxx	xxxxx	325	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	533	360	863	xxxx	xxxx	xxxxx	1246	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	522	350	863	xxxx	xxxx	xxxxx	1246	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.16	0.00	0.04	xxxx	xxxx	xxxx	0.03	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	13.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx								
LOS by Move:	*	*	*	B	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT						LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	863	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*								
ApproachDel:	xxxxxx			12.1			xxxxxx			xxxxxx										
ApproachLOS:	*			B			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 8.0 Worst Case Level Of Service: C[16.9]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module:																				
Base Vol:	361		0		79	0		0		0	38		31		0	0		99		16
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	361		0		79	0		0		0	38		31		0	0		99		16
Added Vol:	0		0		0	0		0		0	0		126		0	0		119		95
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	361		0		79	0		0		0	38		157		0	0		218		111
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	361		0		79	0		0		0	38		157		0	0		218		111
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	361		0		79	0		0		0	38		157		0	0		218		111
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	342	562			79	xxxx	xxxx	xxxxx			329	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	634	439			973	xxxx	xxxx	xxxxx			1242	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	619	425			973	xxxx	xxxx	xxxxx			1242	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.58	0.00			0.08	xxxx	xxxx	xxxx			0.03	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.3	xxxx	xxxx	xxxxx			0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			9.0	xxxxx	xxxx	xxxxx			8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT		
Shared Cap.:	619	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	3.8	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	18.6	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	C	*		*		*	*		*		*	*		*		*	*		*	
ApproachDel:		16.9				xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:		C				*					*					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 4.4 Worst Case Level Of Service: B[12.6]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module:																				
Base Vol:	187		0		42	0		0		0	33		30		0	0		82		16
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	187		0		42	0		0		0	33		30		0	0		82		16
Added Vol:	0		0		0	0		0		0	0		168		0	0		90		72
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	187		0		42	0		0		0	33		198		0	0		172		88
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	187		0		42	0		0		0	33		198		0	0		172		88
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	187		0		42	0		0		0	33		198		0	0		172		88
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	350	524			99	xxxx	xxxx	xxxxx			260	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	626	461			944	xxxx	xxxx	xxxxx			1316	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	615	449			944	xxxx	xxxx	xxxxx			1316	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.30	0.00			0.04	xxxx	xxxx	xxxx			0.03	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.1	xxxx	xxxx	xxxxx			0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			9.0	xxxxx	xxxx	xxxxx			7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT		
Shared Cap.:	615	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	1.3	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	13.4	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	B	*		*		*	*		*		*	*		*		*	*		*	
ApproachDel:		12.6				xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:		B				*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.6 Worst Case Level Of Service: B[12.6]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	69	76	0	0	52	41	88	0	26	0	0	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	69	76	0	0	52	41	88	0	26	0	0	0								
Added Vol:	213	0	0	0	0	0	0	0	126	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	282	76	0	0	52	41	88	0	152	0	0	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	282	76	0	0	52	41	88	0	152	0	0	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	282	76	0	0	52	41	88	0	152	0	0	0								
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx								
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	93	xxxx	xxxxx	xxxx	xxxx	xxxxx	692	xxxx	52	xxxx	xxxx	xxxxx								
Potent Cap.:	1514	xxxx	xxxxx	xxxx	xxxx	xxxxx	413	xxxx	1021	xxxx	xxxx	xxxxx								
Move Cap.:	1514	xxxx	xxxxx	xxxx	xxxx	xxxxx	354	xxxx	1021	xxxx	xxxx	xxxxx								
Volume/Cap:	0.19	xxxx	xxxx	xxxx	xxxx	xxxx	0.25	xxxx	0.15	xxxx	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx	1.0	xxxx	0.5	xxxx	xxxx	xxxxx								
Control Del:	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	18.5	xxxx	9.1	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	*	*	*	C	*	A	*	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			12.6			xxxxxx										
ApproachLOS:	*			*			B			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 6.9 Worst Case Level Of Service: A[10.0]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	45	50	0	0	43	34	41	0	27	0	0	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	45	50	0	0	43	34	41	0	27	0	0	0								
Added Vol:	161	0	0	0	0	0	0	0	168	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	206	50	0	0	43	34	41	0	195	0	0	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	206	50	0	0	43	34	41	0	195	0	0	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	206	50	0	0	43	34	41	0	195	0	0	0								
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx								
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	77	xxxx	xxxxx	xxxx	xxxx	xxxxx	505	xxxx	43	xxxx	xxxx	xxxxx								
Potent Cap.:	1535	xxxx	xxxxx	xxxx	xxxx	xxxxx	530	xxxx	1033	xxxx	xxxx	xxxxx								
Move Cap.:	1535	xxxx	xxxxx	xxxx	xxxx	xxxxx	476	xxxx	1033	xxxx	xxxx	xxxxx								
Volume/Cap:	0.13	xxxx	xxxx	xxxx	xxxx	xxxx	0.09	xxxx	0.19	xxxx	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	0.7	xxxx	xxxx	xxxxx								
Control Del:	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	13.3	xxxx	9.3	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	*	*	*	B	*	A	*	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			10.0			xxxxxx										
ApproachLOS:	*			*			A			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 16.4 Worst Case Level Of Service: D[30.6]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	119		0		0	72		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	119		0		0	72		0		0	0		0		0	0		0	
Added Vol:	0	0		155		126	0		0		0	0		0		261	0		213	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	119		155		126	72		0		0	0		0		261	0		213	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	119		155		126	72		0		0	0		0		261	0		213	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	119		155		126	72		0		0	0		0		261	0		213	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		274	xxxx		xxxxx		xxxx	xxxx		xxxxx		521	521		197	
Potent Cap.:	xxxx	xxxx		xxxxx		1301	xxxx		xxxxx		xxxx	xxxx		xxxxx		520	463		850	
Move Cap.:	xxxx	xxxx		xxxxx		1301	xxxx		xxxxx		xxxx	xxxx		xxxxx		478	415		850	
Volume/Cap:	xxxx	xxxx		xxxx		0.10	xxxx		xxxx		xxxx	xxxx		xxxx		0.55	0.00		0.25	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.3	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		8.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	595		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.3	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	7.8		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	30.6		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	D		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						30.6			
ApproachLOS:	*					*					*						D			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 10.8 Worst Case Level Of Service: C[22.5]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	77		0		0	60		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	77		0		0	60		0		0	0		0		0	0		0	
Added Vol:	0	0		206		168	0		0		0	0		0		197	0		161	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	77		206		168	60		0		0	0		0		197	0		161	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	77		206		168	60		0		0	0		0		197	0		161	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	77		206		168	60		0		0	0		0		197	0		161	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		283	xxxx		xxxxx		xxxx	xxxx		xxxxx		576	576		180	
Potent Cap.:	xxxx	xxxx		xxxxx		1291	xxxx		xxxxx		xxxx	xxxx		xxxxx		482	431		868	
Move Cap.:	xxxx	xxxx		xxxxx		1291	xxxx		xxxxx		xxxx	xxxx		xxxxx		429	369		868	
Volume/Cap:	xxxx	xxxx		xxxx		0.13	xxxx		xxxx		xxxx	xxxx		xxxx		0.46	0.00		0.19	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.4	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		8.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	556		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.4	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	4.6		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	22.5		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	C		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						22.5			
ApproachLOS:	*					*					*						C			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: B[13.2]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	106		16		5	86		0		0		0		0	27		0		3
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	106		16		5	86		0		0		0		0	27		0		3
Added Vol:	0	155		0		0	261		0		0		0		0	0		0		0
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0
Initial Fut:	0	261		16		5	347		0		0		0		0	27		0		3
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	261		16		5	347		0		0		0		0	27		0		3
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	0	261		16		5	347		0		0		0		0	27		0		3
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx		xxxx		xxxxx	6.4		6.5		6.2
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	3.5		4.0		3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		277	xxxx		xxxxx		xxxx		xxxx		xxxxx	626		626		269
Potent Cap.:	xxxx	xxxx		xxxxx		1298	xxxx		xxxxx		xxxx		xxxx		xxxxx	451		403		775
Move Cap.:	xxxx	xxxx		xxxxx		1298	xxxx		xxxxx		xxxx		xxxx		xxxxx	450		402		775
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx		xxxx		xxxx	0.06		0.00		0.00
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
Control Del:	xxxxx	xxxx		xxxxx		7.8	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
LOS by Move:	*	*		*		A	*		*		*		*		*	*		*		*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		470		xxxxx
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		0.2		xxxxx
Shrd ConDel:	xxxxx	xxxx		xxxxx		7.8	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		13.2		xxxxx
Shared LOS:	*	*		*		A	*		*		*		*		*	*		B		*
ApproachDel:	xxxxxx					xxxxxx					xxxxxx							13.2		
ApproachLOS:	*					*					*							B		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: A[9.7]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Volume Module:																				
Base Vol:	0	65		1		4	75		0		0		0		0	0		0		2
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	65		1		4	75		0		0		0		0	0		0		2
Added Vol:	0	206		0		0	197		0		0		0		0	0		0		0
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0
Initial Fut:	0	271		1		4	272		0		0		0		0	0		0		2
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	271		1		4	272		0		0		0		0	0		0		2
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	0	271		1		4	272		0		0		0		0	0		0		2
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		6.2
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		272	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		272
Potent Cap.:	xxxx	xxxx		xxxxx		1303	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		772
Move Cap.:	xxxx	xxxx		xxxxx		1303	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		772
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx		xxxx		xxxx	xxxx		xxxx		0.00
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		0.0
Control Del:	xxxxx	xxxx		xxxxx		7.8	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		9.7
LOS by Move:	*	*		*		A	*		*		*		*		*	*		*		A
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
Shrd ConDel:	xxxxx	xxxx		xxxxx		7.8	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
Shared LOS:	*	*		*		A	*		*		*		*		*	*		*		*
ApproachDel:	xxxxxx					xxxxxx					xxxxxx							9.7		
ApproachLOS:	*					*					*							A		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[12.8]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module:																
Base Vol:	199	444		0	0	214		50	36		0	91	0		0	0
Growth Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Initial Bse:	199	444		0	0	214		50	36		0	91	0		0	0
Added Vol:	24	47		0	0	28		0	0		0	14	0		0	0
PasserByVol:	0	0		0	0	0		0	0		0	0	0		0	0
Initial Fut:	223	491		0	0	242		50	36		0	105	0		0	0
User Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Volume:	223	491		0	0	242		50	36		0	105	0		0	0
Reduct Vol:	0	0		0	0	0		0	0		0	0	0		0	0
FinalVolume:	223	491		0	0	242		50	36		0	105	0		0	0
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5		6.2	xxxxx	xxxx	xxxxx	
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	xxxx	xxxxx	
Capacity Module:																
Cnflict Vol:	292	xxxx	xxxxx	xxxx	xxxx	xxxxx			1179	1179		242	xxxx	xxxx	xxxxx	
Potent Cap.:	1281	xxxx	xxxxx	xxxx	xxxx	xxxxx			212	192		802	xxxx	xxxx	xxxxx	
Move Cap.:	1281	xxxx	xxxxx	xxxx	xxxx	xxxxx			184	159		802	xxxx	xxxx	xxxxx	
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			268	239		xxxxx	191	222	xxxxx	
Volume/Cap:	0.17	xxxx	xxxx	xxxx	xxxx	xxxx			0.13	0.00		0.13	xxxx	xxxx	xxxx	
Level Of Service Module:																
2Way95thQ:	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	xxxx		0.4	xxxx	xxxx	xxxxx	
Control Del:	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	xxxx		10.2	xxxxx	xxxx	xxxxx	
LOS by Move:	A	*	*	*	*	*			*	*		B	*	*	*	
Movement:	LT -	LTR -	RT	LT -	LTR -	RT			LT -	LTR -		RT	LT -	LTR -	RT	
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			268	xxxx		xxxxx	xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			0.5	xxxx		xxxxx	xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			20.5	xxxx		xxxxx	xxxxx	xxxx	xxxxx	
Shared LOS:	*	*	*	*	*	*			C	*		*	*	*	*	
ApproachDel:	xxxxxx			xxxxxx					12.8				xxxxxx			
ApproachLOS:	*			*					B				*			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.6 Worst Case Level Of Service: B[12.9]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module:																
Base Vol:	146	340		0	0	318		43	43		0	144	0		0	0
Growth Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Initial Bse:	146	340		0	0	318		43	43		0	144	0		0	0
Added Vol:	18	36		0	0	37		0	0		0	19	0		0	0
PasserByVol:	0	0		0	0	0		0	0		0	0	0		0	0
Initial Fut:	164	376		0	0	355		43	43		0	163	0		0	0
User Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Volume:	164	376		0	0	355		43	43		0	163	0		0	0
Reduct Vol:	0	0		0	0	0		0	0		0	0	0		0	0
FinalVolume:	164	376		0	0	355		43	43		0	163	0		0	0
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5		6.2	xxxxx	xxxx	xxxxx	
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	xxxx	xxxxx	
Capacity Module:																
Cnflict Vol:	398	xxxx	xxxxx	xxxx	xxxx	xxxxx			1059	1059		355	xxxx	xxxx	xxxxx	
Potent Cap.:	1172	xxxx	xxxxx	xxxx	xxxx	xxxxx			251	226		693	xxxx	xxxx	xxxxx	
Move Cap.:	1172	xxxx	xxxxx	xxxx	xxxx	xxxxx			224	195		693	xxxx	xxxx	xxxxx	
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			334	297		xxxxx	200	270	xxxxx	
Volume/Cap:	0.14	xxxx	xxxx	xxxx	xxxx	xxxx			0.13	0.00		0.24	xxxx	xxxx	xxxx	
Level Of Service Module:																
2Way95thQ:	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	xxxx		0.9	xxxx	xxxx	xxxxx	
Control Del:	8.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	xxxx		11.8	xxxxx	xxxx	xxxxx	
LOS by Move:	A	*	*	*	*	*			*	*		B	*	*	*	
Movement:	LT -	LTR -	RT	LT -	LTR -	RT			LT -	LTR -		RT	LT -	LTR -	RT	
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			334	xxxx		xxxxx	xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			0.4	xxxx		xxxxx	xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			17.3	xxxx		xxxxx	xxxxx	xxxx	xxxxx	
Shared LOS:	*	*	*	*	*	*			C	*		*	*	*	*	
ApproachDel:	xxxxxx			xxxxxx					12.9				xxxxxx			
ApproachLOS:	*			*					B				*			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 12.4 Worst Case Level Of Service: C[18.7]

Street Name:	Cloverdale Blvd									South Interchange												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:																						
Base Vol:	0	110		68	286	76	0		0	0	0		67	0	579							
Growth Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00							
Initial Bse:	0	110		68	286	76	0		0	0	0		67	0	579							
Added Vol:	0	0		0	42	0	0		0	0	0		0	0	71							
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0							
Initial Fut:	0	110		68	328	76	0		0	0	0		67	0	650							
User Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00							
PHF Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00							
PHF Volume:	0	110		68	328	76	0		0	0	0		67	0	650							
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0							
FinalVolume:	0	110		68	328	76	0		0	0	0		67	0	650							
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx		xxxxx	4.1	xxxx	xxxxx		xxxxx	xxxx	xxxxx		6.4	xxxx	6.2							
FollowUpTim:	xxxxx	xxxx		xxxxx	2.2	xxxx	xxxxx		xxxxx	xxxx	xxxxx		3.5	xxxx	3.3							
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx		xxxxx	178	xxxx	xxxxx		xxxx	xxxx	xxxxx		876	xxxx	144							
Potent Cap.:	xxxx	xxxx		xxxxx	1410	xxxx	xxxxx		xxxx	xxxx	xxxxx		322	xxxx	909							
Move Cap.:	xxxx	xxxx		xxxxx	1410	xxxx	xxxxx		xxxx	xxxx	xxxxx		264	xxxx	909							
Volume/Cap:	xxxx	xxxx		xxxx	0.23	xxxx	xxxx		xxxx	xxxx	xxxx		0.25	xxxx	0.72							
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx		xxxxx	0.9	xxxx	xxxxx		xxxx	xxxx	xxxxx		1.0	xxxx	6.3							
Control Del:	xxxxx	xxxx		xxxxx	8.3	xxxx	xxxxx		xxxxx	xxxx	xxxxx		23.2	xxxx	18.2							
LOS by Move:	*	*		*	A	*	*		*	*	*		C	*	C							
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx		xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx							
SharedQueue:	xxxxx	xxxx		xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shrd ConDel:	xxxxx	xxxx		xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shared LOS:	*	*		*	*	*	*		*	*	*		*	*	*							
ApproachDel:	xxxxxx				xxxxxx				xxxxxx				18.7									
ApproachLOS:	*				*				*				C									

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 8.3 Worst Case Level Of Service: B[11.8]

Street Name:	Cloverdale Blvd									South Interchange												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:																						
Base Vol:	0	54		56	270	64	0		0	0	0		40	0	332							
Growth Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00							
Initial Bse:	0	54		56	270	64	0		0	0	0		40	0	332							
Added Vol:	0	0		0	56	0	0		0	0	0		0	0	54							
PasserByVol:	0	0		0	0	0	0		0	0	0		0	0	0							
Initial Fut:	0	54		56	326	64	0		0	0	0		40	0	386							
User Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00							
PHF Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00							
PHF Volume:	0	54		56	326	64	0		0	0	0		40	0	386							
Reduct Vol:	0	0		0	0	0	0		0	0	0		0	0	0							
FinalVolume:	0	54		56	326	64	0		0	0	0		40	0	386							
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx		xxxxx	4.1	xxxx	xxxxx		xxxxx	xxxx	xxxxx		6.4	xxxx	6.2							
FollowUpTim:	xxxxx	xxxx		xxxxx	2.2	xxxx	xxxxx		xxxxx	xxxx	xxxxx		3.5	xxxx	3.3							
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx		xxxxx	110	xxxx	xxxxx		xxxx	xxxx	xxxxx		798	xxxx	82							
Potent Cap.:	xxxx	xxxx		xxxxx	1493	xxxx	xxxxx		xxxx	xxxx	xxxxx		358	xxxx	983							
Move Cap.:	xxxx	xxxx		xxxxx	1493	xxxx	xxxxx		xxxx	xxxx	xxxxx		298	xxxx	983							
Volume/Cap:	xxxx	xxxx		xxxx	0.22	xxxx	xxxx		xxxx	xxxx	xxxx		0.13	xxxx	0.39							
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx		xxxxx	0.8	xxxx	xxxxx		xxxx	xxxx	xxxxx		0.5	xxxx	1.9							
Control Del:	xxxxx	xxxx		xxxxx	8.1	xxxx	xxxxx		xxxxx	xxxx	xxxxx		19.0	xxxx	11.0							
LOS by Move:	*	*		*	A	*	*		*	*	*		C	*	B							
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx		xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx							
SharedQueue:	xxxxx	xxxx		xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shrd ConDel:	xxxxx	xxxx		xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shared LOS:	*	*		*	*	*	*		*	*	*		*	*	*							
ApproachDel:	xxxxxx				xxxxxx				xxxxxx				11.8									
ApproachLOS:	*				*				*				B									

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 4.5 Worst Case Level Of Service: D[34.2]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	44	0	67	0	147	208	113	579	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	44	0	67	0	147	208	113	579	0								
Added Vol:	0	0	0	0	0	0	0	42	0	190	71	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	44	0	67	0	189	208	303	650	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	44	0	67	0	189	208	303	650	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	44	0	67	0	189	208	303	650	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1549	1653	650	xxxx	xxxx	xxxxx	397	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	127	99	473	xxxx	xxxx	xxxxx	1173	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	101	74	473	xxxx	xxxx	xxxxx	1173	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.43	0.00	0.14	xxxx	xxxx	xxxx	0.26	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.5	xxxx	xxxx	xxxxx	1.0	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	13.9	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT			LT - LTR - RT							
Shared Cap.:	xxxx	xxxx	xxxxx	101	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	1.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	65.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			34.2			xxxxxx			xxxxxx										
ApproachLOS:	*			D			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 3.4 Worst Case Level Of Service: C[18.4]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	38	0	56	0	125	232	97	324	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	38	0	56	0	125	232	97	324	0								
Added Vol:	0	0	0	0	0	0	0	56	0	143	54	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	38	0	56	0	181	232	240	378	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	38	0	56	0	181	232	240	378	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	38	0	56	0	181	232	240	378	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1155	1271	378	xxxx	xxxx	xxxxx	413	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	220	169	673	xxxx	xxxx	xxxxx	1157	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	185	134	673	xxxx	xxxx	xxxxx	1157	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.21	0.00	0.08	xxxx	xxxx	xxxx	0.21	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.3	xxxx	xxxx	xxxxx	0.8	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.8	xxxxx	xxxx	xxxxx	8.9	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT			LT - LTR - RT							
Shared Cap.:	xxxx	xxxx	xxxxx	185	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	29.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	D	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			18.4			xxxxxx			xxxxxx										
ApproachLOS:	*			C			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 88.8 Worst Case Level Of Service: F[182.3]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	489		0		99		0		0		0	84	107		0		0	203		49
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00
Initial Bse:	489		0		99		0		0		0	84	107		0		0	203		49
Added Vol:	0		0		112		0		0		0	0	42		0		0	261		0
PasserByVol:	0		0		0		0		0		0	0	0		0		0	0		0
Initial Fut:	489		0		211		0		0		0	84	149		0		0	464		49
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00
PHF Volume:	489		0		211		0		0		0	84	149		0		0	464		49
Reduct Vol:	0		0		0		0		0		0	0	0		0		0	0		0
FinalVolume:	489		0		211		0		0		0	84	149		0		0	464		49
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx		xxxxx			4.1	xxxx		xxxxx	xxxxx	xxxx		xxxxx	
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx		xxxxx			2.2	xxxx		xxxxx	xxxxx	xxxx		xxxxx	
Capacity Module:																				
Cnflict Vol:	806	830			149	xxxx	xxxx		xxxxx			513	xxxx		xxxxx	xxxx	xxxx		xxxxx	
Potent Cap.:	354	308			903	xxxx	xxxx		xxxxx			1063	xxxx		xxxxx	xxxx	xxxx		xxxxx	
Move Cap.:	333	284			903	xxxx	xxxx		xxxxx			1063	xxxx		xxxxx	xxxx	xxxx		xxxxx	
Volume/Cap:	1.47	0.00			0.23	xxxx	xxxx		xxxx			0.08	xxxx		xxxx	xxxx	xxxx		xxxx	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.9	xxxx	xxxx		xxxxx			0.3	xxxx		xxxxx	xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx			10.2	xxxxx	xxxx		xxxxx			8.7	xxxx		xxxxx	xxxxx	xxxx		xxxxx	
LOS by Move:	*	*			B	*	*		*			A	*		*	*	*		*	
Movement:	LT - LTR - RT					LT - LTR - RT						LT - LTR - RT					LT - LTR - RT			
Shared Cap.:	333	xxxx	xxxxx			xxxx	xxxx		xxxxx			xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx
SharedQueue:	26.5	xxxx	xxxxx			xxxxx	xxxx		xxxxx			xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx
Shrd ConDel:	256.6	xxxx	xxxxx			xxxxx	xxxx		xxxxx			xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx
Shared LOS:	F		*		*		*		*			*	*		*		*	*		*
ApproachDel:	182.3					xxxxxx						xxxxxx					xxxxxx			
ApproachLOS:	F					*						*					*			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 9.6 Worst Case Level Of Service: C[20.2]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	262		4		87		0		0		0	69	90		0		0	163		44
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00
Initial Bse:	262		4		87		0		0		0	69	90		0		0	163		44
Added Vol:	0		0		150		0		0		0	0	56		0		0	197		0
PasserByVol:	0		0		0		0		0		0	0	0		0		0	0		0
Initial Fut:	262		4		237		0		0		0	69	146		0		0	360		44
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00
PHF Volume:	262		4		237		0		0		0	69	146		0		0	360		44
Reduct Vol:	0		0		0		0		0		0	0	0		0		0	0		0
FinalVolume:	262		4		237		0		0		0	69	146		0		0	360		44
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx		xxxxx			4.1	xxxx		xxxxx	xxxxx	xxxx		xxxxx	
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx		xxxxx			2.2	xxxx		xxxxx	xxxxx	xxxx		xxxxx	
Capacity Module:																				
Cnflict Vol:	666	688			146	xxxx	xxxx		xxxxx			404	xxxx		xxxxx	xxxx	xxxx		xxxxx	
Potent Cap.:	428	372			906	xxxx	xxxx		xxxxx			1166	xxxx		xxxxx	xxxx	xxxx		xxxxx	
Move Cap.:	408	350			906	xxxx	xxxx		xxxxx			1166	xxxx		xxxxx	xxxx	xxxx		xxxxx	
Volume/Cap:	0.64	0.01			0.26	xxxx	xxxx		xxxx			0.06	xxxx		xxxx	xxxx	xxxx		xxxx	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			1.0	xxxx	xxxx		xxxxx			0.2	xxxx		xxxxx	xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx			10.4	xxxxx	xxxx		xxxxx			8.3	xxxx		xxxxx	xxxxx	xxxx		xxxxx	
LOS by Move:	*	*			B	*	*		*			A	*		*	*	*		*	
Movement:	LT - LTR - RT					LT - LTR - RT						LT - LTR - RT					LT - LTR - RT			
Shared Cap.:	407	xxxx	xxxxx			xxxx	xxxx		xxxxx			xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx
SharedQueue:	4.5	xxxx	xxxxx			xxxxx	xxxx		xxxxx			xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx
Shrd ConDel:	29.0	xxxx	xxxxx			xxxxx	xxxx		xxxxx			xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx
Shared LOS:	D		*		*		*		*			*	*		*		*	*		*
ApproachDel:	20.2					xxxxxx						xxxxxx					xxxxxx			
ApproachLOS:	C					*						*					*			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.728
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 26.6
Optimal Cycle: 46 | Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Volume Module:												
Base Vol:	489	0	99	0	0	0	84	107	0	0	203	49
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	489	0	99	0	0	0	84	107	0	0	203	49
Added Vol:	0	0	112	0	0	0	0	42	0	0	261	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	489	0	211	0	0	0	84	149	0	0	464	49
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	489	0	211	0	0	0	84	149	0	0	464	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	489	0	211	0	0	0	84	149	0	0	464	49
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	489	0	211	0	0	0	84	149	0	0	464	49
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.99	0.99
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.90	0.10
Final Sat.:	1343	0	1599	0	0	0	1805	1900	0	0	1696	179
Capacity Analysis Module:												
Vol/Sat:	0.36	0.00	0.13	0.00	0.00	0.00	0.05	0.08	0.00	0.00	0.27	0.27
Crit Moves:	****						****				****	
Green/Cycle:	0.50	0.00	0.50	0.00	0.00	0.00	0.06	0.44	0.00	0.00	0.38	0.38
Volume/Cap:	0.73	0.00	0.26	0.00	0.00	0.00	0.73	0.18	0.00	0.00	0.73	0.73
Delay/Veh:	23.7	0.0	14.6	0.0	0.0	0.0	66.6	17.1	0.0	0.0	30.6	30.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	23.7	0.0	14.6	0.0	0.0	0.0	66.6	17.1	0.0	0.0	30.6	30.6
LOS by Move:	C	A	B	A	A	A	E	B	A	A	C	C
HCM2k95thQ:	23	0	7	0	0	0	5	5	0	0	24	24

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.433
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 21.1
Optimal Cycle: 24 | Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Volume Module:												
Base Vol:	262	4	87	0	0	0	69	90	0	0	163	44
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	262	4	87	0	0	0	69	90	0	0	163	44
Added Vol:	0	0	150	0	0	0	0	56	0	0	197	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	262	4	237	0	0	0	69	146	0	0	360	44
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	262	4	237	0	0	0	69	146	0	0	360	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	262	4	237	0	0	0	69	146	0	0	360	44
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	262	4	237	0	0	0	69	146	0	0	360	44
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.91	0.91	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.99	0.99
Lanes:	0.98	0.02	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.89	0.11
Final Sat.:	1708	26	1599	0	0	0	1805	1900	0	0	1668	204
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.15	0.00	0.00	0.00	0.04	0.08	0.00	0.00	0.22	0.22
Crit Moves:		****					****				****	
Green/Cycle:	0.35	0.35	0.35	0.00	0.00	0.00	0.09	0.59	0.00	0.00	0.50	0.50
Volume/Cap:	0.43	0.43	0.42	0.00	0.00	0.00	0.43	0.13	0.00	0.00	0.43	0.43
Delay/Veh:	25.2	25.2	25.0	0.0	0.0	0.0	45.1	9.3	0.0	0.0	16.4	16.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	25.2	25.2	25.0	0.0	0.0	0.0	45.1	9.3	0.0	0.0	16.4	16.4
LOS by Move:	C	C	C	A	A	A	D	A	A	A	B	B
HCM2k95thQ:	12	12	11	0	0	0	4	4	0	0	14	14

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 16.5 Worst Case Level Of Service: E[39.4]

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	108	51	1	10	31	91	79	43	81	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	108	51	1	10	31	91	79	43	81	1	47	10
Added Vol:	0	0	0	0	0	261	155	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	108	51	1	10	31	352	234	43	81	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	108	51	1	10	31	352	234	43	81	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	108	51	1	10	31	352	234	43	81	1	47	10
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	383	xxxx	xxxxx	52	xxxx	xxxxx	523	495	207	557	671	52
Potent Cap.:	1187	xxxx	xxxxx	1567	xxxx	xxxxx	468	479	839	444	380	1022
Move Cap.:	1187	xxxx	xxxxx	1567	xxxx	xxxxx	382	430	839	342	341	1022
Volume/Cap:	0.09	xxxx	xxxx	0.01	xxxx	xxxx	0.61	0.10	0.10	0.00	0.14	0.01
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.3	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	443	xxxxx	xxxx	386	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	7.4	xxxxx	xxxxx	0.5	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	39.4	xxxxx	xxxxx	16.0	xxxxx
Shared LOS:	*	*	*	*	*	*	*	E	*	*	C	*
ApproachDel:	xxxxxx			xxxxxx			39.4			16.0		
ApproachLOS:	*			*			E			C		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 14.9 Worst Case Level Of Service: D[29.9]

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	94	31	1	10	28	73	55	43	77	1	47	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	31	1	10	28	73	55	43	77	1	47	10
Added Vol:	0	0	0	0	0	197	206	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	94	31	1	10	28	270	261	43	77	1	47	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	94	31	1	10	28	270	261	43	77	1	47	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	94	31	1	10	28	270	261	43	77	1	47	10
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	298	xxxx	xxxxx	32	xxxx	xxxxx	431	403	163	463	538	32
Potent Cap.:	1275	xxxx	xxxxx	1593	xxxx	xxxxx	538	539	887	513	453	1048
Move Cap.:	1275	xxxx	xxxxx	1593	xxxx	xxxxx	456	494	887	410	415	1048
Volume/Cap:	0.07	xxxx	xxxx	0.01	xxxx	xxxx	0.57	0.09	0.09	0.00	0.11	0.01
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.0	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	511	xxxxx	xxxx	463	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	6.3	xxxxx	xxxxx	0.4	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	29.9	xxxxx	xxxxx	13.9	xxxxx
Shared LOS:	*	*	*	*	*	*	*	D	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			29.9			13.9		
ApproachLOS:	*			*			D			B		

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

PM Short-term+ Project E Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	22	4.3	0.228	12.1	LOS B	32	0.63	0.84	23.6
16T	T	92	2.2	0.228	5.0	LOS A	32	0.63	0.53	27.0
16R	R	55	1.8	0.228	6.5	LOS A	32	0.63	0.65	26.0
Approach		**170**	**2.4**	**0.228**	**6.4**	**LOS A**	**32**	**0.63**	**0.61**	**26.1**
WB AV Resort										
1L	L	1	50.0	0.091	14.9	LOS B	13	0.62	0.88	23.0
6T	T	40	2.5	0.092	5.3	LOS A	13	0.62	0.57	27.0
6R	R	20	4.8	0.092	6.7	LOS A	13	0.62	0.64	26.1
Approach		**63**	**4.8**	**0.092**	**6.0**	**LOS A**	**13**	**0.62**	**0.60**	**26.5**
SB Asti										
17L	L	43	2.3	0.518	15.2	LOS B	104	0.72	0.96	22.5
14T	T	352	2.0	0.520	6.6	LOS A	104	0.72	0.76	26.3
14R	R	19	5.0	0.526	8.1	LOS A	104	0.72	0.83	25.5
Approach		**415**	**2.2**	**0.520**	**7.5**	**LOS A**	**104**	**0.72**	**0.79**	**25.8**
EB South Interchange										
5L	L	177	2.3	0.164	10.3	LOS B	31	0.17	0.59	24.8
2T	T	24	4.0	0.164	1.8	LOS A	31	0.17	0.20	30.8
2R	R	45	2.2	0.164	1.8	LOS A	31	0.17	0.20	30.8
Approach		**247**	**2.4**	**0.164**	**7.9**	**LOS A**	**31**	**0.17**	**0.48**	**26.0**
101 NB Offramp										
13L	L	515	1.9	0.337	12.8	LOS B	60	0.46	0.70	23.5
18T	T	199	2.0	0.337	3.1	LOS A	60	0.45	0.33	28.3
18R	R	64	1.6	0.337	4.3	LOS A	60	0.45	0.43	27.4
Approach		**777**	**1.9**	**0.337**	**9.7**	**LOS A**	**60**	**0.46**	**0.58**	**24.6**
All Vehicles		**1672**	**2.2**	**0.526**	**8.4**	**LOS A**	**104**	**0.50**	**0.62**	**25.3**

Symbols which may appear in this table:

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

Weekend Midday Short-term+ Project E Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	21	4.5	0.154	11.0	LOS B	20	0.51	0.75	24.0
16T	T	78	2.6	0.154	3.9	LOS A	20	0.51	0.42	27.8
16R	R	34	2.9	0.153	5.5	LOS A	20	0.51	0.55	26.7
Approach		**134**	**3.0**	**0.153**	**5.5**	**LOS A**	**20**	**0.51**	**0.51**	**26.7**
WB AV Resort										
1L	L	1	50.0	0.077	13.8	LOS B	10	0.52	0.82	23.3
6T	T	39	2.6	0.077	4.2	LOS A	10	0.52	0.45	27.8
6R	R	21	4.5	0.077	5.5	LOS A	10	0.52	0.55	26.8
Approach		**63**	**4.8**	**0.077**	**4.9**	**LOS A**	**10**	**0.52**	**0.49**	**27.2**
SB Asti										
17L	L	40	2.5	0.348	12.6	LOS B	51	0.53	0.78	23.5
14T	T	267	1.9	0.346	3.9	LOS A	51	0.53	0.42	27.7
14R	R	17	5.6	0.346	5.5	LOS A	51	0.53	0.54	26.6
Approach		**325**	**2.2**	**0.346**	**5.1**	**LOS A**	**51**	**0.53**	**0.47**	**26.9**
EB South Interchange										
5L	L	161	1.9	0.150	10.2	LOS B	27	0.16	0.59	24.9
2T	T	23	4.2	0.150	1.8	LOS A	27	0.16	0.20	31.0
2R	R	42	2.4	0.151	1.8	LOS A	27	0.16	0.19	31.0
Approach		**227**	**2.2**	**0.150**	**7.8**	**LOS A**	**27**	**0.16**	**0.48**	**26.2**
101 NB Offramp										
13L	L	276	2.2	0.211	12.6	LOS B	34	0.40	0.68	23.7
18T	T	151	2.0	0.211	3.0	LOS A	34	0.39	0.32	28.7
18R	R	62	1.6	0.212	4.0	LOS A	34	0.39	0.40	27.8
Approach		**489**	**2.0**	**0.211**	**8.5**	**LOS A**	**34**	**0.39**	**0.53**	**25.3**
All Vehicles		**1238**	**2.3**	**0.348**	**7.0**	**LOS A**	**51**	**0.41**	**0.50**	**26.1**

Symbols which may appear in this table:

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.477
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.9
Optimal Cycle:	21	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm												
Base Vol:	47	317	71	34	212	15	16	35	69	109	36	38
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	52	349	78	37	233	17	18	39	76	120	40	42
Added Vol:	74	98	68	21	74	0	0	14	69	86	14	28
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	126	447	146	58	307	17	18	53	145	206	54	70
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	126	447	146	58	307	17	18	53	145	206	54	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	126	447	146	58	307	17	18	53	145	206	54	70
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	126	447	146	58	307	17	18	53	145	206	54	70
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.75	0.75	0.85	0.78	0.78	0.78	0.88	0.88	0.88	0.70	0.70	0.70
Lanes:	0.44	1.56	1.00	0.30	1.61	0.09	0.08	0.24	0.68	0.63	0.16	0.21
Final Sat.:	623	2214	1615	454	2389	128	137	408	1127	832	217	282
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.09	0.13	0.13	0.13	0.13	0.13	0.13	0.25	0.25	0.25
Crit Moves:		****									****	
Green/Cycle:	0.42	0.42	0.42	0.42	0.42	0.42	0.52	0.52	0.52	0.52	0.52	0.52
Volume/Cap:	0.48	0.48	0.21	0.30	0.30	0.30	0.25	0.25	0.25	0.48	0.48	0.48
Delay/Veh:	14.9	14.9	13.0	13.5	13.5	13.5	9.4	9.4	9.4	11.3	11.3	11.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.9	14.9	13.0	13.5	13.5	13.5	9.4	9.4	9.4	11.3	11.3	11.3
LOS by Move:	B	B	B	B	B	B	A	A	A	B	B	B
HCM2kAvgQ:	5	5	2	3	3	3	3	3	3	5	5	5

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.447
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.6
Optimal Cycle:	20	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	64	291	99	39	291	17	18	39	64	99	40	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	291	99	39	291	17	18	39	64	99	40	39
Added Vol:	74	98	68	21	74	0	0	14	69	86	14	28
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	138	389	167	60	365	17	18	53	133	185	54	67
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	138	389	167	60	365	17	18	53	133	185	54	67
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	138	389	167	60	365	17	18	53	133	185	54	67
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	138	389	167	60	365	17	18	53	133	185	54	67
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.70	0.70	0.85	0.79	0.79	0.79	0.88	0.88	0.88	0.72	0.72	0.72
Lanes:	0.52	1.48	1.00	0.27	1.65	0.08	0.09	0.26	0.65	0.60	0.18	0.22
Final Sat.:	700	1972	1615	410	2492	116	148	435	1091	826	241	299
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.10	0.15	0.15	0.15	0.12	0.12	0.12	0.22	0.22	0.22
Crit Moves:		****									****	
Green/Cycle:	0.44	0.44	0.44	0.44	0.44	0.44	0.50	0.50	0.50	0.50	0.50	0.50
Volume/Cap:	0.45	0.45	0.23	0.33	0.33	0.33	0.24	0.24	0.24	0.45	0.45	0.45
Delay/Veh:	13.9	13.9	12.3	12.9	12.9	12.9	10.1	10.1	10.1	11.7	11.7	11.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	13.9	13.9	12.3	12.9	12.9	12.9	10.1	10.1	10.1	11.7	11.7	11.7
LOS by Move:	B	B	B	B	B	B	B	B	B	B	B	B
HCM2kAvgQ:	5	5	2	3	3	3	3	3	3	5	5	5

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 3.9 Worst Case Level Of Service: E[43.3]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	466	95	46	399	0	0	0	0	61	0	34								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	466	95	46	399	0	0	0	0	61	0	34								
Added Vol:	0	239	57	1	229	0	0	0	0	46	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	705	152	47	628	0	0	0	0	107	0	34								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	705	152	47	628	0	0	0	0	107	0	34								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	705	152	47	628	0	0	0	0	107	0	34								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	857	xxxx	xxxxx	xxxx	xxxx	xxxxx	1189	xxxx	429								
Potent Cap.:	xxxx	xxxx	xxxxx	792	xxxx	xxxxx	xxxx	xxxx	xxxxx	184	xxxx	580								
Move Cap.:	xxxx	xxxx	xxxxx	792	xxxx	xxxxx	xxxx	xxxx	xxxxx	175	xxxx	580								
Volume/Cap:	xxxx	xxxx	xxxx	0.06	xxxx	xxxx	xxxx	xxxx	xxxx	0.61	xxxx	0.06								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	3.4	xxxx	0.2								
Control Del:	xxxxx	xxxx	xxxxx	9.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	53.4	xxxx	11.6								
LOS by Move:	*	*	*	A	*	*	*	*	*	F	*	B								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			43.3										
ApproachLOS:	*			*			*			E										

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 4.6 Worst Case Level Of Service: E[44.9]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	432	78	40	432	0	0	0	0	78	0	40								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	432	78	40	432	0	0	0	0	78	0	40								
Added Vol:	0	239	57	1	229	0	0	0	0	46	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	671	135	41	661	0	0	0	0	124	0	40								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	671	135	41	661	0	0	0	0	124	0	40								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	671	135	41	661	0	0	0	0	124	0	40								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	806	xxxx	xxxxx	xxxx	xxxx	xxxxx	1151	xxxx	403								
Potent Cap.:	xxxx	xxxx	xxxxx	828	xxxx	xxxxx	xxxx	xxxx	xxxxx	194	xxxx	603								
Move Cap.:	xxxx	xxxx	xxxxx	828	xxxx	xxxxx	xxxx	xxxx	xxxxx	187	xxxx	603								
Volume/Cap:	xxxx	xxxx	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx	0.66	xxxx	0.07								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	3.9	xxxx	0.2								
Control Del:	xxxxx	xxxx	xxxxx	9.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	55.8	xxxx	11.4								
LOS by Move:	*	*	*	A	*	*	*	*	*	F	*	B								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			44.9										
ApproachLOS:	*			*			*			E										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 Critical Vol./Cap.(X): 0.590
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 17.7
Optimal Cycle: 31 Level Of Service: B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm												
Base Vol:	7	382	52	97	370	2	1	12	15	104	21	178
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	8	420	57	107	407	2	1	13	17	114	23	196
Added Vol:	22	143	239	141	122	12	14	3	26	253	5	140
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	30	563	296	248	529	14	15	16	43	367	28	336
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	30	563	296	248	529	14	15	16	43	367	28	336
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	30	563	296	248	529	14	15	16	43	367	28	336
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	30	563	296	248	529	14	15	16	43	367	28	336
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.90	0.90	0.95	0.95	0.95	0.91	0.91	0.91	0.96	0.96	0.85
Lanes:	1.00	1.31	0.69	1.00	1.95	0.05	0.20	0.22	0.58	1.86	0.14	1.00
Final Sat.:	1805	2243	1180	1805	3502	94	355	381	999	3375	258	1615
Capacity Analysis Module:												
Vol/Sat:	0.02	0.25	0.25	0.14	0.15	0.15	0.04	0.04	0.04	0.11	0.11	0.21
Crit Moves:		****		****					****		****	
Green/Cycle:	0.06	0.43	0.43	0.23	0.59	0.59	0.07	0.07	0.07	0.18	0.18	0.42
Volume/Cap:	0.25	0.59	0.59	0.59	0.25	0.25	0.59	0.59	0.59	0.59	0.59	0.50
Delay/Veh:	32.3	16.1	16.1	26.1	6.9	6.9	38.8	38.8	38.8	27.5	27.5	15.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	32.3	16.1	16.1	26.1	6.9	6.9	38.8	38.8	38.8	27.5	27.5	15.6
LOS by Move:	C	B	B	C	A	A	D	D	D	C	C	B
HCM2kAvgQ:	1	8	8	6	3	3	3	3	3	5	5	6

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 Critical Vol./Cap.(X): 0.684
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 25.7
Optimal Cycle: 38 Level Of Service: C

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	68	6	88	0	8	9	5	255	50	80	230	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	6	88	0	8	9	5	255	50	80	230	0
Added Vol:	22	143	239	141	122	12	14	3	26	253	5	140
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	90	149	327	141	130	21	19	258	76	333	235	140
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	149	327	141	130	21	19	258	76	333	235	140
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	90	149	327	141	130	21	19	258	76	333	235	140
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	90	149	327	141	130	21	19	258	76	333	235	140
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.85	0.85	0.95	0.93	0.93	0.97	0.97	0.97	0.97	0.97	0.85
Lanes:	1.00	1.00	1.00	1.00	1.72	0.28	0.05	0.73	0.22	1.17	0.83	1.00
Final Sat.:	1805	1619	1619	1805	3043	492	99	1344	396	2165	1528	1615
Capacity Analysis Module:												
Vol/Sat:	0.05	0.09	0.20	0.08	0.04	0.04	0.19	0.19	0.19	0.15	0.15	0.09
Crit Moves:			****	****			****				****	
Green/Cycle:	0.22	0.30	0.30	0.11	0.19	0.19	0.28	0.28	0.28	0.22	0.22	0.34
Volume/Cap:	0.23	0.31	0.68	0.68	0.23	0.23	0.68	0.68	0.68	0.68	0.68	0.26
Delay/Veh:	22.7	19.3	24.6	39.0	24.2	24.2	26.2	26.2	26.2	27.2	27.2	17.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	22.7	19.3	24.6	39.0	24.2	24.2	26.2	26.2	26.2	27.2	27.2	17.0
LOS by Move:	C	B	C	D	C	C	C	C	C	C	C	B
HCM2kAvgQ:	2	3	8	4	2	2	8	8	8	7	7	2

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.4 Worst Case Level Of Service: B[12.8]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm																				
Base Vol:	0	0	0	4	0	24	0	43	97	25	345	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	4	0	24	0	43	97	25	345	0								
Added Vol:	0	0	0	12	0	53	0	85	298	67	345	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	16	0	77	0	128	395	92	690	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	16	0	77	0	128	395	92	690	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	16	0	77	0	128	395	92	690	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	938	1397	345	xxxx	xxxx	xxxxx	523	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	267	142	657	xxxx	xxxx	xxxxx	1054	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	249	130	657	xxxx	xxxx	xxxxx	1054	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.06	0.00	0.12	xxxx	xxxx	xxxx	0.09	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	20.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.7	xxxx	xxxxx								
LOS by Move:	*	*	*	C	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT						LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	657	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	11.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	B	*	*	*	*	*	*								
ApproachDel:	xxxxxx			12.8			xxxxxx			xxxxxx										
ApproachLOS:	*			B			*			*										

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.4 Worst Case Level Of Service: B[11.4]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module:																				
Base Vol:	0	0	0	3	0	23	0	42	117	19	176	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	3	0	23	0	42	117	19	176	0								
Added Vol:	0	0	0	12	0	53	0	85	298	67	345	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	15	0	76	0	127	415	86	521	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	15	0	76	0	127	415	86	521	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	15	0	76	0	127	415	86	521	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	757	1235	261	xxxx	xxxx	xxxxx	542	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	348	178	744	xxxx	xxxx	xxxxx	1037	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	326	163	744	xxxx	xxxx	xxxxx	1037	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.05	0.00	0.10	xxxx	xxxx	xxxx	0.08	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	16.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.8	xxxx	xxxxx								
LOS by Move:	*	*	*	C	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT						LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	744	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	B	*	*	*	*	*	*								
ApproachDel:	xxxxxx			11.4			xxxxxx			xxxxxx										
ApproachLOS:	*			B			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 19.8 Worst Case Level Of Service: D[29.6]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm																				
Base Vol:	272		0		55	0		0		0	23		15		0	0		57		6
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	272		0		55	0		0		0	23		15		0	0		57		6
Added Vol:	280		0		74	0		0		0	47		50		0	0		132		32
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	552		0		129	0		0		0	70		65		0	0		189		38
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	552		0		129	0		0		0	70		65		0	0		189		38
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	552		0		129	0		0		0	70		65		0	0		189		38
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	300	432			33	xxxx	xxxx	xxxxx			227	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	673	519			1040	xxxx	xxxx	xxxxx			1353	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	647	493			1040	xxxx	xxxx	xxxxx			1353	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.85	0.00			0.12	xxxx	xxxx	xxxx			0.05	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.4	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			8.9	xxxxx	xxxx	xxxxx			7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT		
Shared Cap.:	647	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	9.6	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	34.4	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	D	*		*		*	*		*		*	*		*		*	*		*	
ApproachDel:			29.6			xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:			D			*					*					*				

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 11.7 Worst Case Level Of Service: C[18.9]

Street Name:	US 101 North Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module:																				
Base Vol:	144		0		27	0		0		0	26		20		0	0		58		8
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	144		0		27	0		0		0	26		20		0	0		58		8
Added Vol:	280		0		74	0		0		0	47		50		0	0		132		32
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	424		0		101	0		0		0	73		70		0	0		190		40
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	424		0		101	0		0		0	73		70		0	0		190		40
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	424		0		101	0		0		0	73		70		0	0		190		40
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	311	446			35	xxxx	xxxx	xxxxx			230	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	662	510			1037	xxxx	xxxx	xxxxx			1350	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	635	483			1037	xxxx	xxxx	xxxxx			1350	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.67	0.00			0.10	xxxx	xxxx	xxxx			0.05	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.3	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			8.8	xxxxx	xxxx	xxxxx			7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT		
Shared Cap.:	635	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	5.1	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	21.3	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	C	*		*		*	*		*		*	*		*		*	*		*	
ApproachDel:			18.9			xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:			C			*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 5.7 Worst Case Level Of Service: B[13.4]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	32	45		0		0	27		26		69		0		6		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	32	45		0		0	27		26		69		0		6		0		0	
Added Vol:	117	96		0		0	80		47		60		0		64		0		0	
PasserByVol:	0	0		0		0	0		0		0		0		0		0		0	
Initial Fut:	149	141		0		0	107		73		129		0		70		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	149	141		0		0	107		73		129		0		70		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	149	141		0		0	107		73		129		0		70		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	180	xxxx	xxxxx	xxxx	xxxx	xxxxx					546	xxxx			107	xxxx	xxxx	xxxxx		
Potent Cap.:	1408	xxxx	xxxxx	xxxx	xxxx	xxxxx					502	xxxx			953	xxxx	xxxx	xxxxx		
Move Cap.:	1408	xxxx	xxxxx	xxxx	xxxx	xxxxx					461	xxxx			953	xxxx	xxxx	xxxxx		
Volume/Cap:	0.11	xxxx	xxxx	xxxx	xxxx	xxxx					0.28	xxxx			0.07	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx					1.1	xxxx			0.2	xxxx	xxxx	xxxxx		
Control Del:	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx					15.8	xxxx			9.1	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*					C	*			A	*	*	*		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*					*	*	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx							13.4					xxxxxx				
ApproachLOS:	*			*							B					*				

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 4.9 Worst Case Level Of Service: B[11.6]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	11	28		0		0	26		28		32		0		10		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	11	28		0		0	26		28		32		0		10		0		0	
Added Vol:	117	96		0		0	80		47		60		0		64		0		0	
PasserByVol:	0	0		0		0	0		0		0		0		0		0		0	
Initial Fut:	128	124		0		0	106		75		92		0		74		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	128	124		0		0	106		75		92		0		74		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	128	124		0		0	106		75		92		0		74		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	181	xxxx	xxxxx	xxxx	xxxx	xxxxx					486	xxxx			106	xxxx	xxxx	xxxxx		
Potent Cap.:	1407	xxxx	xxxxx	xxxx	xxxx	xxxxx					544	xxxx			954	xxxx	xxxx	xxxxx		
Move Cap.:	1407	xxxx	xxxxx	xxxx	xxxx	xxxxx					506	xxxx			954	xxxx	xxxx	xxxxx		
Volume/Cap:	0.09	xxxx	xxxx	xxxx	xxxx	xxxx					0.18	xxxx			0.08	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx					0.7	xxxx			0.3	xxxx	xxxx	xxxxx		
Control Del:	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx					13.7	xxxx			9.1	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*					B	*			A	*	*	*		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*					*	*	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx							11.6					xxxxxx				
ApproachLOS:	*			*							B					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:2007 Balanced																				
Base Vol:	0	69		0		0	37		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	69		0		0	37		0		0	0		0		0	0		0	
Added Vol:	0	156		0		0	110		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	225		0		0	147		0		0	0		0		0	0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	225		0		0	147		0		0	0		0		0	0		0	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	225		0		0	147		0		0	0		0		0	0		0	
Critical Gap Module:																				
Critical Gp:xxxxx	xxxx	xxxxx		xxxxx		xxxx	xxxxx		xxxxx		xxxx	xxxxx				6.4	6.5		6.2	
FollowUpTim:xxxxx	xxxx	xxxxx		xxxxx		xxxx	xxxxx		xxxxx		xxxx	xxxxx				3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					372	372		225	
Potent Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					633	561		819	
Move Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					633	561		819	
Volume/Cap:	xxxx	xxxx		xxxx		xxxx		xxxx		xxxx		xxxx				0.00	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					
Control Del:xxxxx	xxxx	xxxxx		xxxxx		xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
LOS by Move:	*	*		*		*	*		*	*	*		*	*	*					
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx		0	xxxxx				
SharedQueue:xxxxx	xxxx	xxxxx		xxxxx		xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shrd ConDel:xxxxx	xxxx	xxxxx		xxxxx		xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shared LOS:	*	*		*		*	*		*	*	*		*	*	*					
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	*					*					*					*				

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	40		0		0	37		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	40		0		0	37		0		0	0		0		0	0		0	
Added Vol:	0	156		0		0	110		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	196		0		0	147		0		0	0		0		0	0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	196		0		0	147		0		0	0		0		0	0		0	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	196		0		0	147		0		0	0		0		0	0		0	
Critical Gap Module:																				
Critical Gp:xxxxx	xxxx	xxxxx		xxxxx		xxxx	xxxxx		xxxxx		xxxx	xxxxx				6.4	6.5		6.2	
FollowUpTim:xxxxx	xxxx	xxxxx		xxxxx		xxxx	xxxxx		xxxxx		xxxx	xxxxx				3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					343	343		196	
Potent Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					657	583		850	
Move Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					657	583		850	
Volume/Cap:	xxxx	xxxx		xxxx		xxxx		xxxx		xxxx		xxxx				0.00	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					
Control Del:xxxxx	xxxx	xxxxx		xxxxx		xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
LOS by Move:	*	*		*		*	*		*	*	*		*	*	*					
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx		0	xxxxx				
SharedQueue:xxxxx	xxxx	xxxxx		xxxxx		xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shrd ConDel:xxxxx	xxxx	xxxxx		xxxxx		xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shared LOS:	*	*		*		*	*		*	*	*		*	*	*					
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	*					*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.8 Worst Case Level Of Service: B[11.1]

Street Name:	Asti (Frontage) Rd								Santana Dr							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	0	66		16		2	35		0		0	0		0		27	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	66		16		2	35		0		0	0		0		27	0		3	
Added Vol:	0	130		0		0	165		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	196		16		2	200		0		0	0		0		27	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	196		16		2	200		0		0	0		0		27	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	196		16		2	200		0		0	0		0		27	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		212	xxxx		xxxxx		xxxx	xxxx		xxxxx		408	408		204	
Potent Cap.:	xxxx	xxxx		xxxxx		1370	xxxx		xxxxx		xxxx	xxxx		xxxxx		603	536		842	
Move Cap.:	xxxx	xxxx		xxxxx		1370	xxxx		xxxxx		xxxx	xxxx		xxxxx		603	535		842	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		0.04	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		7.6	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	620		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	0.2		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		7.6	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	11.1		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	B		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						11.1			
ApproachLOS:	*					*					*						B			

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: A[9.1]

Street Name:	Asti (Frontage) Rd								Santana Dr							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Volume Module:																				
Base Vol:	0	37		2		1	36		0		0	0		0		0	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	37		2		1	36		0		0	0		0		0	0		3	
Added Vol:	0	130		0		0	165		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	167		2		1	201		0		0	0		0		0	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	167		2		1	201		0		0	0		0		0	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	167		2		1	201		0		0	0		0		0	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		169	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		168	
Potent Cap.:	xxxx	xxxx		xxxxx		1421	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		881	
Move Cap.:	xxxx	xxxx		xxxxx		1421	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		881	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		xxxx	xxxx		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		0.0	
Control Del:	xxxxx	xxxx		xxxxx		7.5	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		9.1	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		A	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		7.5	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						9.1			
ApproachLOS:	*					*					*						A			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.7 Worst Case Level Of Service: C[18.3]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1 0 0	1	0	1 0	1 0	1	0	1	0 1 0	0	1	0	0 0 0	0	0	0
Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm																
Base Vol:	177	343	0	0	135	47	33	0	71	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	177	343	0	0	135	47	33	0	71	0	0	0				
Added Vol:	70	319	0	0	249	9	10	0	64	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	247	662	0	0	384	56	43	0	135	0	0	0				
User Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	272	728	0	0	422	62	47	0	149	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	272	728	0	0	422	62	47	0	149	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	484	xxxx	xxxxx	xxxx	xxxx	xxxxx	1708	1708	422	xxxx	xxxx	xxxxx				
Potent Cap.:	1089	xxxx	xxxxx	xxxx	xxxx	xxxxx	94	86	636	xxxx	xxxx	xxxxx				
Move Cap.:	1089	xxxx	xxxxx	xxxx	xxxx	xxxxx	76	64	636	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	159	143	xxxxx	83	124	xxxxx				
Volume/Cap:	0.25	xxxx	xxxx	xxxx	xxxx	xxxx	0.30	0.00	0.23	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	1.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.9	xxxx	xxxx	xxxxx				
Control Del:	9.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	12.4	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	B	*	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	159	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	36.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	E	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			18.3			xxxxxx						
ApproachLOS:	*			*			C			*						

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.7 Worst Case Level Of Service: C[16.2]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1 0 0	1	0	1 0	1 0	1	0	1	0 1 0	0	1	0	0 0 0	0	0	0
Volume Module:																
Base Vol:	124	239	0	0	239	40	40	0	124	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	124	239	0	0	239	40	40	0	124	0	0	0				
Added Vol:	70	319	0	0	249	9	10	0	64	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	194	558	0	0	488	49	50	0	188	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	194	558	0	0	488	49	50	0	188	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	194	558	0	0	488	49	50	0	188	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	537	xxxx	xxxxx	xxxx	xxxx	xxxxx	1434	1434	488	xxxx	xxxx	xxxxx				
Potent Cap.:	1041	xxxx	xxxxx	xxxx	xxxx	xxxxx	149	135	584	xxxx	xxxx	xxxxx				
Move Cap.:	1041	xxxx	xxxxx	xxxx	xxxx	xxxxx	128	110	584	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	238	212	xxxxx	103	185	xxxxx				
Volume/Cap:	0.19	xxxx	xxxx	xxxx	xxxx	xxxx	0.21	0.00	0.32	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.4	xxxx	xxxx	xxxxx				
Control Del:	9.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	14.1	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	B	*	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	238	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	24.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	C	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			16.2			xxxxxx						
ApproachLOS:	*			*			C			*						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 33.3 Worst Case Level Of Service: F[61.8]

Street Name:	Cloverdale Blvd									South Interchange													
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:2007 Balanced																				
Base Vol:	0	79		12		194	53		0		0		0		0	26		0		452
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	79		12		194	53		0		0		0		0	26		0		452
Added Vol:	0	80		175		249	62		0		0		0		0	123		0		303
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0
Initial Fut:	0	159		187		443	115		0		0		0		0	149		0		755
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	159		187		443	115		0		0		0		0	149		0		755
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	0	159		187		443	115		0		0		0		0	149		0		755
Critical Gap Module:																				
Critical Gp:xxxxx	xxxx	xxxxx		4.1		xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	xxxx		6.2					
FollowUpTim:xxxxx	xxxx	xxxxx		2.2		xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx		3.3					
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	295		xxxx	xxxxx	xxxx	xxxx	xxxxx	1243	xxxx	197							
Potent Cap.:	xxxx	xxxx	xxxxx	1224		xxxx	xxxxx	xxxx	xxxx	xxxxx	186	xxxx	813							
Move Cap.:	xxxx	xxxx	xxxxx	1224		xxxx	xxxxx	xxxx	xxxx	xxxxx	134	xxxx	813							
Volume/Cap:	xxxx	xxxx	xxxx	0.36		xxxx	xxxx	xxxx	xxxx	xxxx	1.11	xxxx	0.93							
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	1.7		xxxx	xxxxx	xxxx	xxxx	xxxxx	8.5	xxxx	13.6							
Control Del:xxxxx	xxxx	xxxxx		9.6		xxxx	xxxxx	xxxxx	xxxx	xxxxx	176.0	xxxx	39.3							
LOS by Move:	*	*	*	A		*	*	*	*	*	F	*	E							
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx									
Shrd ConDel:xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx									
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx				61.8									
ApproachLOS:	*			*			*				F									

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 27.2 Worst Case Level Of Service: F[53.9]

Street Name:	Cloverdale Blvd									South Interchange													
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	42		0		280	65		0		0		0		0	2		0		345
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	42		0		280	65		0		0		0		0	2		0		345
Added Vol:	0	80		175		249	62		0		0		0		0	123		0		303
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0
Initial Fut:	0	122		175		529	127		0		0		0		0	125		0		648
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	122		175		529	127		0		0		0		0	125		0		648
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	0	122		175		529	127		0		0		0		0	125		0		648
Critical Gap Module:																				
Critical Gp:xxxxx	xxxx	xxxxx		4.1		xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	xxxx		6.2					
FollowUpTim:xxxxx	xxxx	xxxxx		2.2		xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx		3.3					
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	297		xxxx	xxxxx	xxxx	xxxx	xxxxx	1395	xxxx	210							
Potent Cap.:	xxxx	xxxx	xxxxx	1276		xxxx	xxxxx	xxxx	xxxx	xxxxx	157	xxxx	836							
Move Cap.:	xxxx	xxxx	xxxxx	1276		xxxx	xxxxx	xxxx	xxxx	xxxxx	106	xxxx	836							
Volume/Cap:	xxxx	xxxx	xxxx	0.41		xxxx	xxxx	xxxx	xxxx	xxxx	1.17	xxxx	0.78							
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	2.1		xxxx	xxxxx	xxxx	xxxx	xxxxx	8.1	xxxx	7.8							
Control Del:xxxxx	xxxx	xxxxx		9.8		xxxx	xxxxx	xxxxx	xxxx	xxxxx	217.1	xxxx	22.5							
LOS by Move:	*	*	*	A		*	*	*	*	*	F	*	C							
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx									
Shrd ConDel:xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx									
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx				53.9									
ApproachLOS:	*			*			*				F									

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.967
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 55.2
Optimal Cycle: 159 Level Of Service: E

Street Name:	Cloverdale Blvd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	1 0	1 0	0	0 0	0	0 0	1 0	0 0	1
Volume Module:	2007 Balanced											
Base Vol:	0	79	12	194	53	0	0	0	0	26	0	452
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	79	12	194	53	0	0	0	0	26	0	452
Added Vol:	0	80	175	249	62	0	0	0	0	123	0	303
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	159	187	443	115	0	0	0	0	149	0	755
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	159	187	443	115	0	0	0	0	149	0	755
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	159	187	443	115	0	0	0	0	149	0	755
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	159	187	443	115	0	0	0	0	149	0	755
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.93	0.93	0.95	1.00	1.00	1.00	1.00	1.00	0.78	1.00	0.85
Lanes:	0.00	0.46	0.54	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	809	952	1805	1900	0	0	0	0	1480	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.20	0.20	0.25	0.06	0.00	0.00	0.00	0.00	0.10	0.00	0.47
Crit Moves:		****		****								****
Green/Cycle:	0.00	0.20	0.20	0.25	0.46	0.00	0.00	0.00	0.00	0.48	0.00	0.48
Volume/Cap:	0.00	0.97	0.97	0.97	0.13	0.00	0.00	0.00	0.00	0.21	0.00	0.97
Delay/Veh:	0.0	78.3	78.3	70.5	15.8	0.0	0.0	0.0	0.0	15.0	0.0	49.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	78.3	78.3	70.5	15.8	0.0	0.0	0.0	0.0	15.0	0.0	49.5
LOS by Move:	A	E	E	E	B	A	A	A	A	B	A	D
HCM2k95thQ:	0	27	27	32	4	0	0	0	0	5	0	46

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.919
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 46.9
Optimal Cycle: 106 Level Of Service: D

Street Name:	Cloverdale Blvd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	1 0	1 0	0	0 0	0	0 0	1 0	0 0	1
Volume Module:												
Base Vol:	0	42	0	280	65	0	0	0	0	2	0	345
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	42	0	280	65	0	0	0	0	2	0	345
Added Vol:	0	80	175	249	62	0	0	0	0	123	0	303
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	122	175	529	127	0	0	0	0	125	0	648
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	122	175	529	127	0	0	0	0	125	0	648
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	122	175	529	127	0	0	0	0	125	0	648
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	122	175	529	127	0	0	0	0	125	0	648
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.92	0.92	0.95	1.00	1.00	1.00	1.00	1.00	0.78	1.00	0.85
Lanes:	0.00	0.41	0.59	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	718	1030	1805	1900	0	0	0	0	1490	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.17	0.17	0.29	0.07	0.00	0.00	0.00	0.00	0.08	0.00	0.40
Crit Moves:		****		****								****
Green/Cycle:	0.00	0.18	0.18	0.32	0.50	0.00	0.00	0.00	0.00	0.44	0.00	0.44
Volume/Cap:	0.00	0.92	0.92	0.92	0.13	0.00	0.00	0.00	0.00	0.19	0.00	0.92
Delay/Veh:	0.0	70.2	70.2	52.8	13.3	0.0	0.0	0.0	0.0	17.5	0.0	43.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	70.2	70.2	52.8	13.3	0.0	0.0	0.0	0.0	17.5	0.0	43.7
LOS by Move:	A	E	E	D	B	A	A	A	A	B	A	D
HCM2k95thQ:	0	23	23	34	4	0	0	0	0	5	0	38

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 44.8 Worst Case Level Of Service: F[385.6]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced																				
Base Vol:	0	0	0	5	0	49	0	100	106	16	429	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	5	0	49	0	100	106	16	429	0								
Added Vol:	0	0	0	121	0	46	0	126	298	302	379	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	126	0	95	0	226	404	318	808	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	126	0	95	0	226	404	318	808	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	126	0	95	0	226	404	318	808	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1872	2074	808	xxxx	xxxx	xxxxx	630	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	80	54	384	xxxx	xxxx	xxxxx	962	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	60	36	384	xxxx	xxxx	xxxxx	962	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	2.11	0.00	0.25	xxxx	xxxx	xxxx	0.33	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	1.0	xxxx	xxxx	xxxxx	1.5	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	17.4	xxxxx	xxxx	xxxxx	10.6	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	C	*	*	*	B	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	60	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	12.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	663.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			385.6			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 35.1 Worst Case Level Of Service: F[287.6]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	0	0	60	0	124	201	1	299	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	0	0	60	0	124	201	1	299	0								
Added Vol:	0	0	0	121	0	46	0	126	298	302	379	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	121	0	106	0	250	499	303	678	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	121	0	106	0	250	499	303	678	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	121	0	106	0	250	499	303	678	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1784	2033	678	xxxx	xxxx	xxxxx	749	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	91	58	456	xxxx	xxxx	xxxxx	869	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	66	38	456	xxxx	xxxx	xxxxx	869	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	1.83	0.00	0.23	xxxx	xxxx	xxxx	0.35	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.9	xxxx	xxxx	xxxxx	1.6	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	15.3	xxxxx	xxxx	xxxxx	11.3	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	C	*	*	*	B	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	66	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	11.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	526.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			287.6			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.674
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 18.6
Optimal Cycle: 39 Level Of Service: B

Street Name:	101 S Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0	0 1	0	0 1	0 0	0	1 0	1	0	0
Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced												
Base Vol:	0	0	0	5	0	49	0	100	106	16	429	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	5	0	49	0	100	106	16	429	0
Added Vol:	0	0	0	121	0	46	0	126	298	302	379	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	126	0	95	0	226	404	318	808	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	126	0	95	0	226	404	318	808	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	126	0	95	0	226	404	318	808	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	126	0	95	0	226	404	318	808	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.71	1.00	0.84	1.00	0.91	0.91	0.95	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.36	0.64	1.00	1.00	0.00
Final Sat.:	0	0	0	1343	0	1599	0	622	1112	1805	1900	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.09	0.00	0.06	0.00	0.36	0.36	0.18	0.43	0.00
Crit Moves:				****				****		****		
Green/Cycle:	0.00	0.00	0.00	0.14	0.00	0.14	0.00	0.54	0.54	0.26	0.80	0.00
Volume/Cap:	0.00	0.00	0.00	0.67	0.00	0.43	0.00	0.67	0.67	0.67	0.53	0.00
Delay/Veh:	0.0	0.0	0.0	50.2	0.0	40.7	0.0	18.6	18.6	36.9	3.8	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	50.2	0.0	40.7	0.0	18.6	18.6	36.9	3.8	0.0
LOS by Move:	A	A	A	D	A	D	A	B	B	D	A	A
HCM2k95thQ:	0	0	0	10	0	6	0	26	26	15	15	0

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.735
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 20.3
Optimal Cycle: 47 Level Of Service: C

Street Name:	101 S Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0	0 1	0	0 1	0 0	0	1 0	1	0	0
Volume Module:												
Base Vol:	0	0	0	0	0	60	0	124	201	1	299	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	60	0	124	201	1	299	0
Added Vol:	0	0	0	121	0	46	0	126	298	302	379	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	121	0	106	0	250	499	303	678	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	121	0	106	0	250	499	303	678	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	121	0	106	0	250	499	303	678	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	121	0	106	0	250	499	303	678	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.71	1.00	0.84	1.00	0.91	0.91	0.95	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.33	0.67	1.00	1.00	0.00
Final Sat.:	0	0	0	1343	0	1599	0	577	1152	1805	1900	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.09	0.00	0.07	0.00	0.43	0.43	0.17	0.36	0.00
Crit Moves:				****				****		****		
Green/Cycle:	0.00	0.00	0.00	0.12	0.00	0.12	0.00	0.59	0.59	0.23	0.82	0.00
Volume/Cap:	0.00	0.00	0.00	0.74	0.00	0.54	0.00	0.74	0.74	0.74	0.44	0.00
Delay/Veh:	0.0	0.0	0.0	58.1	0.0	44.3	0.0	17.7	17.7	42.5	2.8	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	58.1	0.0	44.3	0.0	17.7	17.7	42.5	2.8	0.0
LOS by Move:	A	A	A	E	A	D	A	B	B	D	A	A
HCM2k95thQ:	0	0	0	10	0	8	0	30	30	16	11	0

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange West Consolidated Roundabout

PM General Plan Buildout

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
WB South Interchange										
1L	L	475	1.9	0.374	11.7	LOS B	89	0.47	0.63	23.7
6T	T	711	2.0	0.456	2.5	LOS A	122	0.48	0.26	28.2
Approach		**1184**	**1.9**	**0.456**	**6.1**	**LOS A**	**122**	**0.47**	**0.41**	**25.9**
SB Offramp										
17L	L	134	2.2	0.399	17.4	LOS B	68	0.77	0.97	21.7
14T	T	17	5.6	0.400	7.6	LOS A	68	0.77	0.85	26.0
14R	R	83	2.4	0.399	9.3	LOS A	68	0.77	0.89	24.5
Approach		**235**	**2.6**	**0.399**	**13.8**	**LOS B**	**68**	**0.77**	**0.93**	**22.8**
SB Cloverdale Blvd										
15L	L	167	1.8	0.261	12.7	LOS B	41	0.70	0.77	23.4
12T	T	299	2.0	0.371	4.8	LOS A	90	0.76	0.52	26.2
12R	R	121	1.7	0.371	6.7	LOS A	90	0.76	0.66	25.2
Approach		**587**	**1.9**	**0.371**	**7.5**	**LOS A**	**90**	**0.74**	**0.62**	**25.0**
NB Cloverdale Blvd										
13L	L	167	1.8	0.528	16.7	LOS B	113	0.80	1.01	21.6
18T	T	71	1.4	0.530	8.4	LOS A	113	0.80	0.91	25.3
18R	R	126	2.4	0.529	9.9	LOS A	113	0.80	0.91	24.1
Approach		**364**	**1.9**	**0.529**	**12.7**	**LOS B**	**113**	**0.80**	**0.95**	**22.9**
All Vehicles		**2370**	**2.0**	**0.530**	**8.2**	**LOS A**	**122**	**0.62**	**0.60**	**24.9**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA INTERSECTION

Movement Summary

South Interchange West Consolidated Roundabout

WKD General Plan Buildout

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
WB South Interchange										
1L	L	435	2.1	0.328	11.5	LOS B	76	0.39	0.61	23.9
6T	T	598	2.0	0.371	2.2	LOS A	93	0.39	0.24	29.0
Approach		**1033**	**2.0**	**0.371**	**6.1**	**LOS A**	**93**	**0.39**	**0.40**	**26.3**
SB Offramp										
17L	L	128	2.3	0.355	15.8	LOS B	55	0.70	0.92	22.5
14T	T	18	5.3	0.352	6.0	LOS A	55	0.70	0.67	26.5
14R	R	94	2.1	0.355	7.7	LOS A	55	0.70	0.78	25.5
Approach		**242**	**2.5**	**0.355**	**11.9**	**LOS B**	**55**	**0.70**	**0.85**	**23.7**
SB Cloverdale Blvd										
15L	L	186	2.1	0.282	12.5	LOS B	43	0.68	0.76	23.4
12T	T	371	1.9	0.425	4.7	LOS A	104	0.75	0.51	26.2
12R	R	134	2.2	0.425	6.5	LOS A	104	0.75	0.64	25.3
Approach		**691**	**2.0**	**0.425**	**7.2**	**LOS A**	**104**	**0.73**	**0.60**	**25.2**
NB Cloverdale Blvd										
13L	L	128	2.3	0.480	16.6	LOS B	96	0.79	0.99	21.7
18T	T	61	1.6	0.480	8.2	LOS A	96	0.79	0.90	25.5
18R	R	123	1.6	0.479	9.8	LOS A	96	0.79	0.89	24.2
Approach		**313**	**1.9**	**0.479**	**12.3**	**LOS B**	**96**	**0.79**	**0.93**	**23.2**
All Vehicles		**2279**	**2.1**	**0.480**	**7.9**	**LOS A**	**104**	**0.58**	**0.58**	**25.2**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 283.3 Worst Case Level Of Service: F[573.3]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:	2007 Balanced																			
Base Vol:	371		0		18	0		0		0	63		42		0	0		74		5
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	371		0		18	0		0		0	63		42		0	0		74		5
Added Vol:	292		0		251	0		0		0	52		195		0	0		390		137
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	663		0		269	0		0		0	115		237		0	0		464		142
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	663		0		269	0		0		0	115		237		0	0		464		142
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	663		0		269	0		0		0	115		237		0	0		464		142
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
Capacity Module:																				
Cnflict Vol:	1002	1073			237	xxxx	xxxx	xxxxx			606	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Potent Cap.:	271	222			807	xxxx	xxxx	xxxxx			982	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Move Cap.:	247	196			807	xxxx	xxxx	xxxxx			982	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Volume/Cap:	2.69	0.00			0.33	xxxx	xxxx		xxxx		0.12	xxxx		xxxx		xxxx	xxxx		xxxx	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			1.5	xxxx	xxxx	xxxxx			0.4	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Control Del:	xxxxx	xxxx			11.7	xxxxx	xxxx	xxxxx			9.2	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
LOS by Move:	*	*			B	*	*		*		A	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	247	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	56.4	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	801.2	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F		*		*		*		*		*		*		*		*		*	
ApproachDel:	573.3					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 193.5 Worst Case Level Of Service: F[419.6]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	248		6		11	0		0		0	77		41		0	0		57		1
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	248		6		11	0		0		0	77		41		0	0		57		1
Added Vol:	292		0		251	0		0		0	52		195		0	0		390		137
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	540		6		262	0		0		0	129		236		0	0		447		138
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	540		6		262	0		0		0	129		236		0	0		447		138
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	540		6		262	0		0		0	129		236		0	0		447		138
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
Capacity Module:																				
Cnflict Vol:	1010	1079			236	xxxx	xxxx	xxxxx			585	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Potent Cap.:	268	220			808	xxxx	xxxx	xxxxx			1000	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Move Cap.:	242	192			808	xxxx	xxxx	xxxxx			1000	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Volume/Cap:	2.24	0.03			0.32	xxxx	xxxx		xxxx		0.13	xxxx		xxxx		xxxx	xxxx		xxxx	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			1.4	xxxx	xxxx	xxxxx			0.4	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Control Del:	xxxxx	xxxx			11.6	xxxxx	xxxx	xxxxx			9.1	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
LOS by Move:	*	*			B	*	*		*		A	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	241	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	42.9	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	615.4	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F		*		*		*		*		*		*		*		*		*	
ApproachDel:	419.6					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.943
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 43.8
Optimal Cycle: 127 Level Of Service: D

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0 0	1	0 0	0 0	0	1 0	1 0	0	0 0	0 1	0
Volume Module:	2007 Balanced											
Base Vol:	371	0	18	0	0	0	63	42	0	0	74	5
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	371	0	18	0	0	0	63	42	0	0	74	5
Added Vol:	292	0	251	0	0	0	52	195	0	0	390	137
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	663	0	269	0	0	0	115	237	0	0	464	142
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	663	0	269	0	0	0	115	237	0	0	464	142
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	663	0	269	0	0	0	115	237	0	0	464	142
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	663	0	269	0	0	0	115	237	0	0	464	142
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.97	0.97
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.77	0.23
Final Sat.:	1343	0	1599	0	0	0	1805	1900	0	0	1408	431
Capacity Analysis Module:												
Vol/Sat:	0.49	0.00	0.17	0.00	0.00	0.00	0.06	0.12	0.00	0.00	0.33	0.33
Crit Moves:	****						****				****	
Green/Cycle:	0.52	0.00	0.52	0.00	0.00	0.00	0.07	0.42	0.00	0.00	0.35	0.35
Volume/Cap:	0.94	0.00	0.32	0.00	0.00	0.00	0.94	0.30	0.00	0.00	0.94	0.94
Delay/Veh:	43.7	0.0	13.9	0.0	0.0	0.0	110.3	19.6	0.0	0.0	54.1	54.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	43.7	0.0	13.9	0.0	0.0	0.0	110.3	19.6	0.0	0.0	54.1	54.1
LOS by Move:	D	A	B	A	A	A	F	B	A	A	D	D
HCM2k95thQ:	40	0	9	0	0	0	8	9	0	0	34	34

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.758
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 28.0
Optimal Cycle: 50 Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0 0	1	0 0	0 0	0	1 0	1 0	0	0 0	0 1	0
Volume Module:												
Base Vol:	248	6	11	0	0	0	77	41	0	0	57	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	248	6	11	0	0	0	77	41	0	0	57	1
Added Vol:	292	0	251	0	0	0	52	195	0	0	390	137
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	540	6	262	0	0	0	129	236	0	0	447	138
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	540	6	262	0	0	0	129	236	0	0	447	138
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	540	6	262	0	0	0	129	236	0	0	447	138
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	540	6	262	0	0	0	129	236	0	0	447	138
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.89	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.97	0.97
Lanes:	0.99	0.01	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.76	0.24
Final Sat.:	1674	19	1599	0	0	0	1805	1900	0	0	1405	434
Capacity Analysis Module:												
Vol/Sat:	0.32	0.32	0.16	0.00	0.00	0.00	0.07	0.12	0.00	0.00	0.32	0.32
Crit Moves:		****					****				****	
Green/Cycle:	0.43	0.43	0.43	0.00	0.00	0.00	0.09	0.51	0.00	0.00	0.42	0.42
Volume/Cap:	0.76	0.76	0.38	0.00	0.00	0.00	0.76	0.24	0.00	0.00	0.76	0.76
Delay/Veh:	29.0	29.0	20.1	0.0	0.0	0.0	61.8	13.6	0.0	0.0	29.0	29.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	29.0	29.0	20.1	0.0	0.0	0.0	61.8	13.6	0.0	0.0	29.0	29.0
LOS by Move:	C	C	C	A	A	A	E	B	A	A	C	C
HCM2k95thQ:	27	27	11	0	0	0	8	7	0	0	27	27

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 328.1 Worst Case Level Of Service: F[834.1]

Street Name:	Asti (Frontage) Rd									South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	32	33			0	0	15		47		49		0		11	0		0		0
Growth Adj:	1.00	1.00			1.00	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	32	33			0	0	15		47		49		0		11	0		0		0
Added Vol:	239	56			3	30	50		139		93		134		219	4		148		33
PasserByVol:	0	0			0	0	0		0		0		0		0	0		0		0
Initial Fut:	271	89			3	30	65		186		142		134		230	4		148		33
User Adj:	1.00	1.00			1.00	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00			1.00	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	271	89			3	30	65		186		142		134		230	4		148		33
Reduct Vol:	0	0			0	0	0		0		0		0		0	0		0		0
FinalVolume:	271	89			3	30	65		186		142		134		230	4		148		33
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx			4.1	xxxx	xxxxx			7.1		6.5		6.2	7.1		6.5		6.2
FollowUpTim:	2.2	xxxx	xxxxx			2.2	xxxx	xxxxx			3.5		4.0		3.3	3.5		4.0		3.3
Capacity Module:																				
Cnflict Vol:	251	xxxx	xxxxx			92	xxxx	xxxxx			941		852		158	1033		944		91
Potent Cap.:	1326	xxxx	xxxxx			1515	xxxx	xxxxx			245		299		893	213		264		973
Move Cap.:	1326	xxxx	xxxxx			1515	xxxx	xxxxx			76		222		893	68		197		973
Volume/Cap:	0.20	xxxx	xxxx			0.02	xxxx	xxxx			1.87		0.60		0.26	0.06		0.75		0.03
Level Of Service Module:																				
2Way95thQ:	0.8	xxxx	xxxxx			0.1	xxxx	xxxxx			xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
Control Del:	8.4	xxxx	xxxxx			7.4	xxxx	xxxxx			xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
LOS by Move:	A	*	*			A	*	*			*		*		*	*		*		*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx		185		xxxxx	xxxx		219		xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx		44.4		xxxxx	xxxxx		6.5		xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx		834		xxxxx	xxxxx		73.0		xxxxx
Shared LOS:	*	*	*			*	*	*			*		F		*	*		F		*
ApproachDel:	xxxxxx					xxxxxx					834.1					73.0				
ApproachLOS:	*					*					F					F				

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 260.6 Worst Case Level Of Service: F[657.5]

Street Name:	Asti (Frontage) Rd									South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	26	19			0	0	18		42		37		0		11	0		0		0
Growth Adj:	1.00	1.00			1.00	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	26	19			0	0	18		42		37		0		11	0		0		0
Added Vol:	239	56			3	30	50		139		93		134		219	4		148		33
PasserByVol:	0	0			0	0	0		0		0		0		0	0		0		0
Initial Fut:	265	75			3	30	68		181		130		134		230	4		148		33
User Adj:	1.00	1.00			1.00	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00			1.00	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	265	75			3	30	68		181		130		134		230	4		148		33
Reduct Vol:	0	0			0	0	0		0		0		0		0	0		0		0
FinalVolume:	265	75			3	30	68		181		130		134		230	4		148		33
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx			4.1	xxxx	xxxxx			7.1		6.5		6.2	7.1		6.5		6.2
FollowUpTim:	2.2	xxxx	xxxxx			2.2	xxxx	xxxxx			3.5		4.0		3.3	3.5		4.0		3.3
Capacity Module:																				
Cnflict Vol:	249	xxxx	xxxxx			78	xxxx	xxxxx			916		827		159	1007		916		77
Potent Cap.:	1328	xxxx	xxxxx			1533	xxxx	xxxxx			255		309		892	221		275		990
Move Cap.:	1328	xxxx	xxxxx			1533	xxxx	xxxxx			86		232		892	74		206		990
Volume/Cap:	0.20	xxxx	xxxx			0.02	xxxx	xxxx			1.51		0.58		0.26	0.05		0.72		0.03
Level Of Service Module:																				
2Way95thQ:	0.7	xxxx	xxxxx			0.1	xxxx	xxxxx			xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
Control Del:	8.4	xxxx	xxxxx			7.4	xxxx	xxxxx			xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
LOS by Move:	A	*	*			A	*	*			*		*		*	*		*		*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx		210		xxxxx	xxxx		230		xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx		40.1		xxxxx	xxxxx		6.0		xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx		657		xxxxx	xxxxx		64.1		xxxxx
Shared LOS:	*	*	*			*	*	*			*		F		*	*		F		*
ApproachDel:	xxxxxx					xxxxxx					657.5					64.1				
ApproachLOS:	*					*					F					F				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.663
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 35.9
Optimal Cycle: 44 Level Of Service: D

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0
Volume Module:	2007 Balanced											
Base Vol:	32	33	0	0	15	47	49	0	11	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	32	33	0	0	15	47	49	0	11	0	0	0
Added Vol:	239	56	3	30	50	139	93	134	219	4	148	33
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	271	89	3	30	65	186	142	134	230	4	148	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	271	89	3	30	65	186	142	134	230	4	148	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	271	89	3	30	65	186	142	134	230	4	148	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	271	89	3	30	65	186	142	134	230	4	148	33
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	0.95	0.89	0.89	0.95	0.91	0.91	0.98	0.98	0.98
Lanes:	1.00	0.97	0.03	1.00	0.26	0.74	1.00	0.37	0.63	0.02	0.80	0.18
Final Sat.:	1805	1829	62	1805	437	1252	1805	633	1086	40	1482	330
Capacity Analysis Module:												
Vol/Sat:	0.15	0.05	0.05	0.02	0.15	0.15	0.08	0.21	0.21	0.10	0.10	0.10
Crit Moves:	****				****				****	****		
Green/Cycle:	0.23	0.34	0.34	0.11	0.22	0.22	0.32	0.32	0.32	0.15	0.15	0.15
Volume/Cap:	0.66	0.14	0.14	0.14	0.66	0.66	0.25	0.66	0.66	0.66	0.66	0.66
Delay/Veh:	39.3	23.3	23.3	40.2	39.7	39.7	25.4	32.5	32.5	46.0	46.0	46.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	39.3	23.3	23.3	40.2	39.7	39.7	25.4	32.5	32.5	46.0	46.0	46.0
LOS by Move:	D	C	C	D	D	D	C	C	C	D	D	D
HCM2k95thQ:	16	4	4	2	15	15	6	18	18	13	13	13

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.658
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 35.9
Optimal Cycle: 44 Level Of Service: D

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0
Volume Module:												
Base Vol:	26	19	0	0	18	42	37	0	11	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	26	19	0	0	18	42	37	0	11	0	0	0
Added Vol:	239	56	3	30	50	139	93	134	219	4	148	33
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	265	75	3	30	68	181	130	134	230	4	148	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	265	75	3	30	68	181	130	134	230	4	148	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	265	75	3	30	68	181	130	134	230	4	148	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	265	75	3	30	68	181	130	134	230	4	148	33
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.99	0.99	0.95	0.89	0.89	0.95	0.91	0.91	0.98	0.98	0.98
Lanes:	1.00	0.96	0.04	1.00	0.27	0.73	1.00	0.37	0.63	0.02	0.80	0.18
Final Sat.:	1805	1816	73	1805	462	1231	1805	633	1086	40	1482	330
Capacity Analysis Module:												
Vol/Sat:	0.15	0.04	0.04	0.02	0.15	0.15	0.07	0.21	0.21	0.10	0.10	0.10
Crit Moves:	****				****				****	****		
Green/Cycle:	0.22	0.32	0.32	0.13	0.22	0.22	0.32	0.32	0.32	0.15	0.15	0.15
Volume/Cap:	0.66	0.13	0.13	0.13	0.66	0.66	0.22	0.66	0.66	0.66	0.66	0.66
Delay/Veh:	39.3	24.3	24.3	38.9	39.6	39.6	25.0	32.1	32.1	45.6	45.6	45.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	39.3	24.3	24.3	38.9	39.6	39.6	25.0	32.1	32.1	45.6	45.6	45.6
LOS by Move:	D	C	C	D	D	D	C	C	C	D	D	D
HCM2k95thQ:	16	3	3	2	15	15	6	18	18	13	13	13

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

PM Buildout

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	67	1.5	0.604	16.1	LOS B	127	0.83	1.04	21.5
16T	T	218	1.8	0.604	9.0	LOS A	127	0.83	0.96	24.8
16R	R	97	2.1	0.602	10.6	LOS B	127	0.83	0.99	23.6
Approach		**382**	**1.8**	**0.604**	**10.7**	**LOS B**	**127**	**0.83**	**0.98**	**23.8**
WB AV Resort										
1L	L	4	20.0	0.385	19.4	LOS B	69	0.83	0.98	20.8
6T	T	119	1.7	0.377	9.9	LOS A	69	0.83	0.90	24.1
6R	R	72	1.4	0.376	11.1	LOS B	69	0.83	0.88	23.2
Approach		**195**	**2.1**	**0.376**	**10.6**	**LOS B**	**69**	**0.83**	**0.89**	**23.7**
SB Asti										
17L	L	100	2.0	0.532	20.4	LOS C	115	0.86	1.06	20.1
14T	T	149	2.0	0.532	11.6	LOS B	115	0.86	0.99	22.9
14R	R	46	2.2	0.535	13.2	LOS B	115	0.86	1.00	21.8
Approach		**295**	**2.0**	**0.532**	**14.8**	**LOS B**	**115**	**0.86**	**1.01**	**21.6**
EB South Interchange										
5L	L	192	2.1	0.267	11.0	LOS B	56	0.32	0.60	24.2
2T	T	66	1.5	0.267	2.1	LOS A	56	0.32	0.23	29.5
2R	R	114	1.8	0.267	2.1	LOS A	56	0.32	0.23	29.5
Approach		**371**	**1.9**	**0.267**	**6.7**	**LOS A**	**56**	**0.32**	**0.42**	**26.2**
101 NB Offramp										
13L	L	698	2.0	0.476	14.4	LOS B	101	0.66	0.81	22.9
18T	T	80	2.5	0.476	4.5	LOS A	101	0.66	0.48	26.7
18R	R	203	2.0	0.477	5.6	LOS A	101	0.66	0.56	26.1
Approach		**981**	**2.0**	**0.476**	**11.8**	**LOS B**	**101**	**0.66**	**0.73**	**23.6**
All Vehicles		**2224**	**2.0**	**0.604**	**11.0**	**LOS B**	**127**	**0.67**	**0.77**	**23.7**

Symbols which may appear in this table:

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

Weekend Midday Buildout

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	66	1.5	0.528	14.6	LOS B	103	0.78	0.99	22.3
16T	T	213	1.9	0.527	7.5	LOS A	103	0.78	0.87	25.9
16R	R	82	2.4	0.529	9.1	LOS A	103	0.78	0.92	24.7
Approach		**360**	**1.9**	**0.528**	**9.2**	**LOS A**	**103**	**0.78**	**0.90**	**24.8**
WB AV Resort										
1L	L	4	20.0	0.333	17.8	LOS B	59	0.79	0.94	21.5
6T	T	119	1.7	0.340	8.3	LOS A	59	0.79	0.84	25.4
6R	R	72	1.4	0.340	9.5	LOS A	59	0.79	0.82	24.4
Approach		**195**	**2.1**	**0.340**	**9.0**	**LOS A**	**59**	**0.79**	**0.84**	**24.9**
SB Asti										
17L	L	103	1.9	0.488	18.8	LOS B	101	0.82	1.02	20.8
14T	T	145	2.1	0.488	10.0	LOS B	101	0.82	0.94	24.0
14R	R	45	2.2	0.489	11.6	LOS B	101	0.82	0.94	22.9
Approach		**293**	**2.0**	**0.488**	**13.3**	**LOS B**	**101**	**0.82**	**0.97**	**22.5**
EB South Interchange										
5L	L	201	2.0	0.276	11.1	LOS B	58	0.32	0.61	24.1
2T	T	67	1.5	0.276	2.1	LOS A	58	0.32	0.23	29.5
2R	R	116	1.7	0.276	2.1	LOS A	58	0.32	0.23	29.5
Approach		**383**	**1.8**	**0.276**	**6.8**	**LOS A**	**58**	**0.32**	**0.43**	**26.1**
101 NB Offramp										
13L	L	568	1.9	0.418	14.2	LOS B	84	0.64	0.79	22.9
18T	T	79	2.5	0.418	4.7	LOS A	84	0.64	0.49	26.8
18R	R	203	2.0	0.418	5.5	LOS A	84	0.64	0.55	26.2
Approach		**850**	**2.0**	**0.418**	**11.2**	**LOS B**	**84**	**0.64**	**0.71**	**23.8**
All Vehicles		**2081**	**2.0**	**0.529**	**10.2**	**LOS B**	**103**	**0.65**	**0.74**	**24.3**

Symbols which may appear in this table:

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	TAZ 2	25.00	26.00	25	26	51	1.1
	Zone 2 Subtotal					25	26	51	1.1
3		1.00	TAZ 3	4.00	2.00	4	2	6	0.1
	Zone 3 Subtotal					4	2	6	0.1
5		1.00	TAZ 5	6.00	3.00	6	3	9	0.2
	Zone 5 Subtotal					6	3	9	0.2
6		1.00	TAZ 6	27.00	14.00	27	14	41	0.9
	Zone 6 Subtotal					27	14	41	0.9
7	Jefferson Sp	1.00	TAZ 7	2.00	2.00	2	2	4	0.1
	Zone 7 Subtotal					2	2	4	0.1
8	12.4 (2/10)	1.00	TAZ 8	14.00	16.00	14	16	30	0.7
	Zone 8 Subtotal					14	16	30	0.7
9	12.4 (3/10)	1.00	TAZ 9	2.00	2.00	2	2	4	0.1
	Zone 9 Subtotal					2	2	4	0.1
12	Tall Trees	1.00	TAZ 12	25.00	15.00	25	15	40	0.9
	Zone 12 Subtotal					25	15	40	0.9
13	12.4 (9/10)	1.00	TAZ 13	13.00	7.00	13	7	20	0.4
	Zone 13 Subtotal					13	7	20	0.4
14	Downtown Com	1.00	TAZ 14	21.00	21.00	21	21	42	0.9
	Zone 14 Subtotal					21	21	42	0.9
16		1.00	TAZ 16	33.00	35.00	33	35	68	1.5
	Zone 16 Subtotal					33	35	68	1.5
17		1.00	TAZ 17	12.00	6.00	12	6	18	0.4
	Zone 17 Subtotal					12	6	18	0.4
18		1.00	TAZ 18	13.00	13.00	13	13	26	0.6
	Zone 18 Subtotal					13	13	26	0.6
19		1.00	TAZ 19	23.00	38.00	23	38	61	1.3
	Zone 19 Subtotal					23	38	61	1.3
20		1.00	TAZ 20	5.00	3.00	5	3	8	0.2

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	TAZ 2	25.00	26.00	25	26	51	1.0
	Zone 2 Subtotal					25	26	51	1.0
3		1.00	TAZ 3	4.00	2.00	4	2	6	0.1
	Zone 3 Subtotal					4	2	6	0.1
5		1.00	TAZ 5	6.00	3.00	6	3	9	0.2
	Zone 5 Subtotal					6	3	9	0.2
6		1.00	TAZ 6	27.00	14.00	27	14	41	0.8
	Zone 6 Subtotal					27	14	41	0.8
7	Jefferson Sp	1.00	TAZ 7	2.00	2.00	2	2	4	0.1
	Zone 7 Subtotal					2	2	4	0.1
8	12.4 (2/10)	1.00	TAZ 8	14.00	16.00	14	16	30	0.6
	Zone 8 Subtotal					14	16	30	0.6
9	12.4 (3/10)	1.00	TAZ 9	2.00	2.00	2	2	4	0.1
	Zone 9 Subtotal					2	2	4	0.1
12	Tall Trees	1.00	TAZ 12	25.00	15.00	25	15	40	0.8
	Zone 12 Subtotal					25	15	40	0.8
13	12.4 (9/10)	1.00	TAZ 13	13.00	7.00	13	7	20	0.4
	Zone 13 Subtotal					13	7	20	0.4
14	Downtown Com	1.00	TAZ 14	21.00	21.00	21	21	42	0.8
	Zone 14 Subtotal					21	21	42	0.8
16		1.00	TAZ 16	33.00	35.00	33	35	68	1.4
	Zone 16 Subtotal					33	35	68	1.4
17		1.00	TAZ 17	12.00	6.00	12	6	18	0.4
	Zone 17 Subtotal					12	6	18	0.4
18		1.00	TAZ 18	13.00	13.00	13	13	26	0.5
	Zone 18 Subtotal					13	13	26	0.5
19		1.00	TAZ 19	23.00	38.00	23	38	61	1.2
	Zone 19 Subtotal					23	38	61	1.2
20		1.00	TAZ 20	5.00	3.00	5	3	8	0.2

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 20 Subtotal					5	3	8	0.2
22		1.00	TAZ 22	109.00	112.00	109	112	221	4.8
	Zone 22 Subtotal					109	112	221	4.8
23		1.00	TAZ 23	33.00	35.00	33	35	68	1.5
	Zone 23 Subtotal					33	35	68	1.5
24	24 Vineyard	1.00	TAZ 24	16.00	10.00	16	10	26	0.6
	Zone 24 Subtotal					16	10	26	0.6
25	25 Westside	1.00	TAZ 25	15.00	9.00	15	9	24	0.5
	Zone 25 Subtotal					15	9	24	0.5
26		1.00	TAZ 26	30.00	33.00	30	33	63	1.4
	Zone 26 Subtotal					30	33	63	1.4
28	28 Citrus Ga	1.00	TAZ 28	23.00	20.00	23	20	43	0.9
	Zone 28 Subtotal					23	20	43	0.9
29		1.00	TAZ 29	14.00	13.00	14	13	27	0.6
	Zone 29 Subtotal					14	13	27	0.6
30		1.00	TAZ 30	17.00	25.00	17	25	42	0.9
	Zone 30 Subtotal					17	25	42	0.9
31		1.00	TAZ 31	46.00	51.00	46	51	97	2.1
	Zone 31 Subtotal					46	51	97	2.1
33		1.00	TAZ 33	18.00	10.00	18	10	28	0.6
	Zone 33 Subtotal					18	10	28	0.6
34		1.00	TAZ 34	1.00	1.00	1	1	2	0.0
	Zone 34 Subtotal					1	1	2	0.0
37		1.00	TAZ 37	54.00	27.00	54	27	81	1.8
	Zone 37 Subtotal					54	27	81	1.8
38	Casino Proje	1.00	Casino	0.00	0.00	0	0	0	0.0
39		1.00	TAZ 39	72.00	73.00	72	73	145	3.2
	Zone 39 Subtotal					72	73	145	3.2
40		1.00	TAZ 40	36.00	38.00	36	38	74	1.6
	Zone 40 Subtotal					36	38	74	1.6
42	42 Rancho de	1.00	TAZ 42	47.00	51.00	47	51	98	2.1
	Zone 42 Subtotal					47	51	98	2.1

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 20 Subtotal					5	3	8	0.2
22		1.00	TAZ 22	109.00	112.00	109	112	221	4.4
	Zone 22 Subtotal					109	112	221	4.4
23		1.00	TAZ 23	33.00	35.00	33	35	68	1.4
	Zone 23 Subtotal					33	35	68	1.4
24	24 Vineyard	1.00	TAZ 24	16.00	10.00	16	10	26	0.5
	Zone 24 Subtotal					16	10	26	0.5
25	25 Westside	1.00	TAZ 25	15.00	9.00	15	9	24	0.5
	Zone 25 Subtotal					15	9	24	0.5
26		1.00	TAZ 26	30.00	33.00	30	33	63	1.3
	Zone 26 Subtotal					30	33	63	1.3
28	28 Citrus Ga	1.00	TAZ 28	23.00	20.00	23	20	43	0.9
	Zone 28 Subtotal					23	20	43	0.9
29		1.00	TAZ 29	14.00	13.00	14	13	27	0.5
	Zone 29 Subtotal					14	13	27	0.5
30		1.00	TAZ 30	17.00	25.00	17	25	42	0.8
	Zone 30 Subtotal					17	25	42	0.8
31		1.00	TAZ 31	46.00	51.00	46	51	97	1.9
	Zone 31 Subtotal					46	51	97	1.9
33		1.00	TAZ 33	18.00	10.00	18	10	28	0.6
	Zone 33 Subtotal					18	10	28	0.6
34		1.00	TAZ 34	1.00	1.00	1	1	2	0.0
	Zone 34 Subtotal					1	1	2	0.0
37		1.00	TAZ 37	54.00	27.00	54	27	81	1.6
	Zone 37 Subtotal					54	27	81	1.6
38	Casino Proje	1.00	Casino	0.00	0.00	0	0	0	0.0
39		1.00	TAZ 39	72.00	73.00	72	73	145	2.9
	Zone 39 Subtotal					72	73	145	2.9
40		1.00	TAZ 40	36.00	38.00	36	38	74	1.5
	Zone 40 Subtotal					36	38	74	1.5
42	42 Rancho de	1.00	TAZ 42	47.00	51.00	47	51	98	2.0
	Zone 42 Subtotal					47	51	98	2.0

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
43		1.00	TAZ 43	53.00	67.00	53	67	120	2.6
	Zone 43 Subtotal					53	67	120	2.6
44		1.00	TAZ 44	167.00	185.00	167	185	352	7.7
	Zone 44 Subtotal					167	185	352	7.7
45		1.00	TAZ 45	7.00	38.00	7	38	45	1.0
	Zone 45 Subtotal					7	38	45	1.0
46		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 46 Subtotal					27	27	54	1.2
47		1.00	TAZ 47	9.00	9.00	9	9	18	0.4
	Zone 47 Subtotal					9	9	18	0.4
48		1.00	TAZ 48	10.00	51.00	10	51	61	1.3
	Zone 48 Subtotal					10	51	61	1.3
50		1.00	TAZ 50	8.00	5.00	8	5	13	0.3
	Zone 50 Subtotal					8	5	13	0.3
54		1.00	TAZ 54	29.00	21.00	29	21	50	1.1
	Zone 54 Subtotal					29	21	50	1.1
56		1.00	TAZ 56	4.00	3.00	4	3	7	0.2
	Zone 56 Subtotal					4	3	7	0.2
57		1.00	TAZ 57	4.00	3.00	4	3	7	0.2
	Zone 57 Subtotal					4	3	7	0.2
62		1.00	TAZ 62	4.00	2.00	4	2	6	0.1
	Zone 62 Subtotal					4	2	6	0.1
119		1.00	TAZ 19	23.00	38.00	23	38	61	1.3
	Zone 119 Subtotal					23	38	61	1.3
122		1.00	TAZ 22	110.00	112.00	110	112	222	4.8
	Zone 122 Subtotal					110	112	222	4.8
123		1.00	TAZ 23	33.00	36.00	33	36	69	1.5
	Zone 123 Subtotal					33	36	69	1.5
137		1.00	TAZ 37	53.00	26.00	53	26	79	1.7
	Zone 137 Subtotal					53	26	79	1.7
138	TAZ 38	1.00	TAZ 38	31.00	112.00	31	112	143	3.1

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
43		1.00	TAZ 43	53.00	67.00	53	67	120	2.4
	Zone 43 Subtotal					53	67	120	2.4
44		1.00	TAZ 44	167.00	185.00	167	185	352	7.0
	Zone 44 Subtotal					167	185	352	7.0
45		1.00	TAZ 45	7.00	38.00	7	38	45	0.9
	Zone 45 Subtotal					7	38	45	0.9
46		1.00	TAZ 46	27.00	27.00	27	27	54	1.1
	Zone 46 Subtotal					27	27	54	1.1
47		1.00	TAZ 47	9.00	9.00	9	9	18	0.4
	Zone 47 Subtotal					9	9	18	0.4
48		1.00	TAZ 48	10.00	51.00	10	51	61	1.2
	Zone 48 Subtotal					10	51	61	1.2
50		1.00	TAZ 50	8.00	5.00	8	5	13	0.3
	Zone 50 Subtotal					8	5	13	0.3
54		1.00	TAZ 54	29.00	21.00	29	21	50	1.0
	Zone 54 Subtotal					29	21	50	1.0
56		1.00	TAZ 56	4.00	3.00	4	3	7	0.1
	Zone 56 Subtotal					4	3	7	0.1
57		1.00	TAZ 57	4.00	3.00	4	3	7	0.1
	Zone 57 Subtotal					4	3	7	0.1
62		1.00	TAZ 62	4.00	2.00	4	2	6	0.1
	Zone 62 Subtotal					4	2	6	0.1
119		1.00	TAZ 19	23.00	38.00	23	38	61	1.2
	Zone 119 Subtotal					23	38	61	1.2
122		1.00	TAZ 22	110.00	112.00	110	112	222	4.4
	Zone 122 Subtotal					110	112	222	4.4
123		1.00	TAZ 23	33.00	36.00	33	36	69	1.4
	Zone 123 Subtotal					33	36	69	1.4
137		1.00	TAZ 37	53.00	26.00	53	26	79	1.6
	Zone 137 Subtotal					53	26	79	1.6
138	TAZ 38	1.00	TAZ 38	31.00	112.00	31	112	143	2.9

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 138 Subtotal					31	112	143	3.1
139		1.00	TAZ 39	72.00	72.00	72	72	144	3.1
	Zone 139 Subtotal					72	72	144	3.1
140		1.00	TAZ 40	36.00	38.00	36	38	74	1.6
	Zone 140 Subtotal					36	38	74	1.6
142		1.00	TAZ 42	48.00	51.00	48	51	99	2.2
	Zone 142 Subtotal					48	51	99	2.2
143		1.00	TAZ 43	53.00	66.00	53	66	119	2.6
	Zone 143 Subtotal					53	66	119	2.6
144		1.00	TAZ 44	167.00	184.00	167	184	351	7.7
	Zone 144 Subtotal					167	184	351	7.7
146		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 146 Subtotal					27	27	54	1.2
148		1.00	TAZ 48	10.00	51.00	10	51	61	1.3
	Zone 148 Subtotal					10	51	61	1.3
TOTAL						1741	1935	3676	80.2

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 138 Subtotal					31	112	143	2.9
139		1.00	TAZ 39	72.00	72.00	72	72	144	2.9
	Zone 139 Subtotal					72	72	144	2.9
140		1.00	TAZ 40	36.00	38.00	36	38	74	1.5
	Zone 140 Subtotal					36	38	74	1.5
142		1.00	TAZ 42	48.00	51.00	48	51	99	2.0
	Zone 142 Subtotal					48	51	99	2.0
143		1.00	TAZ 43	53.00	66.00	53	66	119	2.4
	Zone 143 Subtotal					53	66	119	2.4
144		1.00	TAZ 44	167.00	184.00	167	184	351	7.0
	Zone 144 Subtotal					167	184	351	7.0
146		1.00	TAZ 46	27.00	27.00	27	27	54	1.1
	Zone 146 Subtotal					27	27	54	1.1
148		1.00	TAZ 48	10.00	51.00	10	51	61	1.2
	Zone 148 Subtotal					10	51	61	1.2
TOTAL						1741	1935	3676	73.6

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt A

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	489.00	419.00	489	419	908	19.8
	Zone 38 Subtotal					489	419	908	19.8
TOTAL						489	419	908	19.8

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt A

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	732.00	585.00	732	585	1317	26.4
	Zone 38 Subtotal					732	585	1317	26.4
TOTAL						732	585	1317	26.4

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.507
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	13.5
Optimal Cycle:	22	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm												
Base Vol:	47	317	71	34	212	15	16	35	69	109	36	38
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	52	349	78	37	233	17	18	39	76	120	40	42
Added Vol:	74	102	95	21	79	0	0	14	69	114	14	28
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	126	451	173	58	312	17	18	53	145	234	54	70
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	126	451	173	58	312	17	18	53	145	234	54	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	126	451	173	58	312	17	18	53	145	234	54	70
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	126	451	173	58	312	17	18	53	145	234	54	70
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.74	0.74	0.85	0.78	0.78	0.78	0.88	0.88	0.88	0.69	0.69	0.69
Lanes:	0.44	1.56	1.00	0.30	1.61	0.09	0.08	0.24	0.68	0.65	0.15	0.20
Final Sat.:	616	2207	1615	448	2396	127	137	407	1124	853	195	255
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.11	0.13	0.13	0.13	0.13	0.13	0.13	0.27	0.27	0.27
Crit Moves:		****									****	
Green/Cycle:	0.40	0.40	0.40	0.40	0.40	0.40	0.54	0.54	0.54	0.54	0.54	0.54
Volume/Cap:	0.51	0.51	0.27	0.32	0.32	0.32	0.24	0.24	0.24	0.51	0.51	0.51
Delay/Veh:	16.1	16.1	14.2	14.5	14.5	14.5	8.6	8.6	8.6	10.8	10.8	10.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	16.1	16.1	14.2	14.5	14.5	14.5	8.6	8.6	8.6	10.8	10.8	10.8
LOS by Move:	B	B	B	B	B	B	A	A	A	B	B	B
HCM2kAvgQ:	5	5	3	3	3	3	3	3	3	5	5	5

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.493
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	13.4
Optimal Cycle:	22	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	64	291	99	39	291	17	18	39	64	99	40	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	291	99	39	291	17	18	39	64	99	40	39
Added Vol:	74	104	106	21	82	0	0	14	69	127	14	28
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	138	395	205	60	373	17	18	53	133	226	54	67
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	138	395	205	60	373	17	18	53	133	226	54	67
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	138	395	205	60	373	17	18	53	133	226	54	67
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	138	395	205	60	373	17	18	53	133	226	54	67
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.69	0.69	0.85	0.80	0.80	0.80	0.88	0.88	0.88	0.70	0.70	0.70
Lanes:	0.52	1.48	1.00	0.27	1.66	0.07	0.09	0.26	0.65	0.65	0.16	0.19
Final Sat.:	680	1948	1615	403	2504	114	147	434	1089	862	206	255
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.13	0.15	0.15	0.15	0.12	0.12	0.12	0.26	0.26	0.26
Crit Moves:		****									****	
Green/Cycle:	0.41	0.41	0.41	0.41	0.41	0.41	0.53	0.53	0.53	0.53	0.53	0.53
Volume/Cap:	0.49	0.49	0.31	0.36	0.36	0.36	0.23	0.23	0.23	0.49	0.49	0.49
Delay/Veh:	15.6	15.6	14.2	14.4	14.4	14.4	8.9	8.9	8.9	11.0	11.0	11.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.6	15.6	14.2	14.4	14.4	14.4	8.9	8.9	8.9	11.0	11.0	11.0
LOS by Move:	B	B	B	B	B	B	A	A	A	B	B	B
HCM2kAvgQ:	5	5	3	4	4	4	2	2	2	5	5	5

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: E[49.8]

Street Name:	Cloverdale Blvd									Lake St										
Approach:	North Bound					South Bound				East Bound					West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	466		95		46	399		0		0		0		0	61		0		34
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	466		95		46	399		0		0		0		0	61		0		34
Added Vol:	0	271		57		1	262		0		0		0		0	46		0		0
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0
Initial Fut:	0	737		152		47	661		0		0		0		0	107		0		34
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	737		152		47	661		0		0		0		0	107		0		34
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	0	737		152		47	661		0		0		0		0	107		0		34
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx		xxxx		xxxxx	6.8		xxxx		6.9
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	3.5		xxxx		3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		889	xxxx		xxxxx		xxxx		xxxx		xxxxx	1238		xxxx		445
Potent Cap.:	xxxx	xxxx		xxxxx		771	xxxx		xxxxx		xxxx		xxxx		xxxxx	171		xxxx		567
Move Cap.:	xxxx	xxxx		xxxxx		771	xxxx		xxxxx		xxxx		xxxx		xxxxx	163		xxxx		567
Volume/Cap:	xxxx	xxxx		xxxx		0.06	xxxx		xxxx		xxxx		xxxx		xxxx	0.66		xxxx		0.06
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.2	xxxx		xxxxx		xxxx		xxxx		xxxxx	3.7		xxxx		0.2
Control Del:	xxxxx	xxxx		xxxxx		10.0	xxxx		xxxxx		xxxxx		xxxx		xxxxx	61.9		xxxx		11.8
LOS by Move:	*	*		*		A	*		*		*		*		*	F		*		B
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
SharedQueue:	xxxxx	xxxx		xxxxx		0.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
Shrd ConDel:	xxxxx	xxxx		xxxxx		10.0	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
Shared LOS:	*	*		*		A	*		*		*		*		*	*		*		*
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					49.8				
ApproachLOS:	*					*					*					E				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 5.4 Worst Case Level Of Service: F[55.7]

Street Name:	Cloverdale Blvd									Lake St										
Approach:	North Bound					South Bound				East Bound					West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	432		78		40	432		0		0		0		0	78		0		40
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	432		78		40	432		0		0		0		0	78		0		40
Added Vol:	0	283		57		1	277		0		0		0		0	46		0		0
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0
Initial Fut:	0	715		135		41	709		0		0		0		0	124		0		40
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	715		135		41	709		0		0		0		0	124		0		40
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	0	715		135		41	709		0		0		0		0	124		0		40
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx		xxxx		xxxxx	6.8		xxxx		6.9
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	3.5		xxxx		3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		850	xxxx		xxxxx		xxxx		xxxx		xxxxx	1219		xxxx		425
Potent Cap.:	xxxx	xxxx		xxxxx		797	xxxx		xxxxx		xxxx		xxxx		xxxxx	176		xxxx		583
Move Cap.:	xxxx	xxxx		xxxxx		797	xxxx		xxxxx		xxxx		xxxx		xxxxx	169		xxxx		583
Volume/Cap:	xxxx	xxxx		xxxx		0.05	xxxx		xxxx		xxxx		xxxx		xxxx	0.74		xxxx		0.07
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.2	xxxx		xxxxx		xxxx		xxxx		xxxxx	4.6		xxxx		0.2
Control Del:	xxxxx	xxxx		xxxxx		9.8	xxxx		xxxxx		xxxxx		xxxx		xxxxx	69.9		xxxx		11.6
LOS by Move:	*	*		*		A	*		*		*		*		*	F		*		B
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
SharedQueue:	xxxxx	xxxx		xxxxx		0.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
Shrd ConDel:	xxxxx	xxxx		xxxxx		9.8	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
Shared LOS:	*	*		*		A	*		*		*		*		*	*		*		*
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					55.7				
ApproachLOS:	*					*					*					F				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.613
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	18.1
Optimal Cycle:	33	Level Of Service:	B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm												
Base Vol:	7	382	52	97	370	2	1	12	15	104	21	178
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	8	420	57	107	407	2	1	13	17	114	23	196
Added Vol:	22	143	242	174	122	12	14	3	26	257	5	172
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	30	563	299	281	529	14	15	16	43	371	28	368
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	30	563	299	281	529	14	15	16	43	371	28	368
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	30	563	299	281	529	14	15	16	43	371	28	368
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	30	563	299	281	529	14	15	16	43	371	28	368
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.90	0.90	0.95	0.95	0.95	0.91	0.91	0.91	0.96	0.96	0.85
Lanes:	1.00	1.31	0.69	1.00	1.95	0.05	0.20	0.22	0.58	1.86	0.14	1.00
Final Sat.:	1805	2235	1187	1805	3502	94	355	381	999	3377	256	1615
Capacity Analysis Module:												
Vol/Sat:	0.02	0.25	0.25	0.16	0.15	0.15	0.04	0.04	0.04	0.11	0.11	0.23
Crit Moves:		****		****					****		****	
Green/Cycle:	0.07	0.41	0.41	0.25	0.60	0.60	0.07	0.07	0.07	0.18	0.18	0.43
Volume/Cap:	0.25	0.61	0.61	0.61	0.25	0.25	0.61	0.61	0.61	0.61	0.61	0.53
Delay/Veh:	32.2	17.0	17.0	25.5	6.7	6.7	40.6	40.6	40.6	28.2	28.2	15.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	32.2	17.0	17.0	25.5	6.7	6.7	40.6	40.6	40.6	28.2	28.2	15.3
LOS by Move:	C	B	B	C	A	A	D	D	D	C	C	B
HCM2kAvgQ:	1	8	8	6	3	3	3	3	3	5	5	6

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.719
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	26.6
Optimal Cycle:	42	Level Of Service:	C

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	68	6	88	0	8	9	5	255	50	80	230	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	6	88	0	8	9	5	255	50	80	230	0
Added Vol:	22	143	244	189	122	12	14	3	26	258	5	184
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	90	149	332	189	130	21	19	258	76	338	235	184
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	149	332	189	130	21	19	258	76	338	235	184
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	90	149	332	189	130	21	19	258	76	338	235	184
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	90	149	332	189	130	21	19	258	76	338	235	184
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.85	0.85	0.95	0.93	0.93	0.97	0.97	0.97	0.97	0.97	0.85
Lanes:	1.00	1.00	1.00	1.00	1.72	0.28	0.05	0.73	0.22	1.18	0.82	1.00
Final Sat.:	1805	1619	1619	1805	3043	492	99	1344	396	2177	1513	1615
Capacity Analysis Module:												
Vol/Sat:	0.05	0.09	0.21	0.10	0.04	0.04	0.19	0.19	0.19	0.16	0.16	0.11
Crit Moves:			****	****			****				****	
Green/Cycle:	0.23	0.29	0.29	0.15	0.20	0.20	0.27	0.27	0.27	0.22	0.22	0.36
Volume/Cap:	0.21	0.32	0.72	0.72	0.21	0.21	0.72	0.72	0.72	0.72	0.72	0.31
Delay/Veh:	22.0	19.8	26.3	37.7	23.6	23.6	28.4	28.4	28.4	28.6	28.6	16.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	22.0	19.8	26.3	37.7	23.6	23.6	28.4	28.4	28.4	28.6	28.6	16.4
LOS by Move:	C	B	C	D	C	C	C	C	C	C	C	B
HCM2kAvgQ:	2	3	8	6	2	2	8	8	8	7	7	3

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.7 Worst Case Level Of Service: C[21.1]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm																				
Base Vol:	0	0	0	4	0	24	0	43	97	25	345	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	4	0	24	0	43	97	25	345	0								
Added Vol:	0	0	0	46	0	53	0	100	320	157	380	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	50	0	77	0	143	417	182	725	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	50	0	77	0	143	417	182	725	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	50	0	77	0	143	417	182	725	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1161	1649	363	xxxx	xxxx	xxxxx	560	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	192	100	640	xxxx	xxxx	xxxxx	1021	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	165	82	640	xxxx	xxxx	xxxxx	1021	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.30	0.00	0.12	xxxx	xxxx	xxxx	0.18	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	1.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	35.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.3	xxxx	xxxxx								
LOS by Move:	*	*	*	E	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT																			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	640	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	11.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	B	*	*	*	*	*	*								
ApproachDel:	xxxxxx			21.1			xxxxxx			xxxxxx										
ApproachLOS:	*			C			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 3.4 Worst Case Level Of Service: C[22.1]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module:																				
Base Vol:	0	0	0	3	0	23	0	42	117	19	176	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	3	0	23	0	42	117	19	176	0								
Added Vol:	0	0	0	63	0	53	0	107	329	193	394	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	66	0	76	0	149	446	212	570	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	66	0	76	0	149	446	212	570	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	66	0	76	0	149	446	212	570	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1069	1589	285	xxxx	xxxx	xxxxx	595	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	220	109	718	xxxx	xxxx	xxxxx	991	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	184	86	718	xxxx	xxxx	xxxxx	991	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.36	0.00	0.11	xxxx	xxxx	xxxx	0.21	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	1.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.8	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	35.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.6	xxxx	xxxxx								
LOS by Move:	*	*	*	E	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT																			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	718	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.6	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	B	*	*	*	*	*	*								
ApproachDel:	xxxxxx			22.1			xxxxxx			xxxxxx										
ApproachLOS:	*			C			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 29.4 Worst Case Level Of Service: E[49.3]

Street Name:	US 101 North Ramps												Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0 0 1			0 0 0 0 0			1 0 2 0 0			0 0 1 1 0		
Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm												
Base Vol:	272	0	55	0	0	0	23	15	0	0	57	6
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	272	0	55	0	0	0	23	15	0	0	57	6
Added Vol:	280	0	206	0	0	0	47	99	0	0	258	62
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	552	0	261	0	0	0	70	114	0	0	315	68
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	552	0	261	0	0	0	70	114	0	0	315	68
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	552	0	261	0	0	0	70	114	0	0	315	68
Critical Gap Module:												
Critical Gp:	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	412	637	57	xxxx	xxxx	xxxxx	383	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	574	398	1004	xxxx	xxxx	xxxxx	1187	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	548	374	1004	xxxx	xxxx	xxxxx	1187	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	1.01	0.00	0.26	xxxx	xxxx	xxxx	0.06	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	1.0	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	9.8	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	A	*	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	548	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	14.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	67.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	F	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	49.3			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	E			*			*			*		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 15.1 Worst Case Level Of Service: D[28.1]

Street Name:	US 101 North Ramps												Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0 0 1			0 0 0 0 0			1 0 2 0 0			0 0 1 1 0		
Volume Module:												
Base Vol:	144	0	27	0	0	0	26	20	0	0	58	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	144	0	27	0	0	0	26	20	0	0	58	8
Added Vol:	280	0	272	0	0	0	47	124	0	0	307	73
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	424	0	299	0	0	0	73	144	0	0	365	81
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	424	0	299	0	0	0	73	144	0	0	365	81
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	424	0	299	0	0	0	73	144	0	0	365	81
Critical Gap Module:												
Critical Gp:	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	473	736	72	xxxx	xxxx	xxxxx	446	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	525	349	982	xxxx	xxxx	xxxxx	1125	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	499	326	982	xxxx	xxxx	xxxxx	1125	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.85	0.00	0.30	xxxx	xxxx	xxxx	0.06	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	1.3	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	10.3	xxxxx	xxxx	xxxxx	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	499	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	8.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	40.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	E	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	28.1			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	D			*			*			*		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.590
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 21.1
Optimal Cycle: 32 | Level Of Service: C

Street Name:	US 101 North Ramps						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm												
Base Vol:	272	0	55	0	0	0	23	15	0	0	57	6
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	272	0	55	0	0	0	23	15	0	0	57	6
Added Vol:	280	0	206	0	0	0	47	99	0	0	258	62
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	552	0	261	0	0	0	70	114	0	0	315	68
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	552	0	261	0	0	0	70	114	0	0	315	68
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	552	0	261	0	0	0	70	114	0	0	315	68
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	552	0	261	0	0	0	70	114	0	0	315	68
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.85	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.92	0.92
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	2.00	0.00	0.00	1.64	0.36
Final Sat.:	1357	0	1615	0	0	0	1805	3610	0	0	2889	624
Capacity Analysis Module:												
Vol/Sat:	0.41	0.00	0.16	0.00	0.00	0.00	0.04	0.03	0.00	0.00	0.11	0.11
Crit Moves:	****						****				****	
Green/Cycle:	0.69	0.00	1.38	0.00	0.00	0.00	0.07	0.25	0.00	0.00	0.18	0.18
Volume/Cap:	0.59	0.00	0.12	0.00	0.00	0.00	0.59	0.13	0.00	0.00	0.59	0.59
Delay/Veh:	9.1	0.0	8.6	0.0	0.0	0.0	53.1	29.1	0.0	0.0	38.7	38.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.1	0.0	8.6	0.0	0.0	0.0	53.1	29.1	0.0	0.0	38.7	38.7
LOS by Move:	A	A	A	A	A	A	D	C	A	A	D	D
HCM2k95thQ:	17	0	0	0	0	0	6	3	0	0	12	12

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.511
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 19.7
Optimal Cycle: 28 | Level Of Service: B

Street Name:	US 101 North Ramps						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	144	0	27	0	0	0	26	20	0	0	58	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	144	0	27	0	0	0	26	20	0	0	58	8
Added Vol:	280	0	272	0	0	0	47	124	0	0	307	73
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	424	0	299	0	0	0	73	144	0	0	365	81
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	424	0	299	0	0	0	73	144	0	0	365	81
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	424	0	299	0	0	0	73	144	0	0	365	81
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	424	0	299	0	0	0	73	144	0	0	365	81
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.85	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.92	0.92
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	2.00	0.00	0.00	1.64	0.36
Final Sat.:	1357	0	1615	0	0	0	1805	3610	0	0	2875	638
Capacity Analysis Module:												
Vol/Sat:	0.31	0.00	0.19	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.13	0.13
Crit Moves:	****						****				****	
Green/Cycle:	0.61	0.00	1.22	0.00	0.00	0.00	0.08	0.33	0.00	0.00	0.25	0.25
Volume/Cap:	0.51	0.00	0.15	0.00	0.00	0.00	0.51	0.12	0.00	0.00	0.51	0.51
Delay/Veh:	11.5	0.0	3.1	0.0	0.0	0.0	47.3	23.6	0.0	0.0	32.8	32.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.5	0.0	3.1	0.0	0.0	0.0	47.3	23.6	0.0	0.0	32.8	32.8
LOS by Move:	B	A	A	A	A	A	D	C	A	A	C	C
HCM2k95thQ:	15	0	0	0	0	0	6	3	0	0	13	13

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 8.8 Worst Case Level Of Service: C[16.5]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	32	45		0		0	27		26		69		0		6	0		0		0
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	32	45		0		0	27		26		69		0		6	0		0		0
Added Vol:	272	96		0		0	80		47		60		0		245	0		0		0
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0
Initial Fut:	304	141		0		0	107		73		129		0		251	0		0		0
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	304	141		0		0	107		73		129		0		251	0		0		0
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	304	141		0		0	107		73		129		0		251	0		0		0
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	180	xxxx	xxxxx	xxxx	xxxx	xxxxx					856	xxxx			107	xxxx	xxxx	xxxxx		
Potent Cap.:	1408	xxxx	xxxxx	xxxx	xxxx	xxxxx					331	xxxx			953	xxxx	xxxx	xxxxx		
Move Cap.:	1408	xxxx	xxxxx	xxxx	xxxx	xxxxx					276	xxxx			953	xxxx	xxxx	xxxxx		
Volume/Cap:	0.22	xxxx	xxxx	xxxx	xxxx	xxxx					0.47	xxxx			0.26	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx					2.3	xxxx			1.1	xxxx	xxxx	xxxxx		
Control Del:	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx					29.0	xxxx			10.1	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*					D	*			B	*	*	*		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*					*	*	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx							16.5					xxxxxx				
ApproachLOS:	*			*							C					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 8.5 Worst Case Level Of Service: B[14.5]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	11	28		0		0	26		28		32		0		10	0		0		0
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	11	28		0		0	26		28		32		0		10	0		0		0
Added Vol:	334	96		0		0	80		47		60		0		335	0		0		0
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0
Initial Fut:	345	124		0		0	106		75		92		0		345	0		0		0
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	345	124		0		0	106		75		92		0		345	0		0		0
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	345	124		0		0	106		75		92		0		345	0		0		0
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	181	xxxx	xxxxx	xxxx	xxxx	xxxxx					920	xxxx			106	xxxx	xxxx	xxxxx		
Potent Cap.:	1407	xxxx	xxxxx	xxxx	xxxx	xxxxx					303	xxxx			954	xxxx	xxxx	xxxxx		
Move Cap.:	1407	xxxx	xxxxx	xxxx	xxxx	xxxxx					246	xxxx			954	xxxx	xxxx	xxxxx		
Volume/Cap:	0.25	xxxx	xxxx	xxxx	xxxx	xxxx					0.37	xxxx			0.36	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	1.0	xxxx	xxxxx	xxxx	xxxx	xxxxx					1.7	xxxx			1.7	xxxx	xxxx	xxxxx		
Control Del:	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx					28.1	xxxx			10.9	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*					D	*			B	*	*	*		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*					*	*	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx							14.5					xxxxxx				
ApproachLOS:	*			*							B					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 50.7 Worst Case Level Of Service: F[151.1]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	0	69		0		0	37		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	69		0		0	37		0		0	0		0		0	0		0	
Added Vol:	0	156		308		181	110		0		0	0		0		264	0		155	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	225		308		181	147		0		0	0		0		264	0		155	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	225		308		181	147		0		0	0		0		264	0		155	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	225		308		181	147		0		0	0		0		264	0		155	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		533	xxxx		xxxxx		xxxx	xxxx		xxxxx		888	888		379	
Potent Cap.:	xxxx	xxxx		xxxxx		1045	xxxx		xxxxx		xxxx	xxxx		xxxxx		317	285		672	
Move Cap.:	xxxx	xxxx		xxxxx		1045	xxxx		xxxxx		xxxx	xxxx		xxxxx		270	230		672	
Volume/Cap:	xxxx	xxxx		xxxx		0.17	xxxx		xxxx		xxxx	xxxx		xxxx		0.98	0.00		0.23	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.6	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		9.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	347		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.6	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	17.9		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		9.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	151		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	F		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					151.1				
ApproachLOS:	*					*					*					F				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 255.7 Worst Case Level Of Service: F[720.7]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	40		0		0	37		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	40		0		0	37		0		0	0		0		0	0		0	
Added Vol:	0	156		461		271	110		0		0	0		0		369	0		216	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	196		461		271	147		0		0	0		0		369	0		216	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	196		461		271	147		0		0	0		0		369	0		216	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	196		461		271	147		0		0	0		0		369	0		216	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		657	xxxx		xxxxx		xxxx	xxxx		xxxxx		1116	1116		427	
Potent Cap.:	xxxx	xxxx		xxxxx		940	xxxx		xxxxx		xxxx	xxxx		xxxxx		232	210		632	
Move Cap.:	xxxx	xxxx		xxxxx		940	xxxx		xxxxx		xxxx	xxxx		xxxxx		171	138		632	
Volume/Cap:	xxxx	xxxx		xxxx		0.29	xxxx		xxxx		xxxx	xxxx		xxxx		2.16	0.00		0.34	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		1.2	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		10.4	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		B	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	234		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		1.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	48.4		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		10.4	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	721		xxxxx	
Shared LOS:	*	*		*		B	*		*		*	*		*		*	F		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					720.7				
ApproachLOS:	*					*					*					F				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec):	100	Critical Vol./Cap.(X):	0.502
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	20.3
Optimal Cycle:	27	Level Of Service:	C

Street Name:	Asti (Frontage) Rd						Project Access					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1	0	1	1	0	1	0	0	1	0	0	0	1
Volume Module:2007 Balanced												
Base Vol:	0	69	0	0	37	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	69	0	0	37	0	0	0	0	0	0	0
Added Vol:	0	156	308	181	110	0	0	0	0	264	0	155
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	225	308	181	147	0	0	0	0	264	0	155
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	225	308	181	147	0	0	0	0	264	0	155
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	225	308	181	147	0	0	0	0	264	0	155
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	225	308	181	147	0	0	0	0	264	0	155
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.85	0.95	1.00	1.00	1.00	1.00	1.00	0.77	1.00	0.85
Lanes:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1900	1615	1805	1900	0	0	0	0	1461	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.12	0.19	0.10	0.08	0.00	0.00	0.00	0.00	0.18	0.00	0.10
Crit Moves:			****	****						****		
Green/Cycle:	0.00	0.38	0.38	0.60	0.58	0.00	0.00	0.00	0.00	0.36	0.00	0.36
Volume/Cap:	0.00	0.31	0.50	0.25	0.13	0.00	0.00	0.00	0.00	0.50	0.00	0.27
Delay/Veh:	0.0	22.0	24.4	9.5	9.6	0.0	0.0	0.0	0.0	25.8	0.0	22.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	22.0	24.4	9.5	9.6	0.0	0.0	0.0	0.0	25.8	0.0	22.9
LOS by Move:	A	C	C	A	A	A	A	A	A	C	A	C
HCM2k95thQ:	0	9	14	5	4	0	0	0	0	13	0	7

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec):	100	Critical Vol./Cap.(X):	0.732
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	24.1
Optimal Cycle:	46	Level Of Service:	C

Street Name:	Asti (Frontage) Rd						Project Access					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1	0	1	1	0	1	0	0	1	0	0	0	1
Volume Module:												
Base Vol:	0	40	0	0	37	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	40	0	0	37	0	0	0	0	0	0	0
Added Vol:	0	156	461	271	110	0	0	0	0	369	0	216
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	196	461	271	147	0	0	0	0	369	0	216
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	196	461	271	147	0	0	0	0	369	0	216
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	196	461	271	147	0	0	0	0	369	0	216
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	196	461	271	147	0	0	0	0	369	0	216
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.85	0.95	1.00	1.00	1.00	1.00	1.00	0.77	1.00	0.85
Lanes:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1900	1615	1805	1900	0	0	0	0	1461	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.10	0.29	0.15	0.08	0.00	0.00	0.00	0.00	0.25	0.00	0.13
Crit Moves:			****	****						****		
Green/Cycle:	0.00	0.39	0.39	0.62	0.60	0.00	0.00	0.00	0.00	0.34	0.00	0.34
Volume/Cap:	0.00	0.26	0.73	0.35	0.13	0.00	0.00	0.00	0.00	0.73	0.00	0.39
Delay/Veh:	0.0	20.9	30.5	9.4	8.9	0.0	0.0	0.0	0.0	34.2	0.0	25.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	20.9	30.5	9.4	8.9	0.0	0.0	0.0	0.0	34.2	0.0	25.2
LOS by Move:	A	C	C	A	A	A	A	A	A	C	A	C
HCM2k95thQ:	0	8	24	8	4	0	0	0	0	21	0	10

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: C[18.6]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	0	66		16		2	35		0		0	0		0		27	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	66		16		2	35		0		0	0		0		27	0		3	
Added Vol:	0	438		0		0	429		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	504		16		2	464		0		0	0		0		27	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	504		16		2	464		0		0	0		0		27	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	504		16		2	464		0		0	0		0		27	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		520	xxxx		xxxxx		xxxx	xxxx		xxxxx		980	980		512	
Potent Cap.:	xxxx	xxxx		xxxxx		1056	xxxx		xxxxx		xxxx	xxxx		xxxxx		279	252		566	
Move Cap.:	xxxx	xxxx		xxxxx		1056	xxxx		xxxxx		xxxx	xxxx		xxxxx		279	251		566	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		0.10	0.00		0.01	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		8.4	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	294		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	0.3		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.4	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	18.6		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	C		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						18.6			
ApproachLOS:	*					*					*						C			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: B[12.5]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Volume Module:																				
Base Vol:	0	37		2		1	36		0		0	0		0		0	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	37		2		1	36		0		0	0		0		0	0		3	
Added Vol:	0	591		0		0	534		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	628		2		1	570		0		0	0		0		0	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	628		2		1	570		0		0	0		0		0	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	628		2		1	570		0		0	0		0		0	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		630	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		629	
Potent Cap.:	xxxx	xxxx		xxxxx		962	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		486	
Move Cap.:	xxxx	xxxx		xxxxx		962	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		486	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		xxxx	xxxx		0.01	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		0.0	
Control Del:	xxxxx	xxxx		xxxxx		8.7	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		12.5	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		B	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.7	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						12.5			
ApproachLOS:	*					*					*						B			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.8 Worst Case Level Of Service: C[18.6]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm																
Base Vol:	177	343	0	0	135	47	33	0	71	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	177	343	0	0	135	47	33	0	71	0	0	0				
Added Vol:	81	323	0	0	253	9	10	0	75	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	258	666	0	0	388	56	43	0	146	0	0	0				
User Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	284	733	0	0	427	62	47	0	161	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	284	733	0	0	427	62	47	0	161	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	488	xxxx	xxxxx	xxxx	xxxx	xxxxx	1744	1744	427	xxxx	xxxx	xxxxx				
Potent Cap.:	1085	xxxx	xxxxx	xxxx	xxxx	xxxxx	89	81	632	xxxx	xxxx	xxxxx				
Move Cap.:	1085	xxxx	xxxxx	xxxx	xxxx	xxxxx	71	60	632	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	152	136	xxxxx	72	117	xxxxx				
Volume/Cap:	0.26	xxxx	xxxx	xxxx	xxxx	xxxx	0.31	0.00	0.25	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	1.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.0	xxxx	xxxx	xxxxx				
Control Del:	9.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	12.6	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	B	*	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	152	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	39.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	E	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			18.6			xxxxxx						
ApproachLOS:	*			*			C			*						

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 4.0 Worst Case Level Of Service: C[16.7]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module:																
Base Vol:	124	239	0	0	239	40	40	0	124	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	124	239	0	0	239	40	40	0	124	0	0	0				
Added Vol:	86	324	0	0	254	9	10	0	80	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	210	563	0	0	493	49	50	0	204	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	210	563	0	0	493	49	50	0	204	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	210	563	0	0	493	49	50	0	204	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	542	xxxx	xxxxx	xxxx	xxxx	xxxxx	1476	1476	493	xxxx	xxxx	xxxxx				
Potent Cap.:	1037	xxxx	xxxxx	xxxx	xxxx	xxxxx	140	127	580	xxxx	xxxx	xxxxx				
Move Cap.:	1037	xxxx	xxxxx	xxxx	xxxx	xxxxx	119	102	580	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	226	201	xxxxx	81	173	xxxxx				
Volume/Cap:	0.20	xxxx	xxxx	xxxx	xxxx	xxxx	0.22	0.00	0.35	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.6	xxxx	xxxx	xxxxx				
Control Del:	9.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	14.5	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	B	*	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	226	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	25.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	D	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			16.7			xxxxxx						
ApproachLOS:	*			*			C			*						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 36.6 Worst Case Level Of Service: F[68.4]

Street Name:	Cloverdale Blvd									South Interchange												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:	2007 Balanced																					
Base Vol:	0	79		12		194	53		0		0		0		0	26		0		452		
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00		
Initial Bse:	0	79		12		194	53		0		0		0		0	26		0		452		
Added Vol:	0	80		175		264	62		0		0		0		0	123		0		318		
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0		
Initial Fut:	0	159		187		458	115		0		0		0		0	149		0		770		
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00		
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00		
PHF Volume:	0	159		187		458	115		0		0		0		0	149		0		770		
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0		
FinalVolume:	0	159		187		458	115		0		0		0		0	149		0		770		
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx		xxxx		xxxxx	6.4		xxxx		6.2		
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	3.5		xxxx		3.3		
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx		xxxxx		292	xxxx		xxxxx		xxxx		xxxx		xxxxx	1273		xxxx		195		
Potent Cap.:	xxxx	xxxx		xxxxx		1224	xxxx		xxxxx		xxxx		xxxx		xxxxx	178		xxxx		814		
Move Cap.:	xxxx	xxxx		xxxxx		1224	xxxx		xxxxx		xxxx		xxxx		xxxxx	126		xxxx		814		
Volume/Cap:	xxxx	xxxx		xxxx		0.37	xxxx		xxxx		xxxx		xxxx		xxxx	1.18		xxxx		0.95		
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx		xxxxx		1.8	xxxx		xxxxx		xxxx		xxxx		xxxxx	9.0		xxxx		14.5		
Control Del:	xxxxx	xxxx		xxxxx		9.7	xxxx		xxxxx		xxxxx		xxxx		xxxxx	203.5		xxxx		42.3		
LOS by Move:	*	*		*		A	*		*		*		*		*	F		*		E		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx		
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx		
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx		
Shared LOS:	*	*		*		*	*		*		*		*		*	*		*		*		
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					68.4						
ApproachLOS:	*					*					*					F						

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 30.5 Worst Case Level Of Service: F[61.1]

Street Name:	Cloverdale Blvd									South Interchange												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:																						
Base Vol:	0	42		0		280	65		0		0		0		0	2		0		345		
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00		
Initial Bse:	0	42		0		280	65		0		0		0		0	2		0		345		
Added Vol:	0	80		175		270	62		0		0		0		0	123		0		324		
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0		
Initial Fut:	0	122		175		550	127		0		0		0		0	125		0		669		
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00		
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00		
PHF Volume:	0	122		175		550	127		0		0		0		0	125		0		669		
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0		
FinalVolume:	0	122		175		550	127		0		0		0		0	125		0		669		
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx		xxxx		xxxxx	6.4		xxxx		6.2		
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	3.5		xxxx		3.3		
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx		xxxxx		297	xxxx		xxxxx		xxxx		xxxx		xxxxx	1437		xxxx		210		
Potent Cap.:	xxxx	xxxx		xxxxx		1276	xxxx		xxxxx		xxxx		xxxx		xxxxx	148		xxxx		836		
Move Cap.:	xxxx	xxxx		xxxxx		1276	xxxx		xxxxx		xxxx		xxxx		xxxxx	98		xxxx		836		
Volume/Cap:	xxxx	xxxx		xxxx		0.43	xxxx		xxxx		xxxx		xxxx		xxxx	1.27		xxxx		0.80		
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxx		xxxx		xxxxx	8.7		xxxx		8.5		
Control Del:	xxxxx	xxxx		xxxxx		9.9	xxxx		xxxxx		xxxxx		xxxx		xxxxx	259.1		xxxx		24.1		
LOS by Move:	*	*		*		A	*		*		*		*		*	F		*		C		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx		
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx		
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx		
Shared LOS:	*	*		*		*	*		*		*		*		*	*		*		*		
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					61.1						
ApproachLOS:	*					*					*					F						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.986
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 59.4
Optimal Cycle: 180 | Level Of Service: E

Street Name:	Cloverdale Blvd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	1 0	1 0	0	0 0	0	0 0	1 0	0	0 1
Volume Module:	2007 Balanced											
Base Vol:	0	79	12	194	53	0	0	0	0	26	0	452
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	79	12	194	53	0	0	0	0	26	0	452
Added Vol:	0	80	175	264	62	0	0	0	0	123	0	318
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	159	187	458	115	0	0	0	0	149	0	770
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	159	187	458	115	0	0	0	0	149	0	770
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	159	187	458	115	0	0	0	0	149	0	770
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	159	187	458	115	0	0	0	0	149	0	770
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.93	0.93	0.95	1.00	1.00	1.00	1.00	1.00	0.78	1.00	0.85
Lanes:	0.00	0.46	0.54	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	809	952	1805	1900	0	0	0	0	1480	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.20	0.20	0.25	0.06	0.00	0.00	0.00	0.00	0.10	0.00	0.48
Crit Moves:		****		****								****
Green/Cycle:	0.00	0.20	0.20	0.26	0.46	0.00	0.00	0.00	0.00	0.48	0.00	0.48
Volume/Cap:	0.00	0.99	0.99	0.99	0.13	0.00	0.00	0.00	0.00	0.21	0.00	0.99
Delay/Veh:	0.0	84.1	84.1	75.0	15.8	0.0	0.0	0.0	0.0	15.0	0.0	54.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	84.1	84.1	75.0	15.8	0.0	0.0	0.0	0.0	15.0	0.0	54.2
LOS by Move:	A	F	F	E	B	A	A	A	A	B	A	D
HCM2k95thQ:	0	28	28	34	4	0	0	0	0	5	0	49

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.946
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 51.4
Optimal Cycle: 130 | Level Of Service: D

Street Name:	Cloverdale Blvd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	1 0	1 0	0	0 0	0	0 0	1 0	0	0 1
Volume Module:												
Base Vol:	0	42	0	280	65	0	0	0	0	2	0	345
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	42	0	280	65	0	0	0	0	2	0	345
Added Vol:	0	80	175	270	62	0	0	0	0	123	0	324
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	122	175	550	127	0	0	0	0	125	0	669
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	122	175	550	127	0	0	0	0	125	0	669
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	122	175	550	127	0	0	0	0	125	0	669
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	122	175	550	127	0	0	0	0	125	0	669
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.92	0.92	0.95	1.00	1.00	1.00	1.00	1.00	0.78	1.00	0.85
Lanes:	0.00	0.41	0.59	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	718	1030	1805	1900	0	0	0	0	1490	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.17	0.17	0.30	0.07	0.00	0.00	0.00	0.00	0.08	0.00	0.41
Crit Moves:		****		****								****
Green/Cycle:	0.00	0.18	0.18	0.32	0.50	0.00	0.00	0.00	0.00	0.44	0.00	0.44
Volume/Cap:	0.00	0.95	0.95	0.95	0.13	0.00	0.00	0.00	0.00	0.19	0.00	0.95
Delay/Veh:	0.0	77.0	77.0	57.6	13.4	0.0	0.0	0.0	0.0	17.4	0.0	48.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	77.0	77.0	57.6	13.4	0.0	0.0	0.0	0.0	17.4	0.0	48.4
LOS by Move:	A	E	E	E	B	A	A	A	A	B	A	D
HCM2k95thQ:	0	24	24	36	4	0	0	0	0	5	0	41

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 161.0 Worst Case Level Of Service: F[1606.7]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced																				
Base Vol:	0	0	0	5	0	49	0	100	106	16	429	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	5	0	49	0	100	106	16	429	0								
Added Vol:	0	0	0	121	0	46	0	126	313	551	394	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	126	0	95	0	226	419	567	823	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	126	0	95	0	226	419	567	823	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	126	0	95	0	226	419	567	823	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	2393	2602	823	xxxx	xxxx	xxxxx	645	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	38	25	377	xxxx	xxxx	xxxxx	950	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	20	10	377	xxxx	xxxx	xxxxx	950	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	6.37	0.00	0.25	xxxx	xxxx	xxxx	0.60	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	1.0	xxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	17.8	xxxxx	xxxx	xxxxx	14.2	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	C	*	*	*	B	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT						LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	20	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	16.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	2805	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			1606.7			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 251.5 Worst Case Level Of Service: F[2538.5]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	0	0	60	0	124	201	1	299	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	0	0	60	0	124	201	1	299	0								
Added Vol:	0	0	0	121	0	46	0	126	319	649	400	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	121	0	106	0	250	520	650	699	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	121	0	106	0	250	520	650	699	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	121	0	106	0	250	520	650	699	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	2509	2769	699	xxxx	xxxx	xxxxx	770	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	32	20	443	xxxx	xxxx	xxxxx	854	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	12	5	443	xxxx	xxxx	xxxxx	854	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	10.17	0.00	0.24	xxxx	xxxx	xxxx	0.76	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.9	xxxx	xxxx	xxxxx	7.4	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	15.7	xxxxx	xxxx	xxxxx	21.3	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	C	*	*	*	C	*	*								
Movement:	LT - LTR - RT					LT - LTR - RT				LT - LTR - RT						LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	12	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	16.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	4749	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			2538.5			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.830
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 25.3
Optimal Cycle: 66 | Level Of Service: C

Street Name:	101 S Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced												
Base Vol:	0	0	0	5	0	49	0	100	106	16	429	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	5	0	49	0	100	106	16	429	0
Added Vol:	0	0	0	121	0	46	0	126	313	551	394	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	126	0	95	0	226	419	567	823	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	126	0	95	0	226	419	567	823	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	126	0	95	0	226	419	567	823	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	126	0	95	0	226	419	567	823	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.71	1.00	0.84	1.00	0.91	0.91	0.95	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.35	0.65	1.00	1.00	0.00
Final Sat.:	0	0	0	1343	0	1599	0	607	1126	1805	1900	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.09	0.00	0.06	0.00	0.37	0.37	0.31	0.43	0.00
Crit Moves:				****				****		****		
Green/Cycle:	0.00	0.00	0.00	0.11	0.00	0.11	0.00	0.45	0.45	0.38	0.83	0.00
Volume/Cap:	0.00	0.00	0.00	0.83	0.00	0.53	0.00	0.83	0.83	0.83	0.52	0.00
Delay/Veh:	0.0	0.0	0.0	73.6	0.0	44.7	0.0	31.7	31.7	36.6	3.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	73.6	0.0	44.7	0.0	31.7	31.7	36.6	3.0	0.0
LOS by Move:	A	A	A	E	A	D	A	C	C	D	A	A
HCM2k95thQ:	0	0	0	12	0	7	0	33	33	26	13	0

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.953
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 39.1
Optimal Cycle: 139 | Level Of Service: D

Street Name:	101 S Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module:												
Base Vol:	0	0	0	0	0	60	0	124	201	1	299	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	60	0	124	201	1	299	0
Added Vol:	0	0	0	121	0	46	0	126	319	649	400	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	121	0	106	0	250	520	650	699	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	121	0	106	0	250	520	650	699	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	121	0	106	0	250	520	650	699	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	121	0	106	0	250	520	650	699	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.71	1.00	0.84	1.00	0.91	0.91	0.95	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.32	0.68	1.00	1.00	0.00
Final Sat.:	0	0	0	1343	0	1599	0	561	1166	1805	1900	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.09	0.00	0.07	0.00	0.45	0.45	0.36	0.37	0.00
Crit Moves:				****				****		****		
Green/Cycle:	0.00	0.00	0.00	0.09	0.00	0.09	0.00	0.47	0.47	0.38	0.85	0.00
Volume/Cap:	0.00	0.00	0.00	0.95	0.00	0.70	0.00	0.95	0.95	0.95	0.44	0.00
Delay/Veh:	0.0	0.0	0.0	110.3	0.0	57.7	0.0	46.6	46.6	53.8	2.1	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	110.3	0.0	57.7	0.0	46.6	46.6	53.8	2.1	0.0
LOS by Move:	A	A	A	F	A	E	A	D	D	D	A	A
HCM2k95thQ:	0	0	0	13	0	9	0	46	46	32	9	0

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange West Consolidated Roundabout

PM Buildout + Project A Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
WB South Interchange										
1L	L	737	2.0	0.476	11.8	LOS B	134	0.50	0.62	23.5
6T	T	726	2.1	0.557	2.9	LOS A	165	0.58	0.31	27.4
Approach		**1464**	**2.0**	**0.557**	**7.3**	**LOS A**	**165**	**0.54**	**0.47**	**25.1**
SB Offramp										
17L	L	134	2.2	0.450	18.5	LOS B	77	0.81	1.00	21.2
14T	T	17	5.6	0.450	8.7	LOS A	77	0.81	0.90	25.0
14R	R	83	2.4	0.449	10.4	LOS B	77	0.81	0.93	23.7
Approach		**235**	**2.6**	**0.450**	**14.9**	**LOS B**	**77**	**0.81**	**0.97**	**22.1**
SB Cloverdale Blvd										
15L	L	167	1.8	0.326	15.6	LOS B	59	0.86	0.88	21.8
12T	T	315	1.9	0.494	8.7	LOS A	150	0.96	0.93	24.9
12R	R	121	1.7	0.494	10.5	LOS B	150	0.96	0.93	23.6
Approach		**602**	**1.8**	**0.495**	**11.0**	**LOS B**	**150**	**0.93**	**0.91**	**23.6**
NB Cloverdale Blvd										
13L	L	167	1.8	0.693	26.5	LOS C	196	0.94	1.20	17.7
18T	T	71	1.4	0.693	18.1	LOS B	196	0.94	1.18	19.1
18R	R	126	2.4	0.690	19.7	LOS B	196	0.94	1.18	18.4
Approach		**364**	**1.9**	**0.692**	**22.5**	**LOS C**	**196**	**0.94**	**1.19**	**18.1**
All Vehicles		**2665**	**2.0**	**0.693**	**10.9**	**LOS B**	**196**	**0.71**	**0.71**	**23.3**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA INTERSECTION

Movement Summary

South Interchange West Consolidated Roundabout

WKD Buildout+Project A Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
WB South Interchange										
1L	L	800	2.0	0.498	11.7	LOS B	148	0.46	0.60	23.6
6T	T	620	1.9	0.465	2.5	LOS A	128	0.47	0.27	28.3
Approach		**1420**	**2.0**	**0.498**	**7.7**	**LOS A**	**148**	**0.47**	**0.46**	**25.2**
SB Offramp										
17L	L	128	2.3	0.443	18.5	LOS B	77	0.80	1.00	21.2
14T	T	18	5.3	0.442	8.7	LOS A	77	0.80	0.90	25.0
14R	R	94	2.1	0.443	10.5	LOS B	77	0.80	0.93	23.7
Approach		**242**	**2.5**	**0.443**	**14.6**	**LOS B**	**77**	**0.80**	**0.96**	**22.2**
SB Cloverdale Blvd										
15L	L	186	2.1	0.382	16.7	LOS B	72	0.90	0.91	21.2
12T	T	393	2.0	0.631	13.8	LOS B	246	1.00	1.12	21.5
12R	R	134	2.2	0.632	15.6	LOS B	246	1.00	1.12	20.4
Approach		**714**	**2.1**	**0.631**	**14.9**	**LOS B**	**246**	**0.97**	**1.07**	**21.2**
NB Cloverdale Blvd										
13L	L	128	2.3	0.733	35.8	LOS D	224	0.99	1.30	15.1
18T	T	61	1.6	0.735	27.5	LOS C	224	0.99	1.29	15.5
18R	R	123	1.6	0.732	29.0	LOS C	224	0.99	1.28	15.0
Approach		**313**	**1.9**	**0.734**	**31.5**	**LOS C**	**224**	**0.99**	**1.29**	**15.1**
All Vehicles		**2689**	**2.0**	**0.735**	**13.0**	**LOS B**	**246**	**0.69**	**0.76**	**22.2**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 379.4 Worst Case Level Of Service: F[752.3]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:	2007 Balanced																			
Base Vol:	371		0		18	0		0		0	63		42		0	0		74		5
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	371		0		18	0		0		0	63		42		0	0		74		5
Added Vol:	292		0		559	0		0		0	52		195		0	0		654		137
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	663		0		577	0		0		0	115		237		0	0		728		142
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	663		0		577	0		0		0	115		237		0	0		728		142
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	663		0		577	0		0		0	115		237		0	0		728		142
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
Capacity Module:																				
Cnflict Vol:	1266	1337			237	xxxx	xxxx	xxxxx			870	xxxx	xxxxx			xxxx	xxxxx			
Potent Cap.:	188	155			807	xxxx	xxxx	xxxxx			783	xxxx	xxxxx			xxxx	xxxxx			
Move Cap.:	167	132			807	xxxx	xxxx	xxxxx			783	xxxx	xxxxx			xxxx	xxxxx			
Volume/Cap:	3.97	0.00			0.72	xxxx	xxxx		xxxx		0.15	xxxx		xxxx		xxxx	xxxx		xxxx	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			6.2	xxxx	xxxx	xxxxx			0.5	xxxx	xxxxx			xxxx	xxxxx			
Control Del:	xxxxx	xxxx			19.8	xxxxx	xxxx	xxxxx			10.4	xxxx	xxxxx			xxxxx	xxxxx			
LOS by Move:	*	*			C	*	*		*		B	*		*		*	*		*	
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	167	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxxx			
SharedQueue:	65.8	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxxx			
Shrd ConDel:	1390	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxxx			
Shared LOS:	F		*		*		*		*		*		*		*		*		*	
ApproachDel:	752.3					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 302.3 Worst Case Level Of Service: F[615.0]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	248		6		11	0		0		0	77		41		0	0		57		1
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	248		6		11	0		0		0	77		41		0	0		57		1
Added Vol:	292		0		713	0		0		0	52		195		0	0		758		137
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	540		6		724	0		0		0	129		236		0	0		815		138
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	540		6		724	0		0		0	129		236		0	0		815		138
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	540		6		724	0		0		0	129		236		0	0		815		138
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
Capacity Module:																				
Cnflict Vol:	1378	1447			236	xxxx	xxxx	xxxxx			953	xxxx	xxxxx			xxxx	xxxxx			
Potent Cap.:	161	133			808	xxxx	xxxx	xxxxx			729	xxxx	xxxxx			xxxx	xxxxx			
Move Cap.:	139	109			808	xxxx	xxxx	xxxxx			729	xxxx	xxxxx			xxxx	xxxxx			
Volume/Cap:	3.88	0.05			0.90	xxxx	xxxx		xxxx		0.18	xxxx		xxxx		xxxx	xxxx		xxxx	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			12.0	xxxx	xxxx	xxxxx			0.6	xxxx	xxxxx			xxxx	xxxxx			
Control Del:	xxxxx	xxxx			34.5	xxxxx	xxxx	xxxxx			11.0	xxxx	xxxxx			xxxxx	xxxxx			
LOS by Move:	*	*			D	*	*		*		B	*		*		*	*		*	
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	139	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxxx			
SharedQueue:	54.6	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxxx			
Shrd ConDel:	1385	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxxx			
Shared LOS:	F		*		*		*		*		*		*		*		*		*	
ApproachDel:	615.0					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 1.091
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 71.6
Optimal Cycle: 180 | Level Of Service: E

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0 0	0	1 0	1 0	0	0 0	0 1	0
Volume Module:	2007 Balanced											
Base Vol:	371	0	18	0	0	0	63	42	0	0	74	5
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	371	0	18	0	0	0	63	42	0	0	74	5
Added Vol:	292	0	559	0	0	0	52	195	0	0	654	137
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	663	0	577	0	0	0	115	237	0	0	728	142
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	663	0	577	0	0	0	115	237	0	0	728	142
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	663	0	577	0	0	0	115	237	0	0	728	142
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	663	0	577	0	0	0	115	237	0	0	728	142
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.84	0.16
Final Sat.:	1343	0	1599	0	0	0	1805	1900	0	0	1555	303
Capacity Analysis Module:												
Vol/Sat:	0.49	0.00	0.36	0.00	0.00	0.00	0.06	0.12	0.00	0.00	0.47	0.47
Crit Moves:	****						****				****	
Green/Cycle:	0.45	0.00	0.45	0.00	0.00	0.00	0.06	0.49	0.00	0.00	0.43	0.43
Volume/Cap:	1.09	0.00	0.80	0.00	0.00	0.00	1.09	0.26	0.00	0.00	1.09	1.09
Delay/Veh:	91.1	0.0	29.7	0.0	0.0	0.0	161.4	15.1	0.0	0.0	88.1	88.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	91.1	0.0	29.7	0.0	0.0	0.0	161.4	15.1	0.0	0.0	88.1	88.1
LOS by Move:	F	A	C	A	A	A	F	B	A	A	F	F
HCM2k95thQ:	51	0	30	0	0	0	10	8	0	0	56	56

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 1.102
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 75.1
Optimal Cycle: 180 | Level Of Service: E

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0 0	0	1 0	1 0	0	0 0	0 1	0
Volume Module:												
Base Vol:	248	6	11	0	0	0	77	41	0	0	57	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	248	6	11	0	0	0	77	41	0	0	57	1
Added Vol:	292	0	713	0	0	0	52	195	0	0	758	137
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	540	6	724	0	0	0	129	236	0	0	815	138
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	540	6	724	0	0	0	129	236	0	0	815	138
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	540	6	724	0	0	0	129	236	0	0	815	138
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	540	6	724	0	0	0	129	236	0	0	815	138
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.93	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	0.99	0.01	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.86	0.14
Final Sat.:	1741	19	1599	0	0	0	1805	1900	0	0	1592	270
Capacity Analysis Module:												
Vol/Sat:	0.31	0.31	0.45	0.00	0.00	0.00	0.07	0.12	0.00	0.00	0.51	0.51
Crit Moves:			****				****				****	
Green/Cycle:	0.41	0.41	0.41	0.00	0.00	0.00	0.06	0.53	0.00	0.00	0.46	0.46
Volume/Cap:	0.75	0.75	1.10	0.00	0.00	0.00	1.10	0.23	0.00	0.00	1.10	1.10
Delay/Veh:	29.7	29.7	95.9	0.0	0.0	0.0	160.1	12.8	0.0	0.0	89.3	89.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	29.7	29.7	95.9	0.0	0.0	0.0	160.1	12.8	0.0	0.0	89.3	89.3
LOS by Move:	C	C	F	A	A	A	F	B	A	A	F	F
HCM2k95thQ:	27	27	55	0	0	0	11	7	0	0	60	60

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	Asti (Frontage) Rd							South Interchange							
Approach:	North Bound				South Bound			East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled			Stop Sign				Stop Sign			
Rights:	Include				Include			Include				Include			
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced														
Base Vol:	32	33		0		0	15	47	49	0	11	0	0	0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	32	33		0		0	15	47	49	0	11	0	0	0	
Added Vol:	239	56		3		30	50	403	401	134	219	4	148	33	
PasserByVol:	0	0		0		0	0	0	0	0	0	0	0	0	
Initial Fut:	271	89		3		30	65	450	450	134	230	4	148	33	
User Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Volume:	271	89		3		30	65	450	450	134	230	4	148	33	
Reduct Vol:	0	0		0		0	0	0	0	0	0	0	0	0	
FinalVolume:	271	89		3		30	65	450	450	134	230	4	148	33	
Critical Gap Module:															
Critical Gp:	4.1	xxxx		xxxxx		4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2	
FollowUpTim:	2.2	xxxx		xxxxx		2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3	
Capacity Module:															
Cnflict Vol:	515	xxxx		xxxxx		92	xxxx	xxxxx	1073	984	290	1165	1208	91	
Potent Cap.:	1061	xxxx		xxxxx		1515	xxxx	xxxxx	200	250	754	173	185	973	
Move Cap.:	1061	xxxx		xxxxx		1515	xxxx	xxxxx	0	172	754	34	127	973	
Volume/Cap:	0.26	xxxx		xxxx		0.02	xxxx	xxxx	xxxx	0.78	0.31	0.12	1.17	0.03	
Level Of Service Module:															
2Way95thQ:	1.0	xxxx		xxxxx		0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	9.6	xxxx		xxxxx		7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	A	*		*		A	*	*	*	*	*	*	*	*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx	xxxxx	xxxx	0	xxxxx	xxxx	140	xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.6	xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	246	xxxxx	
Shared LOS:	*	*		*		*	*	*	*	*	*	*	F	*	
ApproachDel:	xxxxxx					xxxxxx			xxxxxx				246.0		
ApproachLOS:	*					*			F				F		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	Asti (Frontage) Rd							South Interchange							
Approach:	North Bound				South Bound			East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled			Stop Sign				Stop Sign			
Rights:	Include				Include			Include				Include			
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:															
Base Vol:	26	19		0		0	18	42	37	0	11	0	0	0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	26	19		0		0	18	42	37	0	11	0	0	0	
Added Vol:	239	56		3		30	50	508	555	134	219	4	148	33	
PasserByVol:	0	0		0		0	0	0	0	0	0	0	0	0	
Initial Fut:	265	75		3		30	68	550	592	134	230	4	148	33	
User Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Volume:	265	75		3		30	68	550	592	134	230	4	148	33	
Reduct Vol:	0	0		0		0	0	0	0	0	0	0	0	0	
FinalVolume:	265	75		3		30	68	550	592	134	230	4	148	33	
Critical Gap Module:															
Critical Gp:	4.1	xxxx		xxxxx		4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2	
FollowUpTim:	2.2	xxxx		xxxxx		2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3	
Capacity Module:															
Cnflict Vol:	618	xxxx		xxxxx		78	xxxx	xxxxx	1100	1011	343	1192	1285	77	
Potent Cap.:	972	xxxx		xxxxx		1533	xxxx	xxxxx	191	241	704	166	166	990	
Move Cap.:	972	xxxx		xxxxx		1533	xxxx	xxxxx	0	161	704	26	111	990	
Volume/Cap:	0.27	xxxx		xxxx		0.02	xxxx	xxxx	xxxx	0.83	0.33	0.15	1.34	0.03	
Level Of Service Module:															
2Way95thQ:	1.1	xxxx		xxxxx		0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	10.1	xxxx		xxxxx		7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	B	*		*		A	*	*	*	*	*	*	*	*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx	xxxxx	xxxx	0	xxxxx	xxxx	122	xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	13.2	xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	336	xxxxx	
Shared LOS:	*	*		*		*	*	*	*	*	*	*	F	*	
ApproachDel:	xxxxxx					xxxxxx			xxxxxx				335.7		
ApproachLOS:	*					*			F				F		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.882
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 49.7
Optimal Cycle: 91 | Level Of Service: D

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0
Volume Module:	2007 Balanced											
Base Vol:	32	33	0	0	15	47	49	0	11	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	32	33	0	0	15	47	49	0	11	0	0	0
Added Vol:	239	56	3	30	50	403	401	134	219	4	148	33
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	271	89	3	30	65	450	450	134	230	4	148	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	271	89	3	30	65	450	450	134	230	4	148	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	271	89	3	30	65	450	450	134	230	4	148	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	271	89	3	30	65	450	450	134	230	4	148	33
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	0.95	0.87	0.87	0.95	0.91	0.91	0.98	0.98	0.98
Lanes:	1.00	0.97	0.03	1.00	0.13	0.87	1.00	0.37	0.63	0.02	0.80	0.18
Final Sat.:	1805	1829	62	1805	208	1443	1805	633	1086	40	1482	330
Capacity Analysis Module:												
Vol/Sat:	0.15	0.05	0.05	0.02	0.31	0.31	0.25	0.21	0.21	0.10	0.10	0.10
Crit Moves:	****				****		****			****		
Green/Cycle:	0.17	0.39	0.39	0.13	0.35	0.35	0.28	0.28	0.28	0.11	0.11	0.11
Volume/Cap:	0.88	0.12	0.12	0.12	0.88	0.88	0.88	0.75	0.75	0.88	0.88	0.88
Delay/Veh:	64.8	19.6	19.6	38.4	45.0	45.0	50.6	39.0	39.0	76.0	76.0	76.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	64.8	19.6	19.6	38.4	45.0	45.0	50.6	39.0	39.0	76.0	76.0	76.0
LOS by Move:	E	B	B	D	D	D	D	D	D	E	E	E
HCM2k95thQ:	21	4	4	2	31	31	26	19	19	16	16	16

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 1.032
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 75.5
Optimal Cycle: 180 | Level Of Service: E

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0
Volume Module:												
Base Vol:	26	19	0	0	18	42	37	0	11	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	26	19	0	0	18	42	37	0	11	0	0	0
Added Vol:	239	56	3	30	50	508	555	134	219	4	148	33
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	265	75	3	30	68	550	592	134	230	4	148	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	265	75	3	30	68	550	592	134	230	4	148	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	265	75	3	30	68	550	592	134	230	4	148	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	265	75	3	30	68	550	592	134	230	4	148	33
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.99	0.99	0.95	0.87	0.87	0.95	0.91	0.91	0.98	0.98	0.98
Lanes:	1.00	0.96	0.04	1.00	0.11	0.89	1.00	0.37	0.63	0.02	0.80	0.18
Final Sat.:	1805	1816	73	1805	181	1466	1805	633	1086	40	1482	330
Capacity Analysis Module:												
Vol/Sat:	0.15	0.04	0.04	0.02	0.38	0.38	0.33	0.21	0.21	0.10	0.10	0.10
Crit Moves:	****				****		****			****		
Green/Cycle:	0.14	0.36	0.36	0.15	0.36	0.36	0.32	0.32	0.32	0.10	0.10	0.10
Volume/Cap:	1.03	0.11	0.11	0.11	1.03	1.03	1.03	0.67	0.67	1.03	1.03	1.03
Delay/Veh:	107.7	21.4	21.4	37.4	77.2	77.2	80.3	32.7	32.7	121.2	121	121.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	107.7	21.4	21.4	37.4	77.2	77.2	80.3	32.7	32.7	121.2	121	121.2
LOS by Move:	F	C	C	D	E	E	F	C	C	F	F	F
HCM2k95thQ:	24	3	3	2	44	44	40	18	18	19	19	19

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

PM Buildout+ Project A Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	67	1.5	0.770	23.0	LOS C	192	0.93	1.19	18.4
16T	T	218	1.8	0.768	15.9	LOS B	192	0.93	1.16	20.3
16R	R	97	2.1	0.770	17.5	LOS B	192	0.93	1.17	19.5
Approach		**382**	**1.8**	**0.767**	**17.5**	**LOS B**	**192**	**0.93**	**1.16**	**19.7**
WB AV Resort										
1L	L	4	20.0	0.500	25.1	LOS C	101	0.91	1.07	18.6
6T	T	119	1.7	0.492	15.5	LOS B	101	0.91	1.02	20.5
6R	R	72	1.4	0.493	16.8	LOS B	101	0.91	1.03	19.8
Approach		**195**	**2.1**	**0.493**	**16.2**	**LOS B**	**101**	**0.91**	**1.03**	**20.2**
SB Asti										
17L	L	100	2.0	0.990	50.7	LOS D	554	1.00	1.84	12.3
14T	T	427	2.1	0.993	41.9	LOS D	554	1.00	1.84	12.0
14R	R	46	2.2	1.000	43.5	LOS D	554	1.00	1.84	11.7
Approach		**574**	**2.1**	**0.994**	**43.6**	**LOS D**	**554**	**1.00**	**1.84**	**12.0**
EB South Interchange										
5L	L	192	2.1	0.268	11.0	LOS B	58	0.33	0.60	24.2
2T	T	66	1.5	0.268	2.1	LOS A	58	0.33	0.23	29.4
2R	R	114	1.8	0.268	2.1	LOS A	58	0.33	0.23	29.4
Approach		**371**	**1.9**	**0.268**	**6.7**	**LOS A**	**58**	**0.33**	**0.42**	**26.2**
101 NB Offramp										
13L	L	698	2.0	0.632	16.4	LOS B	184	0.76	0.92	22.2
18T	T	404	2.0	0.632	6.2	LOS A	184	0.75	0.73	26.1
18R	R	203	2.0	0.632	7.3	LOS A	184	0.75	0.75	25.5
Approach		**1305**	**2.0**	**0.632**	**11.8**	**LOS B**	**184**	**0.76**	**0.83**	**23.6**
All Vehicles		**2827**	**2.0**	**1.000**	**18.7**	**LOS B**	**554**	**0.78**	**1.04**	**19.5**

Symbols which may appear in this table:

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

Weekend Midday Buildout+ Project A Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	66	1.5	0.776	25.4	LOS C	201	0.94	1.21	17.6
16T	T	213	1.9	0.777	18.3	LOS B	201	0.94	1.19	19.1
16R	R	82	2.4	0.774	19.9	LOS B	201	0.94	1.20	18.3
Approach		**360**	**1.9**	**0.776**	**19.9**	**LOS B**	**201**	**0.94**	**1.20**	**18.6**
WB AV Resort										
1L	L	4	20.0	0.500	23.3	LOS C	94	0.89	1.05	19.2
6T	T	119	1.7	0.478	13.8	LOS B	94	0.89	1.00	21.5
6R	R	72	1.4	0.477	15.0	LOS B	94	0.89	1.01	20.8
Approach		**195**	**2.1**	**0.478**	**14.5**	**LOS B**	**94**	**0.89**	**1.00**	**21.1**
SB Asti										
17L	L	103	1.9	1.073	68.8	LOS E	838	1.00	2.32	10.0
14T	T	534	2.1	1.070	60.0	LOS E	838	1.00	2.32	9.3
14R	R	45	2.2	1.071	61.6	LOS E	838	1.00	2.32	9.2
Approach		**682**	**2.1**	**1.070**	**61.5**	**LOS E**	**838**	**1.00**	**2.32**	**9.4**
EB South Interchange										
5L	L	201	2.0	0.275	11.1	LOS B	60	0.32	0.60	24.1
2T	T	67	1.5	0.275	2.1	LOS A	60	0.32	0.23	29.5
2R	R	116	1.7	0.274	2.1	LOS A	60	0.32	0.23	29.5
Approach		**383**	**1.8**	**0.275**	**6.8**	**LOS A**	**60**	**0.32**	**0.42**	**26.1**
101 NB Offramp										
13L	L	568	1.9	0.611	16.4	LOS B	166	0.76	0.92	22.2
18T	T	564	2.0	0.701	7.4	LOS A	238	0.81	0.86	25.7
18R	R	203	2.0	0.702	8.5	LOS A	238	0.81	0.83	25.2
Approach		**1335**	**1.9**	**0.702**	**11.4**	**LOS B**	**238**	**0.79**	**0.88**	**23.8**
All Vehicles		**2955**	**2.0**	**1.073**	**23.6**	**LOS C**	**838**	**0.80**	**1.20**	**17.5**

Symbols which may appear in this table:

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	TAZ 2	25.00	26.00	25	26	51	1.2
	Zone 2 Subtotal					25	26	51	1.2
3		1.00	TAZ 3	4.00	2.00	4	2	6	0.1
	Zone 3 Subtotal					4	2	6	0.1
5		1.00	TAZ 5	6.00	3.00	6	3	9	0.2
	Zone 5 Subtotal					6	3	9	0.2
6		1.00	TAZ 6	27.00	14.00	27	14	41	0.9
	Zone 6 Subtotal					27	14	41	0.9
7	Jefferson Sp	1.00	TAZ 7	2.00	2.00	2	2	4	0.1
	Zone 7 Subtotal					2	2	4	0.1
8	12.4 (2/10)	1.00	TAZ 8	14.00	16.00	14	16	30	0.7
	Zone 8 Subtotal					14	16	30	0.7
9	12.4 (3/10)	1.00	TAZ 9	2.00	2.00	2	2	4	0.1
	Zone 9 Subtotal					2	2	4	0.1
12	Tall Trees	1.00	TAZ 12	25.00	15.00	25	15	40	0.9
	Zone 12 Subtotal					25	15	40	0.9
13	12.4 (9/10)	1.00	TAZ 13	13.00	7.00	13	7	20	0.5
	Zone 13 Subtotal					13	7	20	0.5
14	Downtown Com	1.00	TAZ 14	21.00	21.00	21	21	42	1.0
	Zone 14 Subtotal					21	21	42	1.0
16		1.00	TAZ 16	33.00	35.00	33	35	68	1.6
	Zone 16 Subtotal					33	35	68	1.6
17		1.00	TAZ 17	12.00	6.00	12	6	18	0.4
	Zone 17 Subtotal					12	6	18	0.4
18		1.00	TAZ 18	13.00	13.00	13	13	26	0.6
	Zone 18 Subtotal					13	13	26	0.6
19		1.00	TAZ 19	23.00	38.00	23	38	61	1.4
	Zone 19 Subtotal					23	38	61	1.4
20		1.00	TAZ 20	5.00	3.00	5	3	8	0.2

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	TAZ 2	25.00	26.00	25	26	51	1.1
	Zone 2 Subtotal					25	26	51	1.1
3		1.00	TAZ 3	4.00	2.00	4	2	6	0.1
	Zone 3 Subtotal					4	2	6	0.1
5		1.00	TAZ 5	6.00	3.00	6	3	9	0.2
	Zone 5 Subtotal					6	3	9	0.2
6		1.00	TAZ 6	27.00	14.00	27	14	41	0.9
	Zone 6 Subtotal					27	14	41	0.9
7	Jefferson Sp	1.00	TAZ 7	2.00	2.00	2	2	4	0.1
	Zone 7 Subtotal					2	2	4	0.1
8	12.4 (2/10)	1.00	TAZ 8	14.00	16.00	14	16	30	0.6
	Zone 8 Subtotal					14	16	30	0.6
9	12.4 (3/10)	1.00	TAZ 9	2.00	2.00	2	2	4	0.1
	Zone 9 Subtotal					2	2	4	0.1
12	Tall Trees	1.00	TAZ 12	25.00	15.00	25	15	40	0.9
	Zone 12 Subtotal					25	15	40	0.9
13	12.4 (9/10)	1.00	TAZ 13	13.00	7.00	13	7	20	0.4
	Zone 13 Subtotal					13	7	20	0.4
14	Downtown Com	1.00	TAZ 14	21.00	21.00	21	21	42	0.9
	Zone 14 Subtotal					21	21	42	0.9
16		1.00	TAZ 16	33.00	35.00	33	35	68	1.5
	Zone 16 Subtotal					33	35	68	1.5
17		1.00	TAZ 17	12.00	6.00	12	6	18	0.4
	Zone 17 Subtotal					12	6	18	0.4
18		1.00	TAZ 18	13.00	13.00	13	13	26	0.6
	Zone 18 Subtotal					13	13	26	0.6
19		1.00	TAZ 19	23.00	38.00	23	38	61	1.3
	Zone 19 Subtotal					23	38	61	1.3
20		1.00	TAZ 20	5.00	3.00	5	3	8	0.2

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 20 Subtotal					5	3	8	0.2
22		1.00	TAZ 22	109.00	112.00	109	112	221	5.1
	Zone 22 Subtotal					109	112	221	5.1
23		1.00	TAZ 23	33.00	35.00	33	35	68	1.6
	Zone 23 Subtotal					33	35	68	1.6
24	24 Vineyard	1.00	TAZ 24	16.00	10.00	16	10	26	0.6
	Zone 24 Subtotal					16	10	26	0.6
25	25 Westside	1.00	TAZ 25	15.00	9.00	15	9	24	0.6
	Zone 25 Subtotal					15	9	24	0.6
26		1.00	TAZ 26	30.00	33.00	30	33	63	1.4
	Zone 26 Subtotal					30	33	63	1.4
28	28 Citrus Ga	1.00	TAZ 28	23.00	20.00	23	20	43	1.0
	Zone 28 Subtotal					23	20	43	1.0
29		1.00	TAZ 29	14.00	13.00	14	13	27	0.6
	Zone 29 Subtotal					14	13	27	0.6
30		1.00	TAZ 30	17.00	25.00	17	25	42	1.0
	Zone 30 Subtotal					17	25	42	1.0
31		1.00	TAZ 31	46.00	51.00	46	51	97	2.2
	Zone 31 Subtotal					46	51	97	2.2
33		1.00	TAZ 33	18.00	10.00	18	10	28	0.6
	Zone 33 Subtotal					18	10	28	0.6
34		1.00	TAZ 34	1.00	1.00	1	1	2	0.0
	Zone 34 Subtotal					1	1	2	0.0
37		1.00	TAZ 37	54.00	27.00	54	27	81	1.9
	Zone 37 Subtotal					54	27	81	1.9
38	Casino Proje	1.00	Casino	0.00	0.00	0	0	0	0.0
39		1.00	TAZ 39	72.00	73.00	72	73	145	3.3
	Zone 39 Subtotal					72	73	145	3.3
40		1.00	TAZ 40	36.00	38.00	36	38	74	1.7
	Zone 40 Subtotal					36	38	74	1.7
42	42 Rancho de	1.00	TAZ 42	47.00	51.00	47	51	98	2.2
	Zone 42 Subtotal					47	51	98	2.2

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 20 Subtotal					5	3	8	0.2
22		1.00	TAZ 22	109.00	112.00	109	112	221	4.7
	Zone 22 Subtotal					109	112	221	4.7
23		1.00	TAZ 23	33.00	35.00	33	35	68	1.5
	Zone 23 Subtotal					33	35	68	1.5
24	24 Vineyard	1.00	TAZ 24	16.00	10.00	16	10	26	0.6
	Zone 24 Subtotal					16	10	26	0.6
25	25 Westside	1.00	TAZ 25	15.00	9.00	15	9	24	0.5
	Zone 25 Subtotal					15	9	24	0.5
26		1.00	TAZ 26	30.00	33.00	30	33	63	1.4
	Zone 26 Subtotal					30	33	63	1.4
28	28 Citrus Ga	1.00	TAZ 28	23.00	20.00	23	20	43	0.9
	Zone 28 Subtotal					23	20	43	0.9
29		1.00	TAZ 29	14.00	13.00	14	13	27	0.6
	Zone 29 Subtotal					14	13	27	0.6
30		1.00	TAZ 30	17.00	25.00	17	25	42	0.9
	Zone 30 Subtotal					17	25	42	0.9
31		1.00	TAZ 31	46.00	51.00	46	51	97	2.1
	Zone 31 Subtotal					46	51	97	2.1
33		1.00	TAZ 33	18.00	10.00	18	10	28	0.6
	Zone 33 Subtotal					18	10	28	0.6
34		1.00	TAZ 34	1.00	1.00	1	1	2	0.0
	Zone 34 Subtotal					1	1	2	0.0
37		1.00	TAZ 37	54.00	27.00	54	27	81	1.7
	Zone 37 Subtotal					54	27	81	1.7
38	Casino Proje	1.00	Casino	0.00	0.00	0	0	0	0.0
39		1.00	TAZ 39	72.00	73.00	72	73	145	3.1
	Zone 39 Subtotal					72	73	145	3.1
40		1.00	TAZ 40	36.00	38.00	36	38	74	1.6
	Zone 40 Subtotal					36	38	74	1.6
42	42 Rancho de	1.00	TAZ 42	47.00	51.00	47	51	98	2.1
	Zone 42 Subtotal					47	51	98	2.1

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
43		1.00	TAZ 43	53.00	67.00	53	67	120	2.8
	Zone 43 Subtotal					53	67	120	2.8
44		1.00	TAZ 44	167.00	185.00	167	185	352	8.1
	Zone 44 Subtotal					167	185	352	8.1
45		1.00	TAZ 45	7.00	38.00	7	38	45	1.0
	Zone 45 Subtotal					7	38	45	1.0
46		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 46 Subtotal					27	27	54	1.2
47		1.00	TAZ 47	9.00	9.00	9	9	18	0.4
	Zone 47 Subtotal					9	9	18	0.4
48		1.00	TAZ 48	10.00	51.00	10	51	61	1.4
	Zone 48 Subtotal					10	51	61	1.4
50		1.00	TAZ 50	8.00	5.00	8	5	13	0.3
	Zone 50 Subtotal					8	5	13	0.3
54		1.00	TAZ 54	29.00	21.00	29	21	50	1.1
	Zone 54 Subtotal					29	21	50	1.1
56		1.00	TAZ 56	4.00	3.00	4	3	7	0.2
	Zone 56 Subtotal					4	3	7	0.2
57		1.00	TAZ 57	4.00	3.00	4	3	7	0.2
	Zone 57 Subtotal					4	3	7	0.2
62		1.00	TAZ 62	4.00	2.00	4	2	6	0.1
	Zone 62 Subtotal					4	2	6	0.1
119		1.00	TAZ 19	23.00	38.00	23	38	61	1.4
	Zone 119 Subtotal					23	38	61	1.4
122		1.00	TAZ 22	110.00	112.00	110	112	222	5.1
	Zone 122 Subtotal					110	112	222	5.1
123		1.00	TAZ 23	33.00	36.00	33	36	69	1.6
	Zone 123 Subtotal					33	36	69	1.6
137		1.00	TAZ 37	53.00	26.00	53	26	79	1.8
	Zone 137 Subtotal					53	26	79	1.8
138	TAZ 38	1.00	TAZ 38	31.00	112.00	31	112	143	3.3

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
43		1.00	TAZ 43	53.00	67.00	53	67	120	2.6
	Zone 43 Subtotal					53	67	120	2.6
44		1.00	TAZ 44	167.00	185.00	167	185	352	7.6
	Zone 44 Subtotal					167	185	352	7.6
45		1.00	TAZ 45	7.00	38.00	7	38	45	1.0
	Zone 45 Subtotal					7	38	45	1.0
46		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 46 Subtotal					27	27	54	1.2
47		1.00	TAZ 47	9.00	9.00	9	9	18	0.4
	Zone 47 Subtotal					9	9	18	0.4
48		1.00	TAZ 48	10.00	51.00	10	51	61	1.3
	Zone 48 Subtotal					10	51	61	1.3
50		1.00	TAZ 50	8.00	5.00	8	5	13	0.3
	Zone 50 Subtotal					8	5	13	0.3
54		1.00	TAZ 54	29.00	21.00	29	21	50	1.1
	Zone 54 Subtotal					29	21	50	1.1
56		1.00	TAZ 56	4.00	3.00	4	3	7	0.2
	Zone 56 Subtotal					4	3	7	0.2
57		1.00	TAZ 57	4.00	3.00	4	3	7	0.2
	Zone 57 Subtotal					4	3	7	0.2
62		1.00	TAZ 62	4.00	2.00	4	2	6	0.1
	Zone 62 Subtotal					4	2	6	0.1
119		1.00	TAZ 19	23.00	38.00	23	38	61	1.3
	Zone 119 Subtotal					23	38	61	1.3
122		1.00	TAZ 22	110.00	112.00	110	112	222	4.8
	Zone 122 Subtotal					110	112	222	4.8
123		1.00	TAZ 23	33.00	36.00	33	36	69	1.5
	Zone 123 Subtotal					33	36	69	1.5
137		1.00	TAZ 37	53.00	26.00	53	26	79	1.7
	Zone 137 Subtotal					53	26	79	1.7
138	TAZ 38	1.00	TAZ 38	31.00	112.00	31	112	143	3.1

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 138 Subtotal					31	112	143	3.3
139		1.00	TAZ 39	72.00	72.00	72	72	144	3.3
	Zone 139 Subtotal					72	72	144	3.3
140		1.00	TAZ 40	36.00	38.00	36	38	74	1.7
	Zone 140 Subtotal					36	38	74	1.7
142		1.00	TAZ 42	48.00	51.00	48	51	99	2.3
	Zone 142 Subtotal					48	51	99	2.3
143		1.00	TAZ 43	53.00	66.00	53	66	119	2.7
	Zone 143 Subtotal					53	66	119	2.7
144		1.00	TAZ 44	167.00	184.00	167	184	351	8.0
	Zone 144 Subtotal					167	184	351	8.0
146		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 146 Subtotal					27	27	54	1.2
148		1.00	TAZ 48	10.00	51.00	10	51	61	1.4
	Zone 148 Subtotal					10	51	61	1.4
TOTAL						1741	1935	3676	84.3

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 138 Subtotal					31	112	143	3.1
139		1.00	TAZ 39	72.00	72.00	72	72	144	3.1
	Zone 139 Subtotal					72	72	144	3.1
140		1.00	TAZ 40	36.00	38.00	36	38	74	1.6
	Zone 140 Subtotal					36	38	74	1.6
142		1.00	TAZ 42	48.00	51.00	48	51	99	2.1
	Zone 142 Subtotal					48	51	99	2.1
143		1.00	TAZ 43	53.00	66.00	53	66	119	2.6
	Zone 143 Subtotal					53	66	119	2.6
144		1.00	TAZ 44	167.00	184.00	167	184	351	7.5
	Zone 144 Subtotal					167	184	351	7.5
146		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 146 Subtotal					27	27	54	1.2
148		1.00	TAZ 48	10.00	51.00	10	51	61	1.3
	Zone 148 Subtotal					10	51	61	1.3
TOTAL						1741	1935	3676	78.9

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt B

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	363.00	323.00	363	323	686	15.7
	Zone 38 Subtotal					363	323	686	15.7
TOTAL						363	323	686	15.7

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt B

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	545.00	439.00	545	439	984	21.1
	Zone 38 Subtotal					545	439	984	21.1
TOTAL						545	439	984	21.1

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.499
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	13.4
Optimal Cycle:	22	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm												
Base Vol:	47	317	71	34	212	15	16	35	69	109	36	38
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	52	349	78	37	233	17	18	39	76	120	40	42
Added Vol:	74	101	89	21	78	0	0	14	69	107	14	28
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	126	450	167	58	311	17	18	53	145	227	54	70
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	126	450	167	58	311	17	18	53	145	227	54	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	126	450	167	58	311	17	18	53	145	227	54	70
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	126	450	167	58	311	17	18	53	145	227	54	70
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.74	0.74	0.85	0.78	0.78	0.78	0.88	0.88	0.88	0.69	0.69	0.69
Lanes:	0.44	1.56	1.00	0.30	1.61	0.09	0.08	0.24	0.68	0.65	0.15	0.20
Final Sat.:	618	2212	1615	450	2398	127	137	407	1124	848	200	261
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.10	0.13	0.13	0.13	0.13	0.13	0.13	0.27	0.27	0.27
Crit Moves:		****									****	
Green/Cycle:	0.41	0.41	0.41	0.41	0.41	0.41	0.54	0.54	0.54	0.54	0.54	0.54
Volume/Cap:	0.50	0.50	0.25	0.32	0.32	0.32	0.24	0.24	0.24	0.50	0.50	0.50
Delay/Veh:	15.8	15.8	13.9	14.3	14.3	14.3	8.8	8.8	8.8	10.9	10.9	10.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.8	15.8	13.9	14.3	14.3	14.3	8.8	8.8	8.8	10.9	10.9	10.9
LOS by Move:	B	B	B	B	B	B	A	A	A	B	B	B
HCM2kAvgQ:	5	5	2	3	3	3	3	3	3	5	5	5

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.481
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	13.2
Optimal Cycle:	21	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	64	291	99	39	291	17	18	39	64	99	40	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	291	99	39	291	17	18	39	64	99	40	39
Added Vol:	74	103	96	21	80	0	0	14	69	116	14	28
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	138	394	195	60	371	17	18	53	133	215	54	67
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	138	394	195	60	371	17	18	53	133	215	54	67
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	138	394	195	60	371	17	18	53	133	215	54	67
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	138	394	195	60	371	17	18	53	133	215	54	67
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.69	0.69	0.85	0.80	0.80	0.80	0.88	0.88	0.88	0.70	0.70	0.70
Lanes:	0.52	1.48	1.00	0.27	1.66	0.07	0.09	0.26	0.65	0.64	0.16	0.20
Final Sat.:	685	1954	1615	405	2505	115	148	434	1090	854	215	266
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.12	0.15	0.15	0.15	0.12	0.12	0.12	0.25	0.25	0.25
Crit Moves:		****									****	
Green/Cycle:	0.42	0.42	0.42	0.42	0.42	0.42	0.52	0.52	0.52	0.52	0.52	0.52
Volume/Cap:	0.48	0.48	0.29	0.35	0.35	0.35	0.23	0.23	0.23	0.48	0.48	0.48
Delay/Veh:	15.1	15.1	13.7	14.0	14.0	14.0	9.2	9.2	9.2	11.1	11.1	11.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.1	15.1	13.7	14.0	14.0	14.0	9.2	9.2	9.2	11.1	11.1	11.1
LOS by Move:	B	B	B	B	B	B	A	A	A	B	B	B
HCM2kAvgQ:	5	5	3	4	4	4	2	2	2	5	5	5

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: E[48.2]

Street Name:	Cloverdale Blvd									Lake St												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:																						
Base Vol:	0	466		95		46	399		0		0	0		0		61		0		34		
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		
Initial Bse:	0	466		95		46	399		0		0	0		0		61		0		34		
Added Vol:	0	264		57		1	254		0		0	0		0		46		0		0		
PasserByVol:	0	0		0		0	0		0		0	0		0		0		0		0		
Initial Fut:	0	730		152		47	653		0		0	0		0		107		0		34		
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		
PHF Volume:	0	730		152		47	653		0		0	0		0		107		0		34		
Reduct Vol:	0	0		0		0	0		0		0	0		0		0		0		0		
FinalVolume:	0	730		152		47	653		0		0	0		0		107		0		34		
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.8	xxxx		6.9							
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx		3.3							
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx	xxxxx		882	xxxx	xxxxx	xxxx	xxxx	xxxxx		1227	xxxx		441							
Potent Cap.:	xxxx	xxxx	xxxxx		775	xxxx	xxxxx	xxxx	xxxx	xxxxx		174	xxxx		570							
Move Cap.:	xxxx	xxxx	xxxxx		775	xxxx	xxxxx	xxxx	xxxx	xxxxx		165	xxxx		570							
Volume/Cap:	xxxx	xxxx	xxxx		0.06	xxxx	xxxx	xxxx	xxxx	xxxx		0.65	xxxx		0.06							
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx	xxxxx		0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx		3.7	xxxx		0.2							
Control Del:	xxxxx	xxxx	xxxxx		9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx		59.8	xxxx		11.7							
LOS by Move:	*	*	*		A	*	*	*	*	*		F	*		B							
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx		xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx		0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx		9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx							
Shared LOS:	*	*	*		A	*	*	*	*	*		*	*		*							
ApproachDel:	xxxxxx				xxxxxx			xxxxxx				48.2										
ApproachLOS:	*				*			*				E										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 5.2 Worst Case Level Of Service: F[52.7]

Street Name:	Cloverdale Blvd									Lake St												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:																						
Base Vol:	0	432		78		40	432		0		0	0		0		78		0		40		
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		
Initial Bse:	0	432		78		40	432		0		0	0		0		78		0		40		
Added Vol:	0	272		57		1	265		0		0	0		0		46		0		0		
PasserByVol:	0	0		0		0	0		0		0	0		0		0		0		0		
Initial Fut:	0	704		135		41	697		0		0	0		0		124		0		40		
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		
PHF Volume:	0	704		135		41	697		0		0	0		0		124		0		40		
Reduct Vol:	0	0		0		0	0		0		0	0		0		0		0		0		
FinalVolume:	0	704		135		41	697		0		0	0		0		124		0		40		
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.8	xxxx		6.9							
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx		3.3							
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx	xxxxx		839	xxxx	xxxxx	xxxx	xxxx	xxxxx		1202	xxxx		420							
Potent Cap.:	xxxx	xxxx	xxxxx		804	xxxx	xxxxx	xxxx	xxxx	xxxxx		180	xxxx		588							
Move Cap.:	xxxx	xxxx	xxxxx		804	xxxx	xxxxx	xxxx	xxxx	xxxxx		173	xxxx		588							
Volume/Cap:	xxxx	xxxx	xxxx		0.05	xxxx	xxxx	xxxx	xxxx	xxxx		0.72	xxxx		0.07							
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx	xxxxx		0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx		4.4	xxxx		0.2							
Control Del:	xxxxx	xxxx	xxxxx		9.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx		65.9	xxxx		11.6							
LOS by Move:	*	*	*		A	*	*	*	*	*		F	*		B							
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx		xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx		0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx		9.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx							
Shared LOS:	*	*	*		A	*	*	*	*	*		*	*		*							
ApproachDel:	xxxxxx				xxxxxx			xxxxxx				52.7										
ApproachLOS:	*				*			*				F										

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.607
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 18.0
Optimal Cycle: 32 | Level Of Service: B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm												
Base Vol:	7	382	52	97	370	2	1	12	15	104	21	178
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	8	420	57	107	407	2	1	13	17	114	23	196
Added Vol:	22	143	242	166	122	12	14	3	26	256	5	164
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	30	563	299	273	529	14	15	16	43	370	28	360
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	30	563	299	273	529	14	15	16	43	370	28	360
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	30	563	299	273	529	14	15	16	43	370	28	360
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	30	563	299	273	529	14	15	16	43	370	28	360
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.90	0.90	0.95	0.95	0.95	0.91	0.91	0.91	0.96	0.96	0.85
Lanes:	1.00	1.31	0.69	1.00	1.95	0.05	0.20	0.22	0.58	1.86	0.14	1.00
Final Sat.:	1805	2235	1187	1805	3502	94	355	381	999	3377	256	1615
Capacity Analysis Module:												
Vol/Sat:	0.02	0.25	0.25	0.15	0.15	0.15	0.04	0.04	0.04	0.11	0.11	0.22
Crit Moves:		****		****					****	****		
Green/Cycle:	0.07	0.41	0.41	0.25	0.60	0.60	0.07	0.07	0.07	0.18	0.18	0.43
Volume/Cap:	0.25	0.61	0.61	0.61	0.25	0.25	0.61	0.61	0.61	0.61	0.61	0.52
Delay/Veh:	32.2	16.8	16.8	25.7	6.7	6.7	40.2	40.2	40.2	28.0	28.0	15.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	32.2	16.8	16.8	25.7	6.7	6.7	40.2	40.2	40.2	28.0	28.0	15.4
LOS by Move:	C	B	B	C	A	A	D	D	D	C	C	B
HCM2kAvgQ:	1	8	8	6	3	3	3	3	3	5	5	6

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.710
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 26.4
Optimal Cycle: 41 | Level Of Service: C

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	68	6	88	0	8	9	5	255	50	80	230	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	6	88	0	8	9	5	255	50	80	230	0
Added Vol:	22	143	243	177	122	12	14	3	26	257	5	173
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	90	149	331	177	130	21	19	258	76	337	235	173
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	149	331	177	130	21	19	258	76	337	235	173
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	90	149	331	177	130	21	19	258	76	337	235	173
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	90	149	331	177	130	21	19	258	76	337	235	173
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.85	0.85	0.95	0.93	0.93	0.97	0.97	0.97	0.97	0.97	0.85
Lanes:	1.00	1.00	1.00	1.00	1.72	0.28	0.05	0.73	0.22	1.18	0.82	1.00
Final Sat.:	1805	1619	1619	1805	3043	492	99	1344	396	2174	1516	1615
Capacity Analysis Module:												
Vol/Sat:	0.05	0.09	0.20	0.10	0.04	0.04	0.19	0.19	0.19	0.16	0.16	0.11
Crit Moves:			****	****			****			****		
Green/Cycle:	0.23	0.29	0.29	0.14	0.20	0.20	0.27	0.27	0.27	0.22	0.22	0.36
Volume/Cap:	0.22	0.32	0.71	0.71	0.22	0.22	0.71	0.71	0.71	0.71	0.71	0.30
Delay/Veh:	22.1	19.7	25.8	38.0	23.8	23.8	27.8	27.8	27.8	28.3	28.3	16.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	22.1	19.7	25.8	38.0	23.8	23.8	27.8	27.8	27.8	28.3	28.3	16.5
LOS by Move:	C	B	C	D	C	C	C	C	C	C	C	B
HCM2kAvgQ:	2	3	8	5	2	2	8	8	8	7	7	3

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.4 Worst Case Level Of Service: C[18.2]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm																				
Base Vol:	0	0	0	4	0	24	0	43	97	25	345	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	4	0	24	0	43	97	25	345	0								
Added Vol:	0	0	0	38	0	53	0	96	315	137	372	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	42	0	77	0	139	412	162	717	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	42	0	77	0	139	412	162	717	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	42	0	77	0	139	412	162	717	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1111	1592	359	xxxx	xxxx	xxxxx	551	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	206	108	644	xxxx	xxxx	xxxxx	1029	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	181	91	644	xxxx	xxxx	xxxxx	1029	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.23	0.00	0.12	xxxx	xxxx	xxxx	0.16	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.9	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	30.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.2	xxxx	xxxxx								
LOS by Move:	*	*	*	D	*	*	*	*	*	A	*	*								
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT								
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	644	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	11.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	B	*	*	*	*	*	*								
ApproachDel:	xxxxxx			18.2			xxxxxx			xxxxxx										
ApproachLOS:	*			C			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.7 Worst Case Level Of Service: C[17.5]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module:																				
Base Vol:	0	0	0	3	0	23	0	42	117	19	176	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	3	0	23	0	42	117	19	176	0								
Added Vol:	0	0	0	50	0	53	0	101	321	162	382	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	53	0	76	0	143	438	181	558	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	53	0	76	0	143	438	181	558	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	53	0	76	0	143	438	181	558	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	992	1501	279	xxxx	xxxx	xxxxx	581	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	246	123	724	xxxx	xxxx	xxxxx	1003	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	212	101	724	xxxx	xxxx	xxxxx	1003	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.25	0.00	0.10	xxxx	xxxx	xxxx	0.18	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	1.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.7	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	27.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.4	xxxx	xxxxx								
LOS by Move:	*	*	*	D	*	*	*	*	*	A	*	*								
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT								
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	724	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.6	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	B	*	*	*	*	*	*								
ApproachDel:	xxxxxx			17.5			xxxxxx			xxxxxx										
ApproachLOS:	*			C			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 26.5 Worst Case Level Of Service: E[43.3]

Street Name:	US 101 North Ramps												Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0 1		0 0 0	0 0		1 0 2	0 0		0 0 1	1 0	
Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm												
Base Vol:	272	0	55	0	0	0	23	15	0	0	57	6
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	272	0	55	0	0	0	23	15	0	0	57	6
Added Vol:	280	0	172	0	0	0	47	87	0	0	229	55
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	552	0	227	0	0	0	70	102	0	0	286	61
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	552	0	227	0	0	0	70	102	0	0	286	61
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	552	0	227	0	0	0	70	102	0	0	286	61
Critical Gap Module:												
Critical Gp:	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	385	589	51	xxxx	xxxx	xxxxx	347	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	596	423	1013	xxxx	xxxx	xxxxx	1223	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	570	399	1013	xxxx	xxxx	xxxxx	1223	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.97	0.00	0.22	xxxx	xxxx	xxxx	0.06	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	0.9	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	9.6	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	A	*	*	*	A	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	570	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	13.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	57.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	F	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	43.3			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	E			*			*			*		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 13.7 Worst Case Level Of Service: C[24.8]

Street Name:	US 101 North Ramps												Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0 1		0 0 0	0 0		1 0 2	0 0		0 0 1	1 0	
Volume Module:												
Base Vol:	144	0	27	0	0	0	26	20	0	0	58	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	144	0	27	0	0	0	26	20	0	0	58	8
Added Vol:	280	0	221	0	0	0	47	105	0	0	264	63
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	424	0	248	0	0	0	73	125	0	0	322	71
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	424	0	248	0	0	0	73	125	0	0	322	71
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	424	0	248	0	0	0	73	125	0	0	322	71
Critical Gap Module:												
Critical Gp:	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	432	664	63	xxxx	xxxx	xxxxx	393	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	557	384	996	xxxx	xxxx	xxxxx	1177	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	531	360	996	xxxx	xxxx	xxxxx	1177	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.80	0.00	0.25	xxxx	xxxx	xxxx	0.06	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	1.0	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	9.8	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	A	*	*	*	A	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	531	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	33.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	D	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	24.8			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	C			*			*			*		

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.579
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 21.0
Optimal Cycle: 32 | Level Of Service: C

Street Name:	US 101 North Ramps						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	1	0	0	1	0	0	0	0	1	0	2
	0	0	0	1	0	0	0	1	1	0		
Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm												
Base Vol:	272	0	55	0	0	0	23	15	0	0	57	6
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	272	0	55	0	0	0	23	15	0	0	57	6
Added Vol:	280	0	172	0	0	0	47	87	0	0	229	55
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	552	0	227	0	0	0	70	102	0	0	286	61
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	552	0	227	0	0	0	70	102	0	0	286	61
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	552	0	227	0	0	0	70	102	0	0	286	61
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	552	0	227	0	0	0	70	102	0	0	286	61
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.85	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.93	0.93
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	2.00	0.00	0.00	1.65	0.35
Final Sat.:	1357	0	1615	0	0	0	1805	3610	0	0	2898	618
Capacity Analysis Module:												
Vol/Sat:	0.41	0.00	0.14	0.00	0.00	0.00	0.04	0.03	0.00	0.00	0.10	0.10
Crit Moves:	****						****				****	
Green/Cycle:	0.70	0.00	1.41	0.00	0.00	0.00	0.07	0.24	0.00	0.00	0.17	0.17
Volume/Cap:	0.58	0.00	0.10	0.00	0.00	0.00	0.58	0.12	0.00	0.00	0.58	0.58
Delay/Veh:	8.4	0.0	9.6	0.0	0.0	0.0	52.1	30.0	0.0	0.0	39.6	39.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.4	0.0	9.6	0.0	0.0	0.0	52.1	30.0	0.0	0.0	39.6	39.6
LOS by Move:	A	A	A	A	A	A	D	C	A	A	D	D
HCM2k95thQ:	17	0	0	0	0	0	6	3	0	0	11	11

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.495
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 20.1
Optimal Cycle: 27 | Level Of Service: C

Street Name:	US 101 North Ramps						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	1	0	0	1	0	0	0	0	1	0	2
	0	0	0	1	0	0	0	1	1	0		
Volume Module:												
Base Vol:	144	0	27	0	0	0	26	20	0	0	58	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	144	0	27	0	0	0	26	20	0	0	58	8
Added Vol:	280	0	221	0	0	0	47	105	0	0	264	63
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	424	0	248	0	0	0	73	125	0	0	322	71
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	424	0	248	0	0	0	73	125	0	0	322	71
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	424	0	248	0	0	0	73	125	0	0	322	71
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	424	0	248	0	0	0	73	125	0	0	322	71
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.85	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.92	0.92
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	2.00	0.00	0.00	1.64	0.36
Final Sat.:	1357	0	1615	0	0	0	1805	3610	0	0	2878	635
Capacity Analysis Module:												
Vol/Sat:	0.31	0.00	0.15	0.00	0.00	0.00	0.04	0.03	0.00	0.00	0.11	0.11
Crit Moves:	****						****				****	
Green/Cycle:	0.63	0.00	1.26	0.00	0.00	0.00	0.08	0.31	0.00	0.00	0.23	0.23
Volume/Cap:	0.49	0.00	0.12	0.00	0.00	0.00	0.49	0.11	0.00	0.00	0.49	0.49
Delay/Veh:	10.3	0.0	4.1	0.0	0.0	0.0	46.5	24.8	0.0	0.0	34.2	34.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.3	0.0	4.1	0.0	0.0	0.0	46.5	24.8	0.0	0.0	34.2	34.2
LOS by Move:	B	A	A	A	A	A	D	C	A	A	C	C
HCM2k95thQ:	14	0	0	0	0	0	6	3	0	0	11	11

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 8.0 Worst Case Level Of Service: C[15.5]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	32	45		0		0	27		26		69		0		6		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	32	45		0		0	27		26		69		0		6		0		0	
Added Vol:	237	96		0		0	80		47		60		0		199		0		0	
PasserByVol:	0	0		0		0	0		0		0		0		0		0		0	
Initial Fut:	269	141		0		0	107		73		129		0		205		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	269	141		0		0	107		73		129		0		205		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	269	141		0		0	107		73		129		0		205		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	180	xxxx	xxxxx	xxxx	xxxx	xxxxx					786	xxxx			107	xxxx	xxxx	xxxxx		
Potent Cap.:	1408	xxxx	xxxxx	xxxx	xxxx	xxxxx					364	xxxx			953	xxxx	xxxx	xxxxx		
Move Cap.:	1408	xxxx	xxxxx	xxxx	xxxx	xxxxx					310	xxxx			953	xxxx	xxxx	xxxxx		
Volume/Cap:	0.19	xxxx	xxxx	xxxx	xxxx	xxxx					0.42	xxxx			0.22	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx					2.0	xxxx			0.8	xxxx	xxxx	xxxxx		
Control Del:	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					24.6	xxxx			9.8	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*					C	*			A	*	*	*		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*					*	*	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx							15.5					xxxxxx				
ApproachLOS:	*			*							C					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.6 Worst Case Level Of Service: B[13.4]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	11	28		0		0	26		28		32		0		10		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	11	28		0		0	26		28		32		0		10		0		0	
Added Vol:	280	96		0		0	80		47		60		0		266		0		0	
PasserByVol:	0	0		0		0	0		0		0		0		0		0		0	
Initial Fut:	291	124		0		0	106		75		92		0		276		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	291	124		0		0	106		75		92		0		276		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	291	124		0		0	106		75		92		0		276		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	181	xxxx	xxxxx	xxxx	xxxx	xxxxx					812	xxxx			106	xxxx	xxxx	xxxxx		
Potent Cap.:	1407	xxxx	xxxxx	xxxx	xxxx	xxxxx					351	xxxx			954	xxxx	xxxx	xxxxx		
Move Cap.:	1407	xxxx	xxxxx	xxxx	xxxx	xxxxx					295	xxxx			954	xxxx	xxxx	xxxxx		
Volume/Cap:	0.21	xxxx	xxxx	xxxx	xxxx	xxxx					0.31	xxxx			0.29	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx					1.3	xxxx			1.2	xxxx	xxxx	xxxxx		
Control Del:	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					22.6	xxxx			10.3	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*					C	*			B	*	*	*		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*					*	*	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx							13.4					xxxxxx				
ApproachLOS:	*			*							B					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 12.1 Worst Case Level Of Service: E[36.2]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	0	69		0		0	37		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	69		0		0	37		0		0	0		0		0	0		0	
Added Vol:	0	156		229		134	110		0		0	0		0		203	0		120	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	225		229		134	147		0		0	0		0		203	0		120	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	225		229		134	147		0		0	0		0		203	0		120	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	225		229		134	147		0		0	0		0		203	0		120	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		454	xxxx		xxxxx		xxxx	xxxx		xxxxx		755	755		340	
Potent Cap.:	xxxx	xxxx		xxxxx		1117	xxxx		xxxxx		xxxx	xxxx		xxxxx		380	340		707	
Move Cap.:	xxxx	xxxx		xxxxx		1117	xxxx		xxxxx		xxxx	xxxx		xxxxx		342	296		707	
Volume/Cap:	xxxx	xxxx		xxxx		0.12	xxxx		xxxx		xxxx	xxxx		xxxx		0.59	0.00		0.17	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.4	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		8.7	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	423		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.4	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	6.4		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.7	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	36.2		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	E		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						36.2			
ApproachLOS:	*					*					*						E			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 68.1 Worst Case Level Of Service: F[201.6]

Street Name:	Asti (Frontage) Rd									Project Access								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	40		0		0	37		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	40		0		0	37		0		0	0		0		0	0		0	
Added Vol:	0	156		343		202	110		0		0	0		0		277	0		162	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	196		343		202	147		0		0	0		0		277	0		162	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	196		343		202	147		0		0	0		0		277	0		162	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	196		343		202	147		0		0	0		0		277	0		162	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		539	xxxx		xxxxx		xxxx	xxxx		xxxxx		919	919		368	
Potent Cap.:	xxxx	xxxx		xxxxx		1040	xxxx		xxxxx		xxxx	xxxx		xxxxx		304	273		682	
Move Cap.:	xxxx	xxxx		xxxxx		1040	xxxx		xxxxx		xxxx	xxxx		xxxxx		253	214		682	
Volume/Cap:	xxxx	xxxx		xxxx		0.19	xxxx		xxxx		xxxx	xxxx		xxxx		1.10	0.00		0.24	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.7	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		9.3	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	329		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.7	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	21.4		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		9.3	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	202		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	F		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						201.6			
ApproachLOS:	*					*					*						F			

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.378
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 19.4
Optimal Cycle: 22 | Level Of Service: B

Street Name:	Asti (Frontage) Rd						Project Access					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1	0	1	1	0	1	0	0	1	0	0	0	1
Volume Module:	2007 Balanced											
Base Vol:	0	69	0	0	37	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	69	0	0	37	0	0	0	0	0	0	0
Added Vol:	0	156	229	134	110	0	0	0	0	203	0	120
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	225	229	134	147	0	0	0	0	203	0	120
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	225	229	134	147	0	0	0	0	203	0	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	225	229	134	147	0	0	0	0	203	0	120
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	225	229	134	147	0	0	0	0	203	0	120
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.85	0.95	1.00	1.00	1.00	1.00	1.00	0.77	1.00	0.85
Lanes:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1900	1615	1805	1900	0	0	0	0	1461	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.12	0.14	0.07	0.08	0.00	0.00	0.00	0.00	0.14	0.00	0.07
Crit Moves:			****	****						****		
Green/Cycle:	0.00	0.38	0.38	0.59	0.57	0.00	0.00	0.00	0.00	0.37	0.00	0.37
Volume/Cap:	0.00	0.32	0.38	0.19	0.14	0.00	0.00	0.00	0.00	0.38	0.00	0.20
Delay/Veh:	0.0	22.4	23.1	9.6	10.0	0.0	0.0	0.0	0.0	23.6	0.0	21.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	22.4	23.1	9.6	10.0	0.0	0.0	0.0	0.0	23.6	0.0	21.7
LOS by Move:	A	C	C	A	A	A	A	A	A	C	A	C
HCM2k95thQ:	0	10	10	4	4	0	0	0	0	9	0	5

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.547
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 20.6
Optimal Cycle: 30 | Level Of Service: C

Street Name:	Asti (Frontage) Rd						Project Access					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1	0	1	1	0	1	0	0	1	0	0	0	1
Volume Module:												
Base Vol:	0	40	0	0	37	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	40	0	0	37	0	0	0	0	0	0	0
Added Vol:	0	156	343	202	110	0	0	0	0	277	0	162
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	196	343	202	147	0	0	0	0	277	0	162
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	196	343	202	147	0	0	0	0	277	0	162
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	196	343	202	147	0	0	0	0	277	0	162
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	196	343	202	147	0	0	0	0	277	0	162
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.85	0.95	1.00	1.00	1.00	1.00	1.00	0.77	1.00	0.85
Lanes:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1900	1615	1805	1900	0	0	0	0	1461	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.10	0.21	0.11	0.08	0.00	0.00	0.00	0.00	0.19	0.00	0.10
Crit Moves:			****	****						****		
Green/Cycle:	0.00	0.39	0.39	0.61	0.59	0.00	0.00	0.00	0.00	0.35	0.00	0.35
Volume/Cap:	0.00	0.27	0.55	0.26	0.13	0.00	0.00	0.00	0.00	0.55	0.00	0.29
Delay/Veh:	0.0	21.0	24.8	8.9	9.0	0.0	0.0	0.0	0.0	27.6	0.0	24.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	21.0	24.8	8.9	9.0	0.0	0.0	0.0	0.0	27.6	0.0	24.0
LOS by Move:	A	C	C	A	A	A	A	A	A	C	A	C
HCM2k95thQ:	0	8	16	6	4	0	0	0	0	14	0	7

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: C[16.1]

Street Name:	Asti (Frontage) Rd								Santana Dr							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	0	66		16		2	35		0		0	0		0		27	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	66		16		2	35		0		0	0		0		27	0		3	
Added Vol:	0	359		0		0	369		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	425		16		2	404		0		0	0		0		27	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	425		16		2	404		0		0	0		0		27	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	425		16		2	404		0		0	0		0		27	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		441	xxxx		xxxxx		xxxx	xxxx		xxxxx		841	841		433	
Potent Cap.:	xxxx	xxxx		xxxxx		1130	xxxx		xxxxx		xxxx	xxxx		xxxxx		338	303		627	
Move Cap.:	xxxx	xxxx		xxxxx		1130	xxxx		xxxxx		xxxx	xxxx		xxxxx		337	303		627	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		0.08	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		8.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	354		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	0.3		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	16.1		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	C		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						16.1			
ApproachLOS:	*					*					*						C			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: B[11.4]

Street Name:	Asti (Frontage) Rd								Santana Dr							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Volume Module:																				
Base Vol:	0	37		2		1	36		0		0	0		0		0	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	37		2		1	36		0		0	0		0		0	0		3	
Added Vol:	0	473		0		0	442		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	510		2		1	478		0		0	0		0		0	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	510		2		1	478		0		0	0		0		0	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	510		2		1	478		0		0	0		0		0	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		512	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		511	
Potent Cap.:	xxxx	xxxx		xxxxx		1064	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		567	
Move Cap.:	xxxx	xxxx		xxxxx		1064	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		567	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		xxxx	xxxx		0.01	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		0.0	
Control Del:	xxxxx	xxxx		xxxxx		8.4	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		11.4	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		B	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.4	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						11.4			
ApproachLOS:	*					*					*						B			

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.8 Worst Case Level Of Service: C[18.6]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm																
Base Vol:	177	343	0	0	135	47	33	0	71	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	177	343	0	0	135	47	33	0	71	0	0	0				
Added Vol:	79	322	0	0	252	9	10	0	72	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	256	665	0	0	387	56	43	0	143	0	0	0				
User Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	282	732	0	0	426	62	47	0	157	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	282	732	0	0	426	62	47	0	157	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	487	xxxx	xxxxx	xxxx	xxxx	xxxxx	1737	1737	426	xxxx	xxxx	xxxxx				
Potent Cap.:	1086	xxxx	xxxxx	xxxx	xxxx	xxxxx	90	82	633	xxxx	xxxx	xxxxx				
Move Cap.:	1086	xxxx	xxxxx	xxxx	xxxx	xxxxx	72	61	633	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	153	137	xxxxx	74	118	xxxxx				
Volume/Cap:	0.26	xxxx	xxxx	xxxx	xxxx	xxxx	0.31	0.00	0.25	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	1.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.0	xxxx	xxxx	xxxxx				
Control Del:	9.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	12.6	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	B	*	*	*				
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	153	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	38.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	E	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			18.6			xxxxxx						
ApproachLOS:	*			*			C			*						

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.9 Worst Case Level Of Service: C[16.6]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module:																
Base Vol:	124	239	0	0	239	40	40	0	124	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	124	239	0	0	239	40	40	0	124	0	0	0				
Added Vol:	82	323	0	0	253	9	10	0	76	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	206	562	0	0	492	49	50	0	200	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	206	562	0	0	492	49	50	0	200	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	206	562	0	0	492	49	50	0	200	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	541	xxxx	xxxxx	xxxx	xxxx	xxxxx	1466	1466	492	xxxx	xxxx	xxxxx				
Potent Cap.:	1038	xxxx	xxxxx	xxxx	xxxx	xxxxx	142	129	581	xxxx	xxxx	xxxxx				
Move Cap.:	1038	xxxx	xxxxx	xxxx	xxxx	xxxxx	121	104	581	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	228	204	xxxxx	87	176	xxxxx				
Volume/Cap:	0.20	xxxx	xxxx	xxxx	xxxx	xxxx	0.22	0.00	0.34	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.5	xxxx	xxxx	xxxxx				
Control Del:	9.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	14.4	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	B	*	*	*				
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	228	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	25.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	D	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			16.6			xxxxxx						
ApproachLOS:	*			*			C			*						

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 35.9 Worst Case Level Of Service: F[67.1]

Street Name:	Cloverdale Blvd									South Interchange												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:	2007 Balanced																					
Base Vol:	0	79	12	194	53	0	0	0	0	26	0	452										
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00										
Initial Bse:	0	79	12	194	53	0	0	0	0	26	0	452										
Added Vol:	0	80	175	261	62	0	0	0	0	123	0	315										
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0										
Initial Fut:	0	159	187	455	115	0	0	0	0	149	0	767										
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00										
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00										
PHF Volume:	0	159	187	455	115	0	0	0	0	149	0	767										
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0										
FinalVolume:	0	159	187	455	115	0	0	0	0	149	0	767										
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2										
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3										
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx	xxxxx	293	xxxx	xxxxx	xxxx	xxxx	xxxxx	1267	xxxx	195										
Potent Cap.:	xxxx	xxxx	xxxxx	1224	xxxx	xxxxx	xxxx	xxxx	xxxxx	180	xxxx	814										
Move Cap.:	xxxx	xxxx	xxxxx	1224	xxxx	xxxxx	xxxx	xxxx	xxxxx	128	xxxx	814										
Volume/Cap:	xxxx	xxxx	xxxx	0.37	xxxx	xxxx	xxxx	xxxx	xxxx	1.17	xxxx	0.94										
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx	xxxxx	1.7	xxxx	xxxxx	xxxx	xxxx	xxxxx	8.9	xxxx	14.3										
Control Del:	xxxxx	xxxx	xxxxx	9.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	197.8	xxxx	41.7										
LOS by Move:	*	*	*	A	*	*	*	*	*	F	*	E										
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx										
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx										
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx										
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*										
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			67.1												
ApproachLOS:	*			*			*			F												

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 29.7 Worst Case Level Of Service: F[59.3]

Street Name:	Cloverdale Blvd									South Interchange												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:																						
Base Vol:	0	42	0	280	65	0	0	0	0	2	0	345										
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00										
Initial Bse:	0	42	0	280	65	0	0	0	0	2	0	345										
Added Vol:	0	80	175	265	62	0	0	0	0	123	0	319										
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0										
Initial Fut:	0	122	175	545	127	0	0	0	0	125	0	664										
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00										
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00										
PHF Volume:	0	122	175	545	127	0	0	0	0	125	0	664										
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0										
FinalVolume:	0	122	175	545	127	0	0	0	0	125	0	664										
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2										
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3										
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx	xxxxx	297	xxxx	xxxxx	xxxx	xxxx	xxxxx	1427	xxxx	210										
Potent Cap.:	xxxx	xxxx	xxxxx	1276	xxxx	xxxxx	xxxx	xxxx	xxxxx	151	xxxx	836										
Move Cap.:	xxxx	xxxx	xxxxx	1276	xxxx	xxxxx	xxxx	xxxx	xxxxx	100	xxxx	836										
Volume/Cap:	xxxx	xxxx	xxxx	0.43	xxxx	xxxx	xxxx	xxxx	xxxx	1.25	xxxx	0.79										
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	8.6	xxxx	8.3										
Control Del:	xxxxx	xxxx	xxxxx	9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	248.6	xxxx	23.7										
LOS by Move:	*	*	*	A	*	*	*	*	*	F	*	C										
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx										
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx										
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx										
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*										
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			59.3												
ApproachLOS:	*			*			*			F												

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.982
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 58.5
Optimal Cycle: 180 | Level Of Service: E

Street Name:	Cloverdale Blvd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1	0	1	0	0 0	0	0	1	0	0 1
Volume Module:	2007 Balanced											
Base Vol:	0	79	12	194	53	0	0	0	0	26	0	452
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	79	12	194	53	0	0	0	0	26	0	452
Added Vol:	0	80	175	261	62	0	0	0	0	123	0	315
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	159	187	455	115	0	0	0	0	149	0	767
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	159	187	455	115	0	0	0	0	149	0	767
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	159	187	455	115	0	0	0	0	149	0	767
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	159	187	455	115	0	0	0	0	149	0	767
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.93	0.93	0.95	1.00	1.00	1.00	1.00	1.00	0.78	1.00	0.85
Lanes:	0.00	0.46	0.54	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	809	952	1805	1900	0	0	0	0	1480	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.20	0.20	0.25	0.06	0.00	0.00	0.00	0.00	0.10	0.00	0.47
Crit Moves:		****		****								****
Green/Cycle:	0.00	0.20	0.20	0.26	0.46	0.00	0.00	0.00	0.00	0.48	0.00	0.48
Volume/Cap:	0.00	0.98	0.98	0.98	0.13	0.00	0.00	0.00	0.00	0.21	0.00	0.98
Delay/Veh:	0.0	82.9	82.9	74.0	15.8	0.0	0.0	0.0	0.0	15.0	0.0	53.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	82.9	82.9	74.0	15.8	0.0	0.0	0.0	0.0	15.0	0.0	53.2
LOS by Move:	A	F	F	E	B	A	A	A	A	B	A	D
HCM2k95thQ:	0	28	28	33	4	0	0	0	0	5	0	48

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.939
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 50.2
Optimal Cycle: 123 | Level Of Service: D

Street Name:	Cloverdale Blvd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1	0	1	0	0 0	0	0	1	0	0 1
Volume Module:												
Base Vol:	0	42	0	280	65	0	0	0	0	2	0	345
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	42	0	280	65	0	0	0	0	2	0	345
Added Vol:	0	80	175	265	62	0	0	0	0	123	0	319
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	122	175	545	127	0	0	0	0	125	0	664
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	122	175	545	127	0	0	0	0	125	0	664
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	122	175	545	127	0	0	0	0	125	0	664
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	122	175	545	127	0	0	0	0	125	0	664
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.92	0.92	0.95	1.00	1.00	1.00	1.00	1.00	0.78	1.00	0.85
Lanes:	0.00	0.41	0.59	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	718	1030	1805	1900	0	0	0	0	1490	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.17	0.17	0.30	0.07	0.00	0.00	0.00	0.00	0.08	0.00	0.41
Crit Moves:		****		****								****
Green/Cycle:	0.00	0.18	0.18	0.32	0.50	0.00	0.00	0.00	0.00	0.44	0.00	0.44
Volume/Cap:	0.00	0.94	0.94	0.94	0.13	0.00	0.00	0.00	0.00	0.19	0.00	0.94
Delay/Veh:	0.0	75.3	75.3	56.4	13.3	0.0	0.0	0.0	0.0	17.4	0.0	47.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	75.3	75.3	56.4	13.3	0.0	0.0	0.0	0.0	17.4	0.0	47.2
LOS by Move:	A	E	E	E	B	A	A	A	A	B	A	D
HCM2k95thQ:	0	24	24	36	4	0	0	0	0	5	0	40

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 121.5 Worst Case Level Of Service: F[1175.3]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced																				
Base Vol:	0	0	0	5	0	49	0	100	106	16	429	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	5	0	49	0	100	106	16	429	0								
Added Vol:	0	0	0	121	0	46	0	126	310	494	391	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	126	0	95	0	226	416	510	820	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	126	0	95	0	226	416	510	820	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	126	0	95	0	226	416	510	820	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	2274	2482	820	xxxx	xxxx	xxxxx	642	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	45	30	378	xxxx	xxxx	xxxxx	952	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	26	14	378	xxxx	xxxx	xxxxx	952	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	4.87	0.00	0.25	xxxx	xxxx	xxxx	0.54	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	1.0	xxxx	xxxx	xxxxx	3.3	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	17.7	xxxxx	xxxx	xxxxx	13.1	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	C	*	*	*	B	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	26	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	15.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	2048	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			1175.3			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 152.3 Worst Case Level Of Service: F[1468.0]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	0	0	60	0	124	201	1	299	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	0	0	60	0	124	201	1	299	0								
Added Vol:	0	0	0	121	0	46	0	126	314	563	395	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	121	0	106	0	250	515	564	694	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	121	0	106	0	250	515	564	694	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	121	0	106	0	250	515	564	694	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	2330	2587	694	xxxx	xxxx	xxxxx	765	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	41	26	446	xxxx	xxxx	xxxxx	857	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	19	9	446	xxxx	xxxx	xxxxx	857	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	6.22	0.00	0.24	xxxx	xxxx	xxxx	0.66	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.9	xxxx	xxxx	xxxxx	5.1	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	15.6	xxxxx	xxxx	xxxxx	16.9	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	C	*	*	*	C	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	19	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	15.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	2740	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			1468.0			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.794
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 23.4
Optimal Cycle: 57 | Level Of Service: C

Street Name:	101 S Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced												
Base Vol:	0	0	0	5	0	49	0	100	106	16	429	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	5	0	49	0	100	106	16	429	0
Added Vol:	0	0	0	121	0	46	0	126	310	494	391	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	126	0	95	0	226	416	510	820	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	126	0	95	0	226	416	510	820	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	126	0	95	0	226	416	510	820	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	126	0	95	0	226	416	510	820	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.71	1.00	0.84	1.00	0.91	0.91	0.95	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.35	0.65	1.00	1.00	0.00
Final Sat.:	0	0	0	1343	0	1599	0	611	1124	1805	1900	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.09	0.00	0.06	0.00	0.37	0.37	0.28	0.43	0.00
Crit Moves:				****				****		****		
Green/Cycle:	0.00	0.00	0.00	0.12	0.00	0.12	0.00	0.47	0.47	0.36	0.82	0.00
Volume/Cap:	0.00	0.00	0.00	0.79	0.00	0.50	0.00	0.79	0.79	0.79	0.53	0.00
Delay/Veh:	0.0	0.0	0.0	66.4	0.0	43.5	0.0	28.1	28.1	35.7	3.1	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	66.4	0.0	43.5	0.0	28.1	28.1	35.7	3.1	0.0
LOS by Move:	A	A	A	E	A	D	A	C	C	D	A	A
HCM2k95thQ:	0	0	0	11	0	7	0	32	32	23	14	0

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.899
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 32.0
Optimal Cycle: 93 | Level Of Service: C

Street Name:	101 S Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module:												
Base Vol:	0	0	0	0	0	60	0	124	201	1	299	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	60	0	124	201	1	299	0
Added Vol:	0	0	0	121	0	46	0	126	314	563	395	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	121	0	106	0	250	515	564	694	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	121	0	106	0	250	515	564	694	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	121	0	106	0	250	515	564	694	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	121	0	106	0	250	515	564	694	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.71	1.00	0.84	1.00	0.91	0.91	0.95	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.33	0.67	1.00	1.00	0.00
Final Sat.:	0	0	0	1343	0	1599	0	564	1163	1805	1900	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.09	0.00	0.07	0.00	0.44	0.44	0.31	0.37	0.00
Crit Moves:				****				****		****		
Green/Cycle:	0.00	0.00	0.00	0.10	0.00	0.10	0.00	0.49	0.49	0.35	0.84	0.00
Volume/Cap:	0.00	0.00	0.00	0.90	0.00	0.66	0.00	0.90	0.90	0.90	0.43	0.00
Delay/Veh:	0.0	0.0	0.0	93.0	0.0	53.3	0.0	35.6	35.6	46.9	2.2	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	93.0	0.0	53.3	0.0	35.6	35.6	46.9	2.2	0.0
LOS by Move:	A	A	A	F	A	D	A	D	D	D	A	A
HCM2k95thQ:	0	0	0	12	0	9	0	41	41	27	10	0

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange West Consolidated Roundabout

PM Buildout + Project B Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
WB South Interchange										
1L	L	677	2.1	0.521	12.0	LOS B	147	0.55	0.64	23.3
6T	T	726	2.1	0.469	2.5	LOS A	131	0.50	0.27	28.1
Approach		**1404**	**2.1**	**0.521**	**7.1**	**LOS A**	**147**	**0.52**	**0.45**	**25.3**
SB Offramp										
17L	L	134	2.2	0.436	18.2	LOS B	75	0.80	0.99	21.4
14T	T	17	5.6	0.439	8.4	LOS A	75	0.80	0.89	25.3
14R	R	83	2.4	0.437	10.1	LOS B	75	0.80	0.92	23.9
Approach		**235**	**2.6**	**0.437**	**14.6**	**LOS B**	**75**	**0.80**	**0.96**	**22.3**
SB Cloverdale Blvd										
15L	L	167	1.8	0.313	14.8	LOS B	55	0.84	0.86	22.2
12T	T	315	1.9	0.471	7.3	LOS A	135	0.93	0.82	25.1
12R	R	121	1.7	0.471	9.2	LOS A	135	0.93	0.88	24.3
Approach		**602**	**1.8**	**0.471**	**9.8**	**LOS A**	**135**	**0.90**	**0.84**	**24.0**
NB Cloverdale Blvd										
13L	L	167	1.8	0.650	23.2	LOS C	171	0.91	1.15	18.9
18T	T	71	1.4	0.648	14.8	LOS B	171	0.91	1.11	20.9
18R	R	126	2.4	0.651	16.4	LOS B	171	0.91	1.10	20.0
Approach		**364**	**1.9**	**0.650**	**19.2**	**LOS B**	**171**	**0.91**	**1.12**	**19.5**
All Vehicles		**2605**	**2.0**	**0.651**	**10.1**	**LOS B**	**171**	**0.69**	**0.68**	**23.7**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA INTERSECTION

Movement Summary

South Interchange West Consolidated Roundabout

WKD Buildout+Project B Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
WB South Interchange										
1L	L	709	2.0	0.441	11.6	LOS B	122	0.43	0.60	23.7
6T	T	615	2.0	0.456	2.5	LOS A	124	0.46	0.27	28.3
Approach		**1323**	**2.0**	**0.456**	**7.4**	**LOS A**	**124**	**0.44**	**0.45**	**25.4**
SB Offramp										
17L	L	128	2.3	0.410	17.3	LOS B	67	0.77	0.97	21.8
14T	T	18	5.3	0.413	7.5	LOS A	67	0.77	0.85	26.1
14R	R	94	2.1	0.410	9.2	LOS A	67	0.77	0.89	24.6
Approach		**242**	**2.5**	**0.410**	**13.4**	**LOS B**	**67**	**0.77**	**0.93**	**22.9**
SB Cloverdale Blvd										
15L	L	186	2.1	0.347	15.3	LOS B	62	0.84	0.87	21.9
12T	T	387	2.1	0.562	9.7	LOS A	189	0.96	0.98	24.2
12R	R	134	2.2	0.563	11.6	LOS B	189	0.96	0.99	22.9
Approach		**709**	**2.1**	**0.563**	**11.5**	**LOS B**	**189**	**0.93**	**0.96**	**23.3**
NB Cloverdale Blvd										
13L	L	128	2.3	0.648	26.7	LOS C	173	0.94	1.18	17.6
18T	T	61	1.6	0.649	18.4	LOS B	173	0.94	1.15	19.0
18R	R	123	1.6	0.651	19.9	LOS B	173	0.94	1.14	18.3
Approach		**313**	**1.9**	**0.650**	**22.4**	**LOS C**	**173**	**0.94**	**1.16**	**18.1**
All Vehicles		**2587**	**2.0**	**0.651**	**10.9**	**LOS B**	**189**	**0.67**	**0.72**	**23.5**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 355.5 Worst Case Level Of Service: F[709.9]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:	2007 Balanced																			
Base Vol:	371		0		18	0		0		0	63		42		0	0		74		5
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	371		0		18	0		0		0	63		42		0	0		74		5
Added Vol:	292		0		480	0		0		0	52		195		0	0		593		137
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	663		0		498	0		0		0	115		237		0	0		667		142
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	663		0		498	0		0		0	115		237		0	0		667		142
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	663		0		498	0		0		0	115		237		0	0		667		142
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	1205	1276			237	xxxx	xxxx	xxxxx			809	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	205	168			807	xxxx	xxxx	xxxxx			825	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	183	145			807	xxxx	xxxx	xxxxx			825	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	3.62	0.00			0.62	xxxx	xxxx	xxxx			0.14	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			4.3	xxxx	xxxx	xxxxx			0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			16.4	xxxxx	xxxx	xxxxx			10.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			C	*	*	*			B	*	*	*	*	*				
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	183	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	63.9	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	1231	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F		*		*	*		*		*	*		*		*	*		*		*
ApproachDel:	709.9					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 269.3 Worst Case Level Of Service: F[554.8]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	248		6		11	0		0		0	77		41		0	0		57		1
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	248		6		11	0		0		0	77		41		0	0		57		1
Added Vol:	292		0		595	0		0		0	52		195		0	0		666		137
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	540		6		606	0		0		0	129		236		0	0		723		138
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	540		6		606	0		0		0	129		236		0	0		723		138
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	540		6		606	0		0		0	129		236		0	0		723		138
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	1286	1355			236	xxxx	xxxx	xxxxx			861	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	183	151			808	xxxx	xxxx	xxxxx			789	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	160	126			808	xxxx	xxxx	xxxxx			789	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	3.37	0.05			0.75	xxxx	xxxx	xxxx			0.16	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			7.0	xxxx	xxxx	xxxxx			0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			21.5	xxxxx	xxxx	xxxxx			10.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			C	*	*	*			B	*	*	*	*	*				
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	160	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	52.2	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	1147	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F		*		*	*		*		*	*		*		*	*		*		*
ApproachDel:	554.8					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 1.057
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 63.6
Optimal Cycle: 180 | Level Of Service: E

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Volume Module:	2007 Balanced											
Base Vol:	371	0	18	0	0	0	63	42	0	0	74	5
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	371	0	18	0	0	0	63	42	0	0	74	5
Added Vol:	292	0	480	0	0	0	52	195	0	0	593	137
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	663	0	498	0	0	0	115	237	0	0	667	142
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	663	0	498	0	0	0	115	237	0	0	667	142
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	663	0	498	0	0	0	115	237	0	0	667	142
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	663	0	498	0	0	0	115	237	0	0	667	142
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.82	0.18
Final Sat.:	1343	0	1599	0	0	0	1805	1900	0	0	1529	325
Capacity Analysis Module:												
Vol/Sat:	0.49	0.00	0.31	0.00	0.00	0.00	0.06	0.12	0.00	0.00	0.44	0.44
Crit Moves:	****						****				****	
Green/Cycle:	0.47	0.00	0.47	0.00	0.00	0.00	0.06	0.47	0.00	0.00	0.41	0.41
Volume/Cap:	1.06	0.00	0.67	0.00	0.00	0.00	1.06	0.26	0.00	0.00	1.06	1.06
Delay/Veh:	78.6	0.0	22.9	0.0	0.0	0.0	149.5	16.0	0.0	0.0	78.0	78.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	78.6	0.0	22.9	0.0	0.0	0.0	149.5	16.0	0.0	0.0	78.0	78.0
LOS by Move:	E	A	C	A	A	A	F	B	A	A	E	E
HCM2k95thQ:	48	0	23	0	0	0	9	8	0	0	50	50

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.972
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 48.0
Optimal Cycle: 167 | Level Of Service: D

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Volume Module:												
Base Vol:	248	6	11	0	0	0	77	41	0	0	57	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	248	6	11	0	0	0	77	41	0	0	57	1
Added Vol:	292	0	595	0	0	0	52	195	0	0	666	137
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	540	6	606	0	0	0	129	236	0	0	723	138
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	540	6	606	0	0	0	129	236	0	0	723	138
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	540	6	606	0	0	0	129	236	0	0	723	138
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	540	6	606	0	0	0	129	236	0	0	723	138
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	0.92	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	0.99	0.01	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.84	0.16
Final Sat.:	1730	19	1599	0	0	0	1805	1900	0	0	1560	298
Capacity Analysis Module:												
Vol/Sat:	0.31	0.31	0.38	0.00	0.00	0.00	0.07	0.12	0.00	0.00	0.46	0.46
Crit Moves:			****				****				****	
Green/Cycle:	0.39	0.39	0.39	0.00	0.00	0.00	0.07	0.55	0.00	0.00	0.48	0.48
Volume/Cap:	0.80	0.80	0.97	0.00	0.00	0.00	0.97	0.23	0.00	0.00	0.97	0.97
Delay/Veh:	33.8	33.8	59.0	0.0	0.0	0.0	115.5	11.7	0.0	0.0	49.1	49.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	33.8	33.8	59.0	0.0	0.0	0.0	115.5	11.7	0.0	0.0	49.1	49.1
LOS by Move:	C	C	E	A	A	A	F	B	A	A	D	D
HCM2k95thQ:	29	29	40	0	0	0	9	7	0	0	44	44

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	Asti (Frontage) Rd							South Interchange							
Approach:	North Bound				South Bound			East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled			Stop Sign				Stop Sign			
Rights:	Include				Include			Include				Include			
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced														
Base Vol:	32	33		0		0	15	47	49	0	11	0	0	0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	32	33		0		0	15	47	49	0	11	0	0	0	
Added Vol:	239	56		3		30	50	343	322	134	219	4	148	33	
PasserByVol:	0	0		0		0	0	0	0	0	0	0	0	0	
Initial Fut:	271	89		3		30	65	390	371	134	230	4	148	33	
User Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Volume:	271	89		3		30	65	390	371	134	230	4	148	33	
Reduct Vol:	0	0		0		0	0	0	0	0	0	0	0	0	
FinalVolume:	271	89		3		30	65	390	371	134	230	4	148	33	
Critical Gap Module:															
Critical Gp:	4.1	xxxx	xxxxx			4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2	
FollowUpTim:	2.2	xxxx	xxxxx			2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3	
Capacity Module:															
Cnflict Vol:	455	xxxx	xxxxx			92	xxxx	xxxxx	1043	954	260	1135	1148	91	
Potent Cap.:	1116	xxxx	xxxxx			1515	xxxx	xxxxx	209	261	784	181	201	973	
Move Cap.:	1116	xxxx	xxxxx			1515	xxxx	xxxxx	0	182	784	41	140	973	
Volume/Cap:	0.24	xxxx	xxxx			0.02	xxxx	xxxx	xxxx	0.73	0.29	0.10	1.05	0.03	
Level Of Service Module:															
2Way95thQ:	1.0	xxxx	xxxxx			0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	9.3	xxxx	xxxxx			7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	A	*	*			A	*	*	*	*	*	*	*	*	
Movement:	LT -	LTR -	RT			LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx	xxxx	0	xxxxx	xxxx	156	xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.3	xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	188	xxxxx	
Shared LOS:	*	*	*			*	*	*	*	*	*	*	F	*	
ApproachDel:	xxxxxx					xxxxxx			xxxxxx			188.4			
ApproachLOS:	*					*			F			F			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	Asti (Frontage) Rd							South Interchange							
Approach:	North Bound				South Bound			East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled			Stop Sign				Stop Sign			
Rights:	Include				Include			Include				Include			
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:															
Base Vol:	26	19		0		0	18	42	37	0	11	0	0	0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	26	19		0		0	18	42	37	0	11	0	0	0	
Added Vol:	239	56		3		30	50	416	437	134	219	4	148	33	
PasserByVol:	0	0		0		0	0	0	0	0	0	0	0	0	
Initial Fut:	265	75		3		30	68	458	474	134	230	4	148	33	
User Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Volume:	265	75		3		30	68	458	474	134	230	4	148	33	
Reduct Vol:	0	0		0		0	0	0	0	0	0	0	0	0	
FinalVolume:	265	75		3		30	68	458	474	134	230	4	148	33	
Critical Gap Module:															
Critical Gp:	4.1	xxxx	xxxxx			4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2	
FollowUpTim:	2.2	xxxx	xxxxx			2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3	
Capacity Module:															
Cnflict Vol:	526	xxxx	xxxxx			78	xxxx	xxxxx	1054	965	297	1146	1193	77	
Potent Cap.:	1051	xxxx	xxxxx			1533	xxxx	xxxxx	206	257	747	178	189	990	
Move Cap.:	1051	xxxx	xxxxx			1533	xxxx	xxxxx	0	177	747	37	130	990	
Volume/Cap:	0.25	xxxx	xxxx			0.02	xxxx	xxxx	xxxx	0.76	0.31	0.11	1.14	0.03	
Level Of Service Module:															
2Way95thQ:	1.0	xxxx	xxxxx			0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	9.6	xxxx	xxxxx			7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	A	*	*			A	*	*	*	*	*	*	*	*	
Movement:	LT -	LTR -	RT			LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx	xxxx	0	xxxxx	xxxx	145	xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.2	xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	227	xxxxx	
Shared LOS:	*	*	*			*	*	*	*	*	*	*	F	*	
ApproachDel:	xxxxxx					xxxxxx			xxxxxx			227.0			
ApproachLOS:	*					*			F			F			

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.801
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 43.5
Optimal Cycle: 65 | Level Of Service: D

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0
Volume Module:	2007 Balanced											
Base Vol:	32	33	0	0	15	47	49	0	11	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	32	33	0	0	15	47	49	0	11	0	0	0
Added Vol:	239	56	3	30	50	343	322	134	219	4	148	33
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	271	89	3	30	65	390	371	134	230	4	148	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	271	89	3	30	65	390	371	134	230	4	148	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	271	89	3	30	65	390	371	134	230	4	148	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	271	89	3	30	65	390	371	134	230	4	148	33
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	0.95	0.87	0.87	0.95	0.91	0.91	0.98	0.98	0.98
Lanes:	1.00	0.97	0.03	1.00	0.14	0.86	1.00	0.37	0.63	0.02	0.80	0.18
Final Sat.:	1805	1829	62	1805	236	1418	1805	633	1086	40	1482	330
Capacity Analysis Module:												
Vol/Sat:	0.15	0.05	0.05	0.02	0.27	0.27	0.21	0.21	0.21	0.10	0.10	0.10
Crit Moves:	****				****				****	****		
Green/Cycle:	0.19	0.40	0.40	0.14	0.34	0.34	0.26	0.26	0.26	0.12	0.12	0.12
Volume/Cap:	0.80	0.12	0.12	0.12	0.80	0.80	0.78	0.80	0.80	0.80	0.80	0.80
Delay/Veh:	51.6	19.3	19.3	38.3	37.7	37.7	42.0	44.1	44.1	60.3	60.3	60.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.6	19.3	19.3	38.3	37.7	37.7	42.0	44.1	44.1	60.3	60.3	60.3
LOS by Move:	D	B	B	D	D	D	D	D	D	E	E	E
HCM2k95thQ:	19	4	4	2	26	26	20	20	20	15	15	15

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.900
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 51.7
Optimal Cycle: 100 | Level Of Service: D

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0
Volume Module:												
Base Vol:	26	19	0	0	18	42	37	0	11	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	26	19	0	0	18	42	37	0	11	0	0	0
Added Vol:	239	56	3	30	50	416	437	134	219	4	148	33
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	265	75	3	30	68	458	474	134	230	4	148	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	265	75	3	30	68	458	474	134	230	4	148	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	265	75	3	30	68	458	474	134	230	4	148	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	265	75	3	30	68	458	474	134	230	4	148	33
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.99	0.99	0.95	0.87	0.87	0.95	0.91	0.91	0.98	0.98	0.98
Lanes:	1.00	0.96	0.04	1.00	0.13	0.87	1.00	0.37	0.63	0.02	0.80	0.18
Final Sat.:	1805	1816	73	1805	213	1438	1805	633	1086	40	1482	330
Capacity Analysis Module:												
Vol/Sat:	0.15	0.04	0.04	0.02	0.32	0.32	0.26	0.21	0.21	0.10	0.10	0.10
Crit Moves:	****				****		****			****		
Green/Cycle:	0.16	0.37	0.37	0.15	0.35	0.35	0.29	0.29	0.29	0.11	0.11	0.11
Volume/Cap:	0.90	0.11	0.11	0.11	0.90	0.90	0.90	0.73	0.73	0.90	0.90	0.90
Delay/Veh:	69.4	20.9	20.9	37.1	47.5	47.5	52.3	37.0	37.0	80.4	80.4	80.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	69.4	20.9	20.9	37.1	47.5	47.5	52.3	37.0	37.0	80.4	80.4	80.4
LOS by Move:	E	C	C	D	D	D	D	D	D	F	F	F
HCM2k95thQ:	21	3	3	2	33	33	27	19	19	16	16	16

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

PM Buildout+ Project B Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	67	1.5	0.720	20.3	LOS C	170	0.90	1.14	19.5
16T	T	218	1.8	0.719	13.2	LOS B	170	0.90	1.09	21.8
16R	R	97	2.1	0.719	14.8	LOS B	170	0.90	1.11	20.9
Approach		**382**	**1.8**	**0.718**	**14.9**	**LOS B**	**170**	**0.90**	**1.10**	**21.1**
WB AV Resort										
1L	L	4	20.0	0.455	23.2	LOS C	91	0.89	1.04	19.3
6T	T	119	1.7	0.458	13.6	LOS B	91	0.89	0.99	21.6
6R	R	72	1.4	0.458	14.9	LOS B	91	0.89	0.99	20.8
Approach		**195**	**2.1**	**0.457**	**14.3**	**LOS B**	**91**	**0.89**	**0.99**	**21.2**
SB Asti										
17L	L	100	2.0	0.926	40.5	LOS D	402	1.00	1.58	14.1
14T	T	363	1.9	0.924	31.7	LOS C	402	1.00	1.58	14.3
14R	R	46	2.2	0.920	33.3	LOS C	402	1.00	1.58	13.9
Approach		**509**	**2.0**	**0.924**	**33.6**	**LOS C**	**402**	**1.00**	**1.58**	**14.2**
EB South Interchange										
5L	L	192	2.1	0.268	11.0	LOS B	58	0.33	0.60	24.2
2T	T	66	1.5	0.268	2.1	LOS A	58	0.33	0.23	29.4
2R	R	114	1.8	0.268	2.1	LOS A	58	0.33	0.23	29.4
Approach		**371**	**1.9**	**0.268**	**6.7**	**LOS A**	**58**	**0.33**	**0.42**	**26.2**
101 NB Offramp										
13L	L	698	2.0	0.593	15.8	LOS B	160	0.74	0.89	22.5
18T	T	321	1.9	0.592	5.7	LOS A	160	0.73	0.66	26.3
18R	R	203	2.0	0.594	6.8	LOS A	160	0.73	0.72	25.7
Approach		**1222**	**2.0**	**0.593**	**11.6**	**LOS B**	**160**	**0.73**	**0.80**	**23.7**
All Vehicles		**2679**	**1.9**	**0.926**	**15.8**	**LOS B**	**402**	**0.76**	**0.95**	**20.9**

Symbols which may appear in this table:

Movement Summary Page 1 of 2

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

Weekend Midday Buildout+ Project B Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	66	1.5	0.680	19.4	LOS B	154	0.89	1.11	19.9
16T	T	213	1.9	0.682	12.3	LOS B	154	0.89	1.06	22.4
16R	R	82	2.4	0.683	13.9	LOS B	154	0.89	1.08	21.4
Approach		**360**	**1.9**	**0.681**	**14.0**	**LOS B**	**154**	**0.89**	**1.07**	**21.6**
WB AV Resort										
1L	L	4	20.0	0.455	22.6	LOS C	89	0.88	1.03	19.5
6T	T	119	1.7	0.451	13.0	LOS B	89	0.88	0.98	22.0
6R	R	72	1.4	0.449	14.3	LOS B	89	0.88	0.98	21.2
Approach		**195**	**2.1**	**0.450**	**13.7**	**LOS B**	**89**	**0.88**	**0.98**	**21.6**
SB Asti										
17L	L	103	1.9	0.981	48.2	LOS D	546	1.00	1.80	12.7
14T	T	437	2.1	0.980	39.4	LOS D	546	1.00	1.80	12.5
14R	R	45	2.2	0.978	41.0	LOS D	546	1.00	1.80	12.2
Approach		**585**	**2.1**	**0.981**	**41.1**	**LOS D**	**546**	**1.00**	**1.80**	**12.5**
EB South Interchange										
5L	L	201	2.0	0.277	11.1	LOS B	61	0.34	0.60	24.1
2T	T	67	1.5	0.277	2.1	LOS A	61	0.34	0.23	29.4
2R	R	116	1.7	0.277	2.1	LOS A	61	0.34	0.23	29.4
Approach		**383**	**1.8**	**0.277**	**6.8**	**LOS A**	**61**	**0.34**	**0.43**	**26.1**
101 NB Offramp										
13L	L	568	1.9	0.595	16.1	LOS B	159	0.75	0.91	22.3
18T	T	440	2.0	0.595	5.9	LOS A	162	0.74	0.69	26.2
18R	R	203	2.0	0.595	7.0	LOS A	162	0.74	0.73	25.6
Approach		**1211**	**2.0**	**0.595**	**10.9**	**LOS B**	**162**	**0.74**	**0.80**	**23.9**
All Vehicles		**2734**	**2.0**	**0.981**	**17.4**	**LOS B**	**546**	**0.77**	**1.01**	**20.0**

Symbols which may appear in this table:

about:blank 1/9/2009

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	TAZ 2	25.00	26.00	25	26	51	1.2
	Zone 2 Subtotal					25	26	51	1.2
3		1.00	TAZ 3	4.00	2.00	4	2	6	0.1
	Zone 3 Subtotal					4	2	6	0.1
5		1.00	TAZ 5	6.00	3.00	6	3	9	0.2
	Zone 5 Subtotal					6	3	9	0.2
6		1.00	TAZ 6	27.00	14.00	27	14	41	0.9
	Zone 6 Subtotal					27	14	41	0.9
7	Jefferson Sp	1.00	TAZ 7	2.00	2.00	2	2	4	0.1
	Zone 7 Subtotal					2	2	4	0.1
8	12.4 (2/10)	1.00	TAZ 8	14.00	16.00	14	16	30	0.7
	Zone 8 Subtotal					14	16	30	0.7
9	12.4 (3/10)	1.00	TAZ 9	2.00	2.00	2	2	4	0.1
	Zone 9 Subtotal					2	2	4	0.1
12	Tall Trees	1.00	TAZ 12	25.00	15.00	25	15	40	0.9
	Zone 12 Subtotal					25	15	40	0.9
13	12.4 (9/10)	1.00	TAZ 13	13.00	7.00	13	7	20	0.5
	Zone 13 Subtotal					13	7	20	0.5
14	Downtown Com	1.00	TAZ 14	21.00	21.00	21	21	42	1.0
	Zone 14 Subtotal					21	21	42	1.0
16		1.00	TAZ 16	33.00	35.00	33	35	68	1.6
	Zone 16 Subtotal					33	35	68	1.6
17		1.00	TAZ 17	12.00	6.00	12	6	18	0.4
	Zone 17 Subtotal					12	6	18	0.4
18		1.00	TAZ 18	13.00	13.00	13	13	26	0.6
	Zone 18 Subtotal					13	13	26	0.6
19		1.00	TAZ 19	23.00	38.00	23	38	61	1.4
	Zone 19 Subtotal					23	38	61	1.4
20		1.00	TAZ 20	5.00	3.00	5	3	8	0.2

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	TAZ 2	25.00	26.00	25	26	51	1.1
	Zone 2 Subtotal					25	26	51	1.1
3		1.00	TAZ 3	4.00	2.00	4	2	6	0.1
	Zone 3 Subtotal					4	2	6	0.1
5		1.00	TAZ 5	6.00	3.00	6	3	9	0.2
	Zone 5 Subtotal					6	3	9	0.2
6		1.00	TAZ 6	27.00	14.00	27	14	41	0.9
	Zone 6 Subtotal					27	14	41	0.9
7	Jefferson Sp	1.00	TAZ 7	2.00	2.00	2	2	4	0.1
	Zone 7 Subtotal					2	2	4	0.1
8	12.4 (2/10)	1.00	TAZ 8	14.00	16.00	14	16	30	0.7
	Zone 8 Subtotal					14	16	30	0.7
9	12.4 (3/10)	1.00	TAZ 9	2.00	2.00	2	2	4	0.1
	Zone 9 Subtotal					2	2	4	0.1
12	Tall Trees	1.00	TAZ 12	25.00	15.00	25	15	40	0.9
	Zone 12 Subtotal					25	15	40	0.9
13	12.4 (9/10)	1.00	TAZ 13	13.00	7.00	13	7	20	0.4
	Zone 13 Subtotal					13	7	20	0.4
14	Downtown Com	1.00	TAZ 14	21.00	21.00	21	21	42	0.9
	Zone 14 Subtotal					21	21	42	0.9
16		1.00	TAZ 16	33.00	35.00	33	35	68	1.5
	Zone 16 Subtotal					33	35	68	1.5
17		1.00	TAZ 17	12.00	6.00	12	6	18	0.4
	Zone 17 Subtotal					12	6	18	0.4
18		1.00	TAZ 18	13.00	13.00	13	13	26	0.6
	Zone 18 Subtotal					13	13	26	0.6
19		1.00	TAZ 19	23.00	38.00	23	38	61	1.3
	Zone 19 Subtotal					23	38	61	1.3
20		1.00	TAZ 20	5.00	3.00	5	3	8	0.2

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 20 Subtotal					5	3	8	0.2
22		1.00	TAZ 22	109.00	112.00	109	112	221	5.1
	Zone 22 Subtotal					109	112	221	5.1
23		1.00	TAZ 23	33.00	35.00	33	35	68	1.6
	Zone 23 Subtotal					33	35	68	1.6
24	24 Vineyard	1.00	TAZ 24	16.00	10.00	16	10	26	0.6
	Zone 24 Subtotal					16	10	26	0.6
25	25 Westside	1.00	TAZ 25	15.00	9.00	15	9	24	0.6
	Zone 25 Subtotal					15	9	24	0.6
26		1.00	TAZ 26	30.00	33.00	30	33	63	1.5
	Zone 26 Subtotal					30	33	63	1.5
28	28 Citrus Ga	1.00	TAZ 28	23.00	20.00	23	20	43	1.0
	Zone 28 Subtotal					23	20	43	1.0
29		1.00	TAZ 29	14.00	13.00	14	13	27	0.6
	Zone 29 Subtotal					14	13	27	0.6
30		1.00	TAZ 30	17.00	25.00	17	25	42	1.0
	Zone 30 Subtotal					17	25	42	1.0
31		1.00	TAZ 31	46.00	51.00	46	51	97	2.2
	Zone 31 Subtotal					46	51	97	2.2
33		1.00	TAZ 33	18.00	10.00	18	10	28	0.6
	Zone 33 Subtotal					18	10	28	0.6
34		1.00	TAZ 34	1.00	1.00	1	1	2	0.0
	Zone 34 Subtotal					1	1	2	0.0
37		1.00	TAZ 37	54.00	27.00	54	27	81	1.9
	Zone 37 Subtotal					54	27	81	1.9
38	Casino Proje	1.00	Casino	0.00	0.00	0	0	0	0.0
39		1.00	TAZ 39	72.00	73.00	72	73	145	3.4
	Zone 39 Subtotal					72	73	145	3.4
40		1.00	TAZ 40	36.00	38.00	36	38	74	1.7
	Zone 40 Subtotal					36	38	74	1.7
42	42 Rancho de	1.00	TAZ 42	47.00	51.00	47	51	98	2.3
	Zone 42 Subtotal					47	51	98	2.3

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 20 Subtotal					5	3	8	0.2
22		1.00	TAZ 22	109.00	112.00	109	112	221	4.8
	Zone 22 Subtotal					109	112	221	4.8
23		1.00	TAZ 23	33.00	35.00	33	35	68	1.5
	Zone 23 Subtotal					33	35	68	1.5
24	24 Vineyard	1.00	TAZ 24	16.00	10.00	16	10	26	0.6
	Zone 24 Subtotal					16	10	26	0.6
25	25 Westside	1.00	TAZ 25	15.00	9.00	15	9	24	0.5
	Zone 25 Subtotal					15	9	24	0.5
26		1.00	TAZ 26	30.00	33.00	30	33	63	1.4
	Zone 26 Subtotal					30	33	63	1.4
28	28 Citrus Ga	1.00	TAZ 28	23.00	20.00	23	20	43	0.9
	Zone 28 Subtotal					23	20	43	0.9
29		1.00	TAZ 29	14.00	13.00	14	13	27	0.6
	Zone 29 Subtotal					14	13	27	0.6
30		1.00	TAZ 30	17.00	25.00	17	25	42	0.9
	Zone 30 Subtotal					17	25	42	0.9
31		1.00	TAZ 31	46.00	51.00	46	51	97	2.1
	Zone 31 Subtotal					46	51	97	2.1
33		1.00	TAZ 33	18.00	10.00	18	10	28	0.6
	Zone 33 Subtotal					18	10	28	0.6
34		1.00	TAZ 34	1.00	1.00	1	1	2	0.0
	Zone 34 Subtotal					1	1	2	0.0
37		1.00	TAZ 37	54.00	27.00	54	27	81	1.8
	Zone 37 Subtotal					54	27	81	1.8
38	Casino Proje	1.00	Casino	0.00	0.00	0	0	0	0.0
39		1.00	TAZ 39	72.00	73.00	72	73	145	3.2
	Zone 39 Subtotal					72	73	145	3.2
40		1.00	TAZ 40	36.00	38.00	36	38	74	1.6
	Zone 40 Subtotal					36	38	74	1.6
42	42 Rancho de	1.00	TAZ 42	47.00	51.00	47	51	98	2.1
	Zone 42 Subtotal					47	51	98	2.1

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
43		1.00	TAZ 43	53.00	67.00	53	67	120	2.8
	Zone 43 Subtotal					53	67	120	2.8
44		1.00	TAZ 44	167.00	185.00	167	185	352	8.1
	Zone 44 Subtotal					167	185	352	8.1
45		1.00	TAZ 45	7.00	38.00	7	38	45	1.0
	Zone 45 Subtotal					7	38	45	1.0
46		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 46 Subtotal					27	27	54	1.2
47		1.00	TAZ 47	9.00	9.00	9	9	18	0.4
	Zone 47 Subtotal					9	9	18	0.4
48		1.00	TAZ 48	10.00	51.00	10	51	61	1.4
	Zone 48 Subtotal					10	51	61	1.4
50		1.00	TAZ 50	8.00	5.00	8	5	13	0.3
	Zone 50 Subtotal					8	5	13	0.3
54		1.00	TAZ 54	29.00	21.00	29	21	50	1.2
	Zone 54 Subtotal					29	21	50	1.2
56		1.00	TAZ 56	4.00	3.00	4	3	7	0.2
	Zone 56 Subtotal					4	3	7	0.2
57		1.00	TAZ 57	4.00	3.00	4	3	7	0.2
	Zone 57 Subtotal					4	3	7	0.2
62		1.00	TAZ 62	4.00	2.00	4	2	6	0.1
	Zone 62 Subtotal					4	2	6	0.1
119		1.00	TAZ 19	23.00	38.00	23	38	61	1.4
	Zone 119 Subtotal					23	38	61	1.4
122		1.00	TAZ 22	110.00	112.00	110	112	222	5.1
	Zone 122 Subtotal					110	112	222	5.1
123		1.00	TAZ 23	33.00	36.00	33	36	69	1.6
	Zone 123 Subtotal					33	36	69	1.6
137		1.00	TAZ 37	53.00	26.00	53	26	79	1.8
	Zone 137 Subtotal					53	26	79	1.8
138	TAZ 38	1.00	TAZ 38	31.00	112.00	31	112	143	3.3

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
43		1.00	TAZ 43	53.00	67.00	53	67	120	2.6
	Zone 43 Subtotal					53	67	120	2.6
44		1.00	TAZ 44	167.00	185.00	167	185	352	7.7
	Zone 44 Subtotal					167	185	352	7.7
45		1.00	TAZ 45	7.00	38.00	7	38	45	1.0
	Zone 45 Subtotal					7	38	45	1.0
46		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 46 Subtotal					27	27	54	1.2
47		1.00	TAZ 47	9.00	9.00	9	9	18	0.4
	Zone 47 Subtotal					9	9	18	0.4
48		1.00	TAZ 48	10.00	51.00	10	51	61	1.3
	Zone 48 Subtotal					10	51	61	1.3
50		1.00	TAZ 50	8.00	5.00	8	5	13	0.3
	Zone 50 Subtotal					8	5	13	0.3
54		1.00	TAZ 54	29.00	21.00	29	21	50	1.1
	Zone 54 Subtotal					29	21	50	1.1
56		1.00	TAZ 56	4.00	3.00	4	3	7	0.2
	Zone 56 Subtotal					4	3	7	0.2
57		1.00	TAZ 57	4.00	3.00	4	3	7	0.2
	Zone 57 Subtotal					4	3	7	0.2
62		1.00	TAZ 62	4.00	2.00	4	2	6	0.1
	Zone 62 Subtotal					4	2	6	0.1
119		1.00	TAZ 19	23.00	38.00	23	38	61	1.3
	Zone 119 Subtotal					23	38	61	1.3
122		1.00	TAZ 22	110.00	112.00	110	112	222	4.8
	Zone 122 Subtotal					110	112	222	4.8
123		1.00	TAZ 23	33.00	36.00	33	36	69	1.5
	Zone 123 Subtotal					33	36	69	1.5
137		1.00	TAZ 37	53.00	26.00	53	26	79	1.7
	Zone 137 Subtotal					53	26	79	1.7
138	TAZ 38	1.00	TAZ 38	31.00	112.00	31	112	143	3.1

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 138 Subtotal					31	112	143	3.3
139		1.00	TAZ 39	72.00	72.00	72	72	144	3.3
	Zone 139 Subtotal					72	72	144	3.3
140		1.00	TAZ 40	36.00	38.00	36	38	74	1.7
	Zone 140 Subtotal					36	38	74	1.7
142		1.00	TAZ 42	48.00	51.00	48	51	99	2.3
	Zone 142 Subtotal					48	51	99	2.3
143		1.00	TAZ 43	53.00	66.00	53	66	119	2.8
	Zone 143 Subtotal					53	66	119	2.8
144		1.00	TAZ 44	167.00	184.00	167	184	351	8.1
	Zone 144 Subtotal					167	184	351	8.1
146		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 146 Subtotal					27	27	54	1.2
148		1.00	TAZ 48	10.00	51.00	10	51	61	1.4
	Zone 148 Subtotal					10	51	61	1.4
TOTAL						1741	1935	3676	85.0

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 138 Subtotal					31	112	143	3.1
139		1.00	TAZ 39	72.00	72.00	72	72	144	3.1
	Zone 139 Subtotal					72	72	144	3.1
140		1.00	TAZ 40	36.00	38.00	36	38	74	1.6
	Zone 140 Subtotal					36	38	74	1.6
142		1.00	TAZ 42	48.00	51.00	48	51	99	2.2
	Zone 142 Subtotal					48	51	99	2.2
143		1.00	TAZ 43	53.00	66.00	53	66	119	2.6
	Zone 143 Subtotal					53	66	119	2.6
144		1.00	TAZ 44	167.00	184.00	167	184	351	7.7
	Zone 144 Subtotal					167	184	351	7.7
146		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 146 Subtotal					27	27	54	1.2
148		1.00	TAZ 48	10.00	51.00	10	51	61	1.3
	Zone 148 Subtotal					10	51	61	1.3
TOTAL						1741	1935	3676	80.2

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt C

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	344.00	305.00	344	305	649	15.0
	Zone 38 Subtotal					344	305	649	15.0
TOTAL						344	305	649	15.0

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt C

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	504.00	402.00	504	402	906	19.8
	Zone 38 Subtotal					504	402	906	19.8
TOTAL						504	402	906	19.8

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.498
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	13.3
Optimal Cycle:	22	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1	0 1	0 1	0	1	0 0	1!	0 0	0 0	1!	0 0
Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm												
Base Vol:	47	317	71	34	212	15	16	35	69	109	36	38
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	52	349	78	37	233	17	18	39	76	120	40	42
Added Vol:	74	101	88	21	78	0	0	14	69	106	14	28
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	126	450	166	58	311	17	18	53	145	226	54	70
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	126	450	166	58	311	17	18	53	145	226	54	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	126	450	166	58	311	17	18	53	145	226	54	70
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	126	450	166	58	311	17	18	53	145	226	54	70
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.74	0.74	0.85	0.78	0.78	0.78	0.88	0.88	0.88	0.69	0.69	0.69
Lanes:	0.44	1.56	1.00	0.30	1.61	0.09	0.08	0.24	0.68	0.65	0.15	0.20
Final Sat.:	618	2212	1615	450	2398	127	137	408	1126	848	201	262
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.10	0.13	0.13	0.13	0.13	0.13	0.13	0.27	0.27	0.27
Crit Moves:		****									****	
Green/Cycle:	0.41	0.41	0.41	0.41	0.41	0.41	0.53	0.53	0.53	0.53	0.53	0.53
Volume/Cap:	0.50	0.50	0.25	0.32	0.32	0.32	0.24	0.24	0.24	0.50	0.50	0.50
Delay/Veh:	15.7	15.7	13.9	14.2	14.2	14.2	8.8	8.8	8.8	10.9	10.9	10.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.7	15.7	13.9	14.2	14.2	14.2	8.8	8.8	8.8	10.9	10.9	10.9
LOS by Move:	B	B	B	B	B	B	A	A	A	B	B	B
HCM2kAvgQ:	5	5	2	3	3	3	3	3	3	5	5	5

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.478
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	13.1
Optimal Cycle:	21	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1	0 1	0 1	0	1	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	64	291	99	39	291	17	18	39	64	99	40	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	291	99	39	291	17	18	39	64	99	40	39
Added Vol:	74	102	94	21	79	0	0	14	69	114	14	28
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	138	393	193	60	370	17	18	53	133	213	54	67
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	138	393	193	60	370	17	18	53	133	213	54	67
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	138	393	193	60	370	17	18	53	133	213	54	67
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	138	393	193	60	370	17	18	53	133	213	54	67
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.70	0.70	0.85	0.80	0.80	0.80	0.88	0.88	0.88	0.70	0.70	0.70
Lanes:	0.52	1.48	1.00	0.27	1.65	0.08	0.09	0.26	0.65	0.64	0.16	0.20
Final Sat.:	687	1956	1615	406	2503	115	148	434	1090	852	216	268
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.12	0.15	0.15	0.15	0.12	0.12	0.12	0.25	0.25	0.25
Crit Moves:		****									****	
Green/Cycle:	0.42	0.42	0.42	0.42	0.42	0.42	0.52	0.52	0.52	0.52	0.52	0.52
Volume/Cap:	0.48	0.48	0.28	0.35	0.35	0.35	0.23	0.23	0.23	0.48	0.48	0.48
Delay/Veh:	15.1	15.1	13.6	14.0	14.0	14.0	9.2	9.2	9.2	11.1	11.1	11.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.1	15.1	13.6	14.0	14.0	14.0	9.2	9.2	9.2	11.1	11.1	11.1
LOS by Move:	B	B	B	B	B	B	A	A	A	B	B	B
HCM2kAvgQ:	5	5	3	4	4	4	2	2	2	5	5	5

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: E[47.9]

Street Name:	Cloverdale Blvd									Lake St										
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	466	95	46	399	0	0	0	0	0	61	0	34							
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00							
Initial Bse:	0	466	95	46	399	0	0	0	0	0	61	0	34							
Added Vol:	0	262	57	1	253	0	0	0	0	0	46	0	0							
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0							
Initial Fut:	0	728	152	47	652	0	0	0	0	0	107	0	34							
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00							
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00							
PHF Volume:	0	728	152	47	652	0	0	0	0	0	107	0	34							
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0							
FinalVolume:	0	728	152	47	652	0	0	0	0	0	107	0	34							
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.8	xxxx	6.9							
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx	3.3							
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	880	xxxx	xxxxx	xxxx	xxxx	xxxxx		1224	xxxx	440							
Potent Cap.:	xxxx	xxxx	xxxxx	777	xxxx	xxxxx	xxxx	xxxx	xxxxx		174	xxxx	570							
Move Cap.:	xxxx	xxxx	xxxxx	777	xxxx	xxxxx	xxxx	xxxx	xxxxx		166	xxxx	570							
Volume/Cap:	xxxx	xxxx	xxxx	0.06	xxxx	xxxx	xxxx	xxxx	xxxx		0.64	xxxx	0.06							
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx		3.6	xxxx	0.2							
Control Del:	xxxxx	xxxx	xxxxx	9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx		59.4	xxxx	11.7							
LOS by Move:	*	*	*	A	*	*	*	*	*		F	*	B							
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shared LOS:	*	*	*	A	*	*	*	*	*		*	*	*							
ApproachDel:	xxxxxx			xxxxxx			xxxxxx				47.9									
ApproachLOS:	*			*			*				E									

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 5.1 Worst Case Level Of Service: F[52.1]

Street Name:	Cloverdale Blvd									Lake St										
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	432	78	40	432	0	0	0	0	0	78	0	40							
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00							
Initial Bse:	0	432	78	40	432	0	0	0	0	0	78	0	40							
Added Vol:	0	270	57	1	262	0	0	0	0	0	46	0	0							
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0							
Initial Fut:	0	702	135	41	694	0	0	0	0	0	124	0	40							
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00							
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00							
PHF Volume:	0	702	135	41	694	0	0	0	0	0	124	0	40							
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0							
FinalVolume:	0	702	135	41	694	0	0	0	0	0	124	0	40							
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.8	xxxx	6.9							
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx	3.3							
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	837	xxxx	xxxxx	xxxx	xxxx	xxxxx		1199	xxxx	419							
Potent Cap.:	xxxx	xxxx	xxxxx	806	xxxx	xxxxx	xxxx	xxxx	xxxxx		181	xxxx	589							
Move Cap.:	xxxx	xxxx	xxxxx	806	xxxx	xxxxx	xxxx	xxxx	xxxxx		174	xxxx	589							
Volume/Cap:	xxxx	xxxx	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx		0.71	xxxx	0.07							
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx		4.4	xxxx	0.2							
Control Del:	xxxxx	xxxx	xxxxx	9.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx		65.2	xxxx	11.6							
LOS by Move:	*	*	*	A	*	*	*	*	*		F	*	B							
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shared LOS:	*	*	*	A	*	*	*	*	*		*	*	*							
ApproachDel:	xxxxxx			xxxxxx			xxxxxx				52.1									
ApproachLOS:	*			*			*				F									

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.606
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	18.0
Optimal Cycle:	32	Level Of Service:	B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm												
Base Vol:	7	382	52	97	370	2	1	12	15	104	21	178
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	8	420	57	107	407	2	1	13	17	114	23	196
Added Vol:	22	143	241	165	122	12	14	3	26	256	5	163
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	30	563	298	272	529	14	15	16	43	370	28	359
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	30	563	298	272	529	14	15	16	43	370	28	359
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	30	563	298	272	529	14	15	16	43	370	28	359
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	30	563	298	272	529	14	15	16	43	370	28	359
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.90	0.90	0.95	0.95	0.95	0.91	0.91	0.91	0.96	0.96	0.85
Lanes:	1.00	1.31	0.69	1.00	1.95	0.05	0.20	0.22	0.58	1.86	0.14	1.00
Final Sat.:	1805	2238	1185	1805	3502	94	355	381	999	3377	256	1615
Capacity Analysis Module:												
Vol/Sat:	0.02	0.25	0.25	0.15	0.15	0.15	0.04	0.04	0.04	0.11	0.11	0.22
Crit Moves:		****		****					****	****		
Green/Cycle:	0.07	0.42	0.42	0.25	0.60	0.60	0.07	0.07	0.07	0.18	0.18	0.43
Volume/Cap:	0.25	0.61	0.61	0.61	0.25	0.25	0.61	0.61	0.61	0.61	0.61	0.52
Delay/Veh:	32.2	16.8	16.8	25.7	6.7	6.7	40.1	40.1	40.1	28.0	28.0	15.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	32.2	16.8	16.8	25.7	6.7	6.7	40.1	40.1	40.1	28.0	28.0	15.4
LOS by Move:	C	B	B	C	A	A	D	D	D	C	C	B
HCM2kAvgQ:	1	8	8	6	3	3	3	3	3	5	5	6

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec):	70	Critical Vol./Cap.(X):	0.708
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	26.3
Optimal Cycle:	41	Level Of Service:	C

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	0 0	1! 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	68	6	88	0	8	9	5	255	50	80	230	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	6	88	0	8	9	5	255	50	80	230	0
Added Vol:	22	143	242	174	122	12	14	3	26	257	5	170
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	90	149	330	174	130	21	19	258	76	337	235	170
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	149	330	174	130	21	19	258	76	337	235	170
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	90	149	330	174	130	21	19	258	76	337	235	170
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	90	149	330	174	130	21	19	258	76	337	235	170
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.85	0.85	0.95	0.93	0.93	0.97	0.97	0.97	0.97	0.97	0.85
Lanes:	1.00	1.00	1.00	1.00	1.72	0.28	0.05	0.73	0.22	1.18	0.82	1.00
Final Sat.:	1805	1619	1619	1805	3043	492	99	1344	396	2174	1516	1615
Capacity Analysis Module:												
Vol/Sat:	0.05	0.09	0.20	0.10	0.04	0.04	0.19	0.19	0.19	0.16	0.16	0.11
Crit Moves:			****	****			****			****		
Green/Cycle:	0.23	0.29	0.29	0.14	0.20	0.20	0.27	0.27	0.27	0.22	0.22	0.36
Volume/Cap:	0.22	0.32	0.71	0.71	0.22	0.22	0.71	0.71	0.71	0.71	0.71	0.30
Delay/Veh:	22.2	19.7	25.7	38.0	23.8	23.8	27.7	27.7	27.7	28.2	28.2	16.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	22.2	19.7	25.7	38.0	23.8	23.8	27.7	27.7	27.7	28.2	28.2	16.6
LOS by Move:	C	B	C	D	C	C	C	C	C	C	C	B
HCM2kAvgQ:	2	3	8	5	2	2	8	8	8	7	7	3

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.3 Worst Case Level Of Service: C[17.7]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm																				
Base Vol:	0	0	0	4	0	24	0	43	97	25	345	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	4	0	24	0	43	97	25	345	0								
Added Vol:	0	0	0	36	0	53	0	95	314	133	371	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	40	0	77	0	138	411	158	716	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	40	0	77	0	138	411	158	716	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	40	0	77	0	138	411	158	716	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1101	1581	358	xxxx	xxxx	xxxxx	549	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	209	110	644	xxxx	xxxx	xxxxx	1031	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	185	93	644	xxxx	xxxx	xxxxx	1031	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.22	0.00	0.12	xxxx	xxxx	xxxx	0.15	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.5	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	29.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx								
LOS by Move:	*	*	*	D	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT																			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	644	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	11.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	B	*	*	*	*	*	*								
ApproachDel:	xxxxxx			17.7			xxxxxx			xxxxxx										
ApproachLOS:	*			C			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.6 Worst Case Level Of Service: C[16.7]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module:																				
Base Vol:	0	0	0	3	0	23	0	42	117	19	176	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	3	0	23	0	42	117	19	176	0								
Added Vol:	0	0	0	47	0	53	0	100	319	154	379	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	50	0	76	0	142	436	173	555	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	50	0	76	0	142	436	173	555	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	50	0	76	0	142	436	173	555	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	972	1479	278	xxxx	xxxx	xxxxx	578	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	254	127	726	xxxx	xxxx	xxxxx	1006	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	220	105	726	xxxx	xxxx	xxxxx	1006	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.23	0.00	0.10	xxxx	xxxx	xxxx	0.17	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	26.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.3	xxxx	xxxxx								
LOS by Move:	*	*	*	D	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT																			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	726	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.5	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	B	*	*	*	*	*	*								
ApproachDel:	xxxxxx			16.7			xxxxxx			xxxxxx										
ApproachLOS:	*			C			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 25.9 Worst Case Level Of Service: E[42.3]

Street Name:	US 101 North Ramps												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm																				
Base Vol:	272		0		55	0		0		0	23		15		0	0		57		6
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	272		0		55	0		0		0	23		15		0	0		57		6
Added Vol:	280		0		167	0		0		0	47		85		0	0		223		54
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	552		0		222	0		0		0	70		100		0	0		280		60
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	552		0		222	0		0		0	70		100		0	0		280		60
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	552		0		222	0		0		0	70		100		0	0		280		60
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	380	580			50	xxxx	xxxx	xxxxx			340	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	600	428			1014	xxxx	xxxx	xxxxx			1230	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	574	404			1014	xxxx	xxxx	xxxxx			1230	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.96	0.00			0.22	xxxx	xxxx	xxxx			0.06	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.8	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			9.5	xxxxx	xxxx	xxxxx			8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT		
Shared Cap.:	574	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	13.1	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	55.4	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F	*		*		*	*		*		*	*		*		*	*		*	
ApproachDel:		42.3				xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:		E				*					*					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 13.4 Worst Case Level Of Service: C[24.1]

Street Name:	US 101 North Ramps												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module:																				
Base Vol:	144		0		27	0		0		0	26		20		0	0		58		8
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	144		0		27	0		0		0	26		20		0	0		58		8
Added Vol:	280		0		210	0		0		0	47		101		0	0		253		60
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	424		0		237	0		0		0	73		121		0	0		311		68
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	424		0		237	0		0		0	73		121		0	0		311		68
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	424		0		237	0		0		0	73		121		0	0		311		68
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	423	646			61	xxxx	xxxx	xxxxx			379	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	565	393			999	xxxx	xxxx	xxxxx			1191	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	538	369			999	xxxx	xxxx	xxxxx			1191	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.79	0.00			0.24	xxxx	xxxx	xxxx			0.06	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.9	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			9.7	xxxxx	xxxx	xxxxx			8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT		
Shared Cap.:	538	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	7.4	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	32.1	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	D	*		*		*	*		*		*	*		*		*	*		*	
ApproachDel:		24.1				xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:		C				*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.577
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 20.9
Optimal Cycle: 31 | Level Of Service: C

Street Name:	US 101 North Ramps						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm												
Base Vol:	272	0	55	0	0	0	23	15	0	0	57	6
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	272	0	55	0	0	0	23	15	0	0	57	6
Added Vol:	280	0	167	0	0	0	47	85	0	0	223	54
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	552	0	222	0	0	0	70	100	0	0	280	60
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	552	0	222	0	0	0	70	100	0	0	280	60
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	552	0	222	0	0	0	70	100	0	0	280	60
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	552	0	222	0	0	0	70	100	0	0	280	60
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.85	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.93	0.93
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	2.00	0.00	0.00	1.65	0.35
Final Sat.:	1357	0	1615	0	0	0	1805	3610	0	0	2896	620
Capacity Analysis Module:												
Vol/Sat:	0.41	0.00	0.14	0.00	0.00	0.00	0.04	0.03	0.00	0.00	0.10	0.10
Crit Moves:	****						****				****	
Green/Cycle:	0.71	0.00	1.41	0.00	0.00	0.00	0.07	0.23	0.00	0.00	0.17	0.17
Volume/Cap:	0.58	0.00	0.10	0.00	0.00	0.00	0.58	0.12	0.00	0.00	0.58	0.58
Delay/Veh:	8.2	0.0	9.8	0.0	0.0	0.0	52.0	30.2	0.0	0.0	39.8	39.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.2	0.0	9.8	0.0	0.0	0.0	52.0	30.2	0.0	0.0	39.8	39.8
LOS by Move:	A	A	A	A	A	A	D	C	A	A	D	D
HCM2k95thQ:	17	0	0	0	0	0	6	3	0	0	11	11

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.490
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 20.1
Optimal Cycle: 27 | Level Of Service: C

Street Name:	US 101 North Ramps						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	144	0	27	0	0	0	26	20	0	0	58	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	144	0	27	0	0	0	26	20	0	0	58	8
Added Vol:	280	0	210	0	0	0	47	101	0	0	253	60
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	424	0	237	0	0	0	73	121	0	0	311	68
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	424	0	237	0	0	0	73	121	0	0	311	68
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	424	0	237	0	0	0	73	121	0	0	311	68
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	424	0	237	0	0	0	73	121	0	0	311	68
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.85	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.92	0.92
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	2.00	0.00	0.00	1.64	0.36
Final Sat.:	1357	0	1615	0	0	0	1805	3610	0	0	2882	630
Capacity Analysis Module:												
Vol/Sat:	0.31	0.00	0.15	0.00	0.00	0.00	0.04	0.03	0.00	0.00	0.11	0.11
Crit Moves:	****						****				****	
Green/Cycle:	0.64	0.00	1.27	0.00	0.00	0.00	0.08	0.30	0.00	0.00	0.22	0.22
Volume/Cap:	0.49	0.00	0.12	0.00	0.00	0.00	0.49	0.11	0.00	0.00	0.49	0.49
Delay/Veh:	10.0	0.0	4.5	0.0	0.0	0.0	46.4	25.2	0.0	0.0	34.6	34.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.0	0.0	4.5	0.0	0.0	0.0	46.4	25.2	0.0	0.0	34.6	34.6
LOS by Move:	B	A	A	A	A	A	D	C	A	A	C	C
HCM2k95thQ:	14	0	0	0	0	0	6	3	0	0	11	11

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.9 Worst Case Level Of Service: C[15.3]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	32	45		0		0	27		26		69		0		6		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	32	45		0		0	27		26		69		0		6		0		0	
Added Vol:	230	96		0		0	80		47		60		0		192		0		0	
PasserByVol:	0	0		0		0	0		0		0		0		0		0		0	
Initial Fut:	262	141		0		0	107		73		129		0		198		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	262	141		0		0	107		73		129		0		198		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	262	141		0		0	107		73		129		0		198		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	180	xxxx	xxxxx	xxxx	xxxx	xxxxx					772	xxxx			107	xxxx	xxxx	xxxxx		
Potent Cap.:	1408	xxxx	xxxxx	xxxx	xxxx	xxxxx					371	xxxx			953	xxxx	xxxx	xxxxx		
Move Cap.:	1408	xxxx	xxxxx	xxxx	xxxx	xxxxx					318	xxxx			953	xxxx	xxxx	xxxxx		
Volume/Cap:	0.19	xxxx	xxxx	xxxx	xxxx	xxxx					0.41	xxxx			0.21	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx					1.9	xxxx			0.8	xxxx	xxxx	xxxxx		
Control Del:	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					23.9	xxxx			9.8	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*					C	*			A	*	*	*		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*					*	*	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx							15.3					xxxxxx				
ApproachLOS:	*			*							C					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.4 Worst Case Level Of Service: B[13.1]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	11	28		0		0	26		28		32		0		10		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	11	28		0		0	26		28		32		0		10		0		0	
Added Vol:	266	96		0		0	80		47		60		0		251		0		0	
PasserByVol:	0	0		0		0	0		0		0		0		0		0		0	
Initial Fut:	277	124		0		0	106		75		92		0		261		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	277	124		0		0	106		75		92		0		261		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	277	124		0		0	106		75		92		0		261		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	181	xxxx	xxxxx	xxxx	xxxx	xxxxx					784	xxxx			106	xxxx	xxxx	xxxxx		
Potent Cap.:	1407	xxxx	xxxxx	xxxx	xxxx	xxxxx					365	xxxx			954	xxxx	xxxx	xxxxx		
Move Cap.:	1407	xxxx	xxxxx	xxxx	xxxx	xxxxx					309	xxxx			954	xxxx	xxxx	xxxxx		
Volume/Cap:	0.20	xxxx	xxxx	xxxx	xxxx	xxxx					0.30	xxxx			0.27	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx					1.2	xxxx			1.1	xxxx	xxxx	xxxxx		
Control Del:	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					21.5	xxxx			10.2	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*					C	*			B	*	*	*		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*					*	*	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx							13.1					xxxxxx				
ApproachLOS:	*			*							B					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 10.2 Worst Case Level Of Service: D[30.5]

Street Name:	Asti (Frontage) Rd								Project Access							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	0	69		0		0	37		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	69		0		0	37		0		0	0		0		0	0		0	
Added Vol:	0	156		217		127	110		0		0	0		0		192	0		113	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	225		217		127	147		0		0	0		0		192	0		113	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	225		217		127	147		0		0	0		0		192	0		113	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	225		217		127	147		0		0	0		0		192	0		113	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		442	xxxx		xxxxx		xxxx	xxxx		xxxxx		735	735		334	
Potent Cap.:	xxxx	xxxx		xxxxx		1129	xxxx		xxxxx		xxxx	xxxx		xxxxx		390	350		713	
Move Cap.:	xxxx	xxxx		xxxxx		1129	xxxx		xxxxx		xxxx	xxxx		xxxxx		354	307		713	
Volume/Cap:	xxxx	xxxx		xxxx		0.11	xxxx		xxxx		xxxx	xxxx		xxxx		0.54	0.00		0.16	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.4	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		8.6	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	435		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.4	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	5.3		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.6	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	30.5		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	D		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						30.5			
ApproachLOS:	*					*					*						D			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 41.4 Worst Case Level Of Service: F[124.6]

Street Name:	Asti (Frontage) Rd								Project Access							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	40		0		0	37		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	40		0		0	37		0		0	0		0		0	0		0	
Added Vol:	0	156		318		186	110		0		0	0		0		253	0		149	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	196		318		186	147		0		0	0		0		253	0		149	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	196		318		186	147		0		0	0		0		253	0		149	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	196		318		186	147		0		0	0		0		253	0		149	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		514	xxxx		xxxxx		xxxx	xxxx		xxxxx		874	874		355	
Potent Cap.:	xxxx	xxxx		xxxxx		1062	xxxx		xxxxx		xxxx	xxxx		xxxxx		323	290		693	
Move Cap.:	xxxx	xxxx		xxxxx		1062	xxxx		xxxxx		xxxx	xxxx		xxxxx		274	234		693	
Volume/Cap:	xxxx	xxxx		xxxx		0.18	xxxx		xxxx		xxxx	xxxx		xxxx		0.92	0.00		0.21	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.6	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		9.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	354		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.6	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	15.7		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		9.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	125		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	F		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						124.6			
ApproachLOS:	*					*					*						F			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.358
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 19.2
Optimal Cycle: 22 | Level Of Service: B

Street Name:	Asti (Frontage) Rd						Project Access					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1	0	1	1	0	1	0	0	1	0	0	0	1
Volume Module:	2007 Balanced											
Base Vol:	0	69	0	0	37	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	69	0	0	37	0	0	0	0	0	0	0
Added Vol:	0	156	217	127	110	0	0	0	0	192	0	113
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	225	217	127	147	0	0	0	0	192	0	113
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	225	217	127	147	0	0	0	0	192	0	113
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	225	217	127	147	0	0	0	0	192	0	113
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	225	217	127	147	0	0	0	0	192	0	113
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.85	0.95	1.00	1.00	1.00	1.00	1.00	0.77	1.00	0.85
Lanes:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1900	1615	1805	1900	0	0	0	0	1461	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.12	0.13	0.07	0.08	0.00	0.00	0.00	0.00	0.13	0.00	0.07
Crit Moves:			****	****						****		
Green/Cycle:	0.00	0.38	0.38	0.59	0.57	0.00	0.00	0.00	0.00	0.37	0.00	0.37
Volume/Cap:	0.00	0.32	0.36	0.18	0.14	0.00	0.00	0.00	0.00	0.36	0.00	0.19
Delay/Veh:	0.0	22.4	22.9	9.5	10.0	0.0	0.0	0.0	0.0	23.4	0.0	21.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	22.4	22.9	9.5	10.0	0.0	0.0	0.0	0.0	23.4	0.0	21.7
LOS by Move:	A	C	C	A	A	A	A	A	A	C	A	C
HCM2k95thQ:	0	10	10	4	4	0	0	0	0	9	0	5

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.503
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 20.0
Optimal Cycle: 27 | Level Of Service: B

Street Name:	Asti (Frontage) Rd						Project Access					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1	0	1	1	0	1	0	0	1	0	0	0	1
Volume Module:												
Base Vol:	0	40	0	0	37	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	40	0	0	37	0	0	0	0	0	0	0
Added Vol:	0	156	318	186	110	0	0	0	0	253	0	149
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	196	318	186	147	0	0	0	0	253	0	149
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	196	318	186	147	0	0	0	0	253	0	149
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	196	318	186	147	0	0	0	0	253	0	149
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	196	318	186	147	0	0	0	0	253	0	149
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.85	0.95	1.00	1.00	1.00	1.00	1.00	0.77	1.00	0.85
Lanes:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1900	1615	1805	1900	0	0	0	0	1461	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.10	0.20	0.10	0.08	0.00	0.00	0.00	0.00	0.17	0.00	0.09
Crit Moves:			****	****						****		
Green/Cycle:	0.00	0.39	0.39	0.62	0.60	0.00	0.00	0.00	0.00	0.34	0.00	0.34
Volume/Cap:	0.00	0.26	0.50	0.24	0.13	0.00	0.00	0.00	0.00	0.50	0.00	0.27
Delay/Veh:	0.0	20.9	23.7	8.7	8.9	0.0	0.0	0.0	0.0	26.8	0.0	24.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	20.9	23.7	8.7	8.9	0.0	0.0	0.0	0.0	26.8	0.0	24.0
LOS by Move:	A	C	C	A	A	A	A	A	A	C	A	C
HCM2k95thQ:	0	8	15	5	4	0	0	0	0	13	0	7

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: C[15.7]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	0	66		16		2	35		0		0	0		0		27	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	66		16		2	35		0		0	0		0		27	0		3	
Added Vol:	0	347		0		0	357		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	413		16		2	392		0		0	0		0		27	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	413		16		2	392		0		0	0		0		27	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	413		16		2	392		0		0	0		0		27	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		429	xxxx		xxxxx		xxxx	xxxx		xxxxx		817	817		421	
Potent Cap.:	xxxx	xxxx		xxxxx		1141	xxxx		xxxxx		xxxx	xxxx		xxxxx		349	313		637	
Move Cap.:	xxxx	xxxx		xxxxx		1141	xxxx		xxxxx		xxxx	xxxx		xxxxx		348	313		637	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		0.08	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		8.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	365		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	0.3		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	15.7		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	C		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						15.7			
ApproachLOS:	*					*					*						C			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: B[11.2]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Volume Module:																				
Base Vol:	0	37		2		1	36		0		0	0		0		0	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	37		2		1	36		0		0	0		0		0	0		3	
Added Vol:	0	447		0		0	418		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	484		2		1	454		0		0	0		0		0	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	484		2		1	454		0		0	0		0		0	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	484		2		1	454		0		0	0		0		0	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		486	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		485	
Potent Cap.:	xxxx	xxxx		xxxxx		1087	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		586	
Move Cap.:	xxxx	xxxx		xxxxx		1087	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		586	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		xxxx	xxxx		0.01	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		0.0	
Control Del:	xxxxx	xxxx		xxxxx		8.3	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		11.2	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		B	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.3	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						11.2			
ApproachLOS:	*					*					*						B			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.8 Worst Case Level Of Service: C[18.5]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm																
Base Vol:	177	343	0	0	135	47	33	0	71	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	177	343	0	0	135	47	33	0	71	0	0	0				
Added Vol:	78	322	0	0	252	9	10	0	72	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	255	665	0	0	387	56	43	0	143	0	0	0				
User Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	281	732	0	0	426	62	47	0	157	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	281	732	0	0	426	62	47	0	157	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	487	xxxx	xxxxx	xxxx	xxxx	xxxxx	1734	1734	426	xxxx	xxxx	xxxxx				
Potent Cap.:	1086	xxxx	xxxxx	xxxx	xxxx	xxxxx	91	82	633	xxxx	xxxx	xxxxx				
Move Cap.:	1086	xxxx	xxxxx	xxxx	xxxx	xxxxx	73	61	633	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	154	138	xxxxx	75	119	xxxxx				
Volume/Cap:	0.26	xxxx	xxxx	xxxx	xxxx	xxxx	0.31	0.00	0.25	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	1.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.0	xxxx	xxxx	xxxxx				
Control Del:	9.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	12.6	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	B	*	*	*				
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	154	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	38.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	E	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			18.5			xxxxxx						
ApproachLOS:	*			*			C			*						

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.9 Worst Case Level Of Service: C[16.5]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module:																
Base Vol:	124	239	0	0	239	40	40	0	124	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	124	239	0	0	239	40	40	0	124	0	0	0				
Added Vol:	81	322	0	0	253	9	10	0	75	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	205	561	0	0	492	49	50	0	199	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	205	561	0	0	492	49	50	0	199	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	205	561	0	0	492	49	50	0	199	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	541	xxxx	xxxxx	xxxx	xxxx	xxxxx	1463	1463	492	xxxx	xxxx	xxxxx				
Potent Cap.:	1038	xxxx	xxxxx	xxxx	xxxx	xxxxx	143	130	581	xxxx	xxxx	xxxxx				
Move Cap.:	1038	xxxx	xxxxx	xxxx	xxxx	xxxxx	121	104	581	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	229	204	xxxxx	88	177	xxxxx				
Volume/Cap:	0.20	xxxx	xxxx	xxxx	xxxx	xxxx	0.22	0.00	0.34	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.5	xxxx	xxxx	xxxxx				
Control Del:	9.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	14.4	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	B	*	*	*				
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	229	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	25.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	D	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			16.5			xxxxxx						
ApproachLOS:	*			*			C			*						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 35.7 Worst Case Level Of Service: F[66.6]

Street Name:	Cloverdale Blvd									South Interchange												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:	2007 Balanced																					
Base Vol:	0	79		12		194	53		0		0		0		0	26		0		452		
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00		
Initial Bse:	0	79		12		194	53		0		0		0		0	26		0		452		
Added Vol:	0	80		175		260	62		0		0		0		0	123		0		314		
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0		
Initial Fut:	0	159		187		454	115		0		0		0		0	149		0		766		
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00		
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00		
PHF Volume:	0	159		187		454	115		0		0		0		0	149		0		766		
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0		
FinalVolume:	0	159		187		454	115		0		0		0		0	149		0		766		
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx		xxxx		xxxxx	6.4		xxxx		6.2		
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	3.5		xxxx		3.3		
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx		xxxxx		293	xxxx		xxxxx		xxxx		xxxx		xxxxx	1265		xxxx		195		
Potent Cap.:	xxxx	xxxx		xxxxx		1224	xxxx		xxxxx		xxxx		xxxx		xxxxx	180		xxxx		814		
Move Cap.:	xxxx	xxxx		xxxxx		1224	xxxx		xxxxx		xxxx		xxxx		xxxxx	128		xxxx		814		
Volume/Cap:	xxxx	xxxx		xxxx		0.37	xxxx		xxxx		xxxx		xxxx		xxxx	1.16		xxxx		0.94		
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx		xxxxx		1.7	xxxx		xxxxx		xxxx		xxxx		xxxxx	8.9		xxxx		14.2		
Control Del:	xxxxx	xxxx		xxxxx		9.7	xxxx		xxxxx		xxxxx		xxxx		xxxxx	195.9		xxxx		41.4		
LOS by Move:	*	*		*		A	*		*		*		*		*	F		*		E		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx		
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx		
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx		
Shared LOS:	*	*		*		*	*		*		*		*		*	*		*		*		
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					66.6						
ApproachLOS:	*					*					*					F						

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 29.4 Worst Case Level Of Service: F[58.7]

Street Name:	Cloverdale Blvd									South Interchange												
Approach:	North Bound					South Bound					East Bound					West Bound						
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1		
Volume Module:																						
Base Vol:	0	42		0		280	65		0		0		0		0	2		0		345		
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00		
Initial Bse:	0	42		0		280	65		0		0		0		0	2		0		345		
Added Vol:	0	80		175		263	62		0		0		0		0	123		0		318		
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0		
Initial Fut:	0	122		175		543	127		0		0		0		0	125		0		663		
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00		
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00		
PHF Volume:	0	122		175		543	127		0		0		0		0	125		0		663		
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0		
FinalVolume:	0	122		175		543	127		0		0		0		0	125		0		663		
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx		xxxx		xxxxx	6.4		xxxx		6.2		
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	3.5		xxxx		3.3		
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx		xxxxx		297	xxxx		xxxxx		xxxx		xxxx		xxxxx	1423		xxxx		210		
Potent Cap.:	xxxx	xxxx		xxxxx		1276	xxxx		xxxxx		xxxx		xxxx		xxxxx	151		xxxx		836		
Move Cap.:	xxxx	xxxx		xxxxx		1276	xxxx		xxxxx		xxxx		xxxx		xxxxx	101		xxxx		836		
Volume/Cap:	xxxx	xxxx		xxxx		0.43	xxxx		xxxx		xxxx		xxxx		xxxx	1.24		xxxx		0.79		
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxx		xxxx		xxxxx	8.5		xxxx		8.3		
Control Del:	xxxxx	xxxx		xxxxx		9.9	xxxx		xxxxx		xxxxx		xxxx		xxxxx	244.5		xxxx		23.6		
LOS by Move:	*	*		*		A	*		*		*		*		*	F		*		C		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx		
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx		
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx		
Shared LOS:	*	*		*		*	*		*		*		*		*	*		*		*		
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					58.7						
ApproachLOS:	*					*					*					F						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.981
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 58.2
Optimal Cycle: 180 | Level Of Service: E

Street Name:	Cloverdale Blvd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	1 0	1 0	0	0 0	0	0 0	1 0	0	0 1
Volume Module:	2007 Balanced											
Base Vol:	0	79	12	194	53	0	0	0	0	26	0	452
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	79	12	194	53	0	0	0	0	26	0	452
Added Vol:	0	80	175	260	62	0	0	0	0	123	0	314
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	159	187	454	115	0	0	0	0	149	0	766
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	159	187	454	115	0	0	0	0	149	0	766
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	159	187	454	115	0	0	0	0	149	0	766
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	159	187	454	115	0	0	0	0	149	0	766
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.93	0.93	0.95	1.00	1.00	1.00	1.00	1.00	0.78	1.00	0.85
Lanes:	0.00	0.46	0.54	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	809	952	1805	1900	0	0	0	0	1480	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.20	0.20	0.25	0.06	0.00	0.00	0.00	0.00	0.10	0.00	0.47
Crit Moves:		****		****								****
Green/Cycle:	0.00	0.20	0.20	0.26	0.46	0.00	0.00	0.00	0.00	0.48	0.00	0.48
Volume/Cap:	0.00	0.98	0.98	0.98	0.13	0.00	0.00	0.00	0.00	0.21	0.00	0.98
Delay/Veh:	0.0	82.5	82.5	73.7	15.8	0.0	0.0	0.0	0.0	15.0	0.0	52.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	82.5	82.5	73.7	15.8	0.0	0.0	0.0	0.0	15.0	0.0	52.8
LOS by Move:	A	F	F	E	B	A	A	A	A	B	A	D
HCM2k95thQ:	0	28	28	33	4	0	0	0	0	5	0	48

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.938
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 49.9
Optimal Cycle: 121 | Level Of Service: D

Street Name:	Cloverdale Blvd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	1 0	1 0	0	0 0	0	0 0	1 0	0	0 1
Volume Module:												
Base Vol:	0	42	0	280	65	0	0	0	0	2	0	345
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	42	0	280	65	0	0	0	0	2	0	345
Added Vol:	0	80	175	263	62	0	0	0	0	123	0	318
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	122	175	543	127	0	0	0	0	125	0	663
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	122	175	543	127	0	0	0	0	125	0	663
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	122	175	543	127	0	0	0	0	125	0	663
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	122	175	543	127	0	0	0	0	125	0	663
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.92	0.92	0.95	1.00	1.00	1.00	1.00	1.00	0.78	1.00	0.85
Lanes:	0.00	0.41	0.59	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	718	1030	1805	1900	0	0	0	0	1490	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.17	0.17	0.30	0.07	0.00	0.00	0.00	0.00	0.08	0.00	0.41
Crit Moves:		****		****								****
Green/Cycle:	0.00	0.18	0.18	0.32	0.50	0.00	0.00	0.00	0.00	0.44	0.00	0.44
Volume/Cap:	0.00	0.94	0.94	0.94	0.13	0.00	0.00	0.00	0.00	0.19	0.00	0.94
Delay/Veh:	0.0	74.9	74.9	56.0	13.3	0.0	0.0	0.0	0.0	17.4	0.0	46.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	74.9	74.9	56.0	13.3	0.0	0.0	0.0	0.0	17.4	0.0	46.9
LOS by Move:	A	E	E	E	B	A	A	A	A	B	A	D
HCM2k95thQ:	0	23	23	35	4	0	0	0	0	5	0	40

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 115.0 Worst Case Level Of Service: F[1104.9]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced																				
Base Vol:	0	0	0	5	0	49	0	100	106	16	429	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	5	0	49	0	100	106	16	429	0								
Added Vol:	0	0	0	121	0	46	0	126	309	483	390	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	126	0	95	0	226	415	499	819	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	126	0	95	0	226	415	499	819	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	126	0	95	0	226	415	499	819	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	2251	2458	819	xxxx	xxxx	xxxxx	641	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	46	31	379	xxxx	xxxx	xxxxx	953	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	27	15	379	xxxx	xxxx	xxxxx	953	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	4.63	0.00	0.25	xxxx	xxxx	xxxx	0.52	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	1.0	xxxx	xxxx	xxxxx	3.1	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	17.7	xxxxx	xxxx	xxxxx	12.9	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	C	*	*	*	B	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	27	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	15.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	1925	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			1104.9			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 134.9 Worst Case Level Of Service: F[1283.5]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	0	0	60	0	124	201	1	299	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	0	0	60	0	124	201	1	299	0								
Added Vol:	0	0	0	121	0	46	0	126	312	541	394	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	121	0	106	0	250	513	542	693	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	121	0	106	0	250	513	542	693	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	121	0	106	0	250	513	542	693	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	2284	2540	693	xxxx	xxxx	xxxxx	763	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	44	28	447	xxxx	xxxx	xxxxx	859	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	22	10	447	xxxx	xxxx	xxxxx	859	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	5.53	0.00	0.24	xxxx	xxxx	xxxx	0.63	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.9	xxxx	xxxx	xxxxx	4.6	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	15.5	xxxxx	xxxx	xxxxx	16.1	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	C	*	*	*	C	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	22	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	15.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	2394	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			1283.5			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.787
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 23.0
Optimal Cycle: 55 | Level Of Service: C

Street Name:	101 S Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced												
Base Vol:	0	0	0	5	0	49	0	100	106	16	429	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	5	0	49	0	100	106	16	429	0
Added Vol:	0	0	0	121	0	46	0	126	309	483	390	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	126	0	95	0	226	415	499	819	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	126	0	95	0	226	415	499	819	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	126	0	95	0	226	415	499	819	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	126	0	95	0	226	415	499	819	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.71	1.00	0.84	1.00	0.91	0.91	0.95	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.35	0.65	1.00	1.00	0.00
Final Sat.:	0	0	0	1343	0	1599	0	612	1123	1805	1900	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.09	0.00	0.06	0.00	0.37	0.37	0.28	0.43	0.00
Crit Moves:				****				****		****		
Green/Cycle:	0.00	0.00	0.00	0.12	0.00	0.12	0.00	0.47	0.47	0.35	0.82	0.00
Volume/Cap:	0.00	0.00	0.00	0.79	0.00	0.50	0.00	0.79	0.79	0.79	0.53	0.00
Delay/Veh:	0.0	0.0	0.0	65.1	0.0	43.3	0.0	27.4	27.4	35.6	3.2	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	65.1	0.0	43.3	0.0	27.4	27.4	35.6	3.2	0.0
LOS by Move:	A	A	A	E	A	D	A	C	C	D	A	A
HCM2k95thQ:	0	0	0	11	0	7	0	31	31	23	14	0

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.885
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 30.6
Optimal Cycle: 86 | Level Of Service: C

Street Name:	101 S Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module:												
Base Vol:	0	0	0	0	0	60	0	124	201	1	299	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	60	0	124	201	1	299	0
Added Vol:	0	0	0	121	0	46	0	126	312	541	394	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	121	0	106	0	250	513	542	693	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	121	0	106	0	250	513	542	693	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	121	0	106	0	250	513	542	693	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	121	0	106	0	250	513	542	693	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.71	1.00	0.84	1.00	0.91	0.91	0.95	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.33	0.67	1.00	1.00	0.00
Final Sat.:	0	0	0	1343	0	1599	0	566	1161	1805	1900	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.09	0.00	0.07	0.00	0.44	0.44	0.30	0.36	0.00
Crit Moves:				****				****		****		
Green/Cycle:	0.00	0.00	0.00	0.10	0.00	0.10	0.00	0.50	0.50	0.34	0.84	0.00
Volume/Cap:	0.00	0.00	0.00	0.89	0.00	0.65	0.00	0.89	0.89	0.89	0.44	0.00
Delay/Veh:	0.0	0.0	0.0	88.9	0.0	52.2	0.0	33.3	33.3	45.7	2.3	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	88.9	0.0	52.2	0.0	33.3	33.3	45.7	2.3	0.0
LOS by Move:	A	A	A	F	A	D	A	C	C	D	A	A
HCM2k95thQ:	0	0	0	12	0	9	0	40	40	27	10	0

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange West Consolidated Roundabout

PM Buildout + Project C Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
WB South Interchange										
1L	L	665	2.0	0.512	12.0	LOS B	143	0.55	0.64	23.4
6T	T	722	1.9	0.466	2.5	LOS A	129	0.49	0.27	28.1
Approach		**1387**	**1.9**	**0.512**	**7.0**	**LOS A**	**143**	**0.52**	**0.44**	**25.3**
SB Offramp										
17L	L	134	2.2	0.434	18.1	LOS B	74	0.80	0.99	21.4
14T	T	17	5.6	0.429	8.3	LOS A	74	0.80	0.89	25.4
14R	R	83	2.4	0.432	10.0	LOS B	74	0.80	0.92	24.0
Approach		**235**	**2.6**	**0.433**	**14.5**	**LOS B**	**74**	**0.80**	**0.96**	**22.4**
SB Cloverdale Blvd										
15L	L	167	1.8	0.309	14.6	LOS B	54	0.83	0.85	22.3
12T	T	311	1.9	0.461	7.0	LOS A	129	0.92	0.78	25.1
12R	R	121	1.7	0.460	8.8	LOS A	129	0.92	0.86	24.3
Approach		**598**	**1.8**	**0.461**	**9.5**	**LOS A**	**129**	**0.89**	**0.81**	**24.0**
NB Cloverdale Blvd										
13L	L	167	1.8	0.640	22.4	LOS C	166	0.90	1.13	19.1
18T	T	71	1.4	0.636	14.1	LOS B	166	0.90	1.09	21.3
18R	R	126	2.4	0.638	15.7	LOS B	166	0.90	1.09	20.4
Approach		**364**	**1.9**	**0.639**	**18.5**	**LOS B**	**166**	**0.90**	**1.11**	**19.9**
All Vehicles		**2584**	**2.0**	**0.640**	**9.9**	**LOS A**	**166**	**0.69**	**0.67**	**23.8**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA INTERSECTION

Movement Summary

South Interchange West Consolidated Roundabout

WKD Buildout+Project C Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
WB South Interchange										
1L	L	686	2.0	0.428	11.6	LOS B	117	0.42	0.60	23.7
6T	T	613	2.0	0.454	2.5	LOS A	122	0.46	0.27	28.4
Approach		**1299**	**2.0**	**0.454**	**7.3**	**LOS A**	**122**	**0.44**	**0.45**	**25.4**
SB Offramp										
17L	L	128	2.3	0.403	17.0	LOS B	65	0.76	0.96	21.9
14T	T	18	5.3	0.404	7.2	LOS A	65	0.76	0.83	26.2
14R	R	94	2.1	0.403	9.0	LOS A	65	0.76	0.88	24.8
Approach		**242**	**2.5**	**0.403**	**13.1**	**LOS B**	**65**	**0.76**	**0.92**	**23.1**
SB Cloverdale Blvd										
15L	L	186	2.1	0.339	15.0	LOS B	60	0.83	0.86	22.1
12T	T	385	2.1	0.547	9.0	LOS A	177	0.94	0.95	24.8
12R	R	134	2.2	0.547	10.8	LOS B	177	0.94	0.96	23.4
Approach		**707**	**2.1**	**0.547**	**10.9**	**LOS B**	**177**	**0.91**	**0.93**	**23.7**
NB Cloverdale Blvd										
13L	L	128	2.3	0.629	25.1	LOS C	162	0.93	1.15	18.1
18T	T	61	1.6	0.629	16.8	LOS B	162	0.93	1.12	19.8
18R	R	123	1.6	0.631	18.4	LOS B	162	0.93	1.11	19.0
Approach		**313**	**1.9**	**0.630**	**20.8**	**LOS C**	**162**	**0.93**	**1.13**	**18.7**
All Vehicles		**2561**	**2.1**	**0.631**	**10.5**	**LOS B**	**177**	**0.66**	**0.71**	**23.7**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 351.0 Worst Case Level Of Service: F[701.4]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:	2007 Balanced																			
Base Vol:	371		0		18	0		0		0	63		42		0	0		74		5
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	371		0		18	0		0		0	63		42		0	0		74		5
Added Vol:	292		0		468	0		0		0	52		195		0	0		582		137
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	663		0		486	0		0		0	115		237		0	0		656		142
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	663		0		486	0		0		0	115		237		0	0		656		142
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	663		0		486	0		0		0	115		237		0	0		656		142
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	1194	1265			237	xxxx	xxxx	xxxxx			798	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	208	171			807	xxxx	xxxx	xxxxx			833	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	186	147			807	xxxx	xxxx	xxxxx			833	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	3.56	0.00			0.60	xxxx	xxxx	xxxx			0.14	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			4.1	xxxx	xxxx	xxxxx			0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			16.0	xxxxx	xxxx	xxxxx			10.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			C	*	*	*			B	*	*	*	*	*				
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	186	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	63.5	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	1204	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F		*		*	*		*		*	*		*		*	*		*		*
ApproachDel:	701.4					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 261.7 Worst Case Level Of Service: F[540.1]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	248		6		11	0		0		0	77		41		0	0		57		1
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	248		6		11	0		0		0	77		41		0	0		57		1
Added Vol:	292		0		569	0		0		0	52		195		0	0		643		137
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	540		6		580	0		0		0	129		236		0	0		700		138
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	540		6		580	0		0		0	129		236		0	0		700		138
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	540		6		580	0		0		0	129		236		0	0		700		138
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	1263	1332			236	xxxx	xxxx	xxxxx			838	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	189	156			808	xxxx	xxxx	xxxxx			805	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	166	131			808	xxxx	xxxx	xxxxx			805	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	3.26	0.05			0.72	xxxx	xxxx	xxxx			0.16	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			6.3	xxxx	xxxx	xxxxx			0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			19.9	xxxxx	xxxx	xxxxx			10.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			C	*	*	*			B	*	*	*	*	*				
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	165	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	51.5	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	1093	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F		*		*	*		*		*	*		*		*	*		*		*
ApproachDel:	540.1					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 1.051
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 62.2
Optimal Cycle: 180 | Level Of Service: E

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0 0	0	1 0	1 0	0	0 0	0 1	0
Volume Module:	2007 Balanced											
Base Vol:	371	0	18	0	0	0	63	42	0	0	74	5
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	371	0	18	0	0	0	63	42	0	0	74	5
Added Vol:	292	0	468	0	0	0	52	195	0	0	582	137
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	663	0	486	0	0	0	115	237	0	0	656	142
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	663	0	486	0	0	0	115	237	0	0	656	142
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	663	0	486	0	0	0	115	237	0	0	656	142
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	663	0	486	0	0	0	115	237	0	0	656	142
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.82	0.18
Final Sat.:	1343	0	1599	0	0	0	1805	1900	0	0	1524	330
Capacity Analysis Module:												
Vol/Sat:	0.49	0.00	0.30	0.00	0.00	0.00	0.06	0.12	0.00	0.00	0.43	0.43
Crit Moves:	****						****				****	
Green/Cycle:	0.47	0.00	0.47	0.00	0.00	0.00	0.06	0.47	0.00	0.00	0.41	0.41
Volume/Cap:	1.05	0.00	0.65	0.00	0.00	0.00	1.05	0.27	0.00	0.00	1.05	1.05
Delay/Veh:	76.4	0.0	22.2	0.0	0.0	0.0	147.3	16.2	0.0	0.0	76.3	76.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	76.4	0.0	22.2	0.0	0.0	0.0	147.3	16.2	0.0	0.0	76.3	76.3
LOS by Move:	E	A	C	A	A	A	F	B	A	A	E	E
HCM2k95thQ:	48	0	22	0	0	0	9	8	0	0	49	49

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.942
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 43.5
Optimal Cycle: 125 | Level Of Service: D

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0 0	0	1 0	1 0	0	0 0	0 1	0
Volume Module:												
Base Vol:	248	6	11	0	0	0	77	41	0	0	57	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	248	6	11	0	0	0	77	41	0	0	57	1
Added Vol:	292	0	569	0	0	0	52	195	0	0	643	137
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	540	6	580	0	0	0	129	236	0	0	700	138
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	540	6	580	0	0	0	129	236	0	0	700	138
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	540	6	580	0	0	0	129	236	0	0	700	138
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	540	6	580	0	0	0	129	236	0	0	700	138
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	0.92	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	0.99	0.01	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.84	0.16
Final Sat.:	1726	19	1599	0	0	0	1805	1900	0	0	1552	306
Capacity Analysis Module:												
Vol/Sat:	0.31	0.31	0.36	0.00	0.00	0.00	0.07	0.12	0.00	0.00	0.45	0.45
Crit Moves:			****				****				****	
Green/Cycle:	0.39	0.39	0.39	0.00	0.00	0.00	0.08	0.55	0.00	0.00	0.48	0.48
Volume/Cap:	0.81	0.81	0.94	0.00	0.00	0.00	0.94	0.22	0.00	0.00	0.94	0.94
Delay/Veh:	34.9	34.9	52.5	0.0	0.0	0.0	105.1	11.4	0.0	0.0	42.4	42.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	34.9	34.9	52.5	0.0	0.0	0.0	105.1	11.4	0.0	0.0	42.4	42.4
LOS by Move:	C	C	D	A	A	A	F	B	A	A	D	D
HCM2k95thQ:	30	30	37	0	0	0	8	7	0	0	41	41

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	Asti (Frontage) Rd							South Interchange							
Approach:	North Bound				South Bound			East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled			Stop Sign				Stop Sign			
Rights:	Include				Include			Include				Include			
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced														
Base Vol:	32	33		0		0	15	47	49	0	11	0	0	0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	32	33		0		0	15	47	49	0	11	0	0	0	
Added Vol:	239	56		3		30	50	332	310	134	219	4	148	33	
PasserByVol:	0	0		0		0	0	0	0	0	0	0	0	0	
Initial Fut:	271	89		3		30	65	379	359	134	230	4	148	33	
User Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Volume:	271	89		3		30	65	379	359	134	230	4	148	33	
Reduct Vol:	0	0		0		0	0	0	0	0	0	0	0	0	
FinalVolume:	271	89		3		30	65	379	359	134	230	4	148	33	
Critical Gap Module:															
Critical Gp:	4.1	xxxx		xxxxx		4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2	
FollowUpTim:	2.2	xxxx		xxxxx		2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3	
Capacity Module:															
Cnflict Vol:	444	xxxx		xxxxx		92	xxxx	xxxxx	1038	949	255	1129	1137	91	
Potent Cap.:	1127	xxxx		xxxxx		1515	xxxx	xxxxx	211	263	789	183	204	973	
Move Cap.:	1127	xxxx		xxxxx		1515	xxxx	xxxxx	0	185	789	42	143	973	
Volume/Cap:	0.24	xxxx		xxxx		0.02	xxxx	xxxx	xxxx	0.73	0.29	0.09	1.03	0.03	
Level Of Service Module:															
2Way95thQ:	0.9	xxxx		xxxxx		0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	9.2	xxxx		xxxxx		7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	A	*		*		A	*	*	*	*	*	*	*	*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx	xxxxx	xxxx	0	xxxxx	xxxx	159	xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.1	xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	179	xxxxx	
Shared LOS:	*	*		*		*	*	*	*	*	*	*	F	*	
ApproachDel:	xxxxxx					xxxxxx			xxxxxx				179.1		
ApproachLOS:	*					*			F				F		

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	Asti (Frontage) Rd							South Interchange							
Approach:	North Bound				South Bound			East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled			Stop Sign				Stop Sign			
Rights:	Include				Include			Include				Include			
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:															
Base Vol:	26	19		0		0	18	42	37	0	11	0	0	0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	26	19		0		0	18	42	37	0	11	0	0	0	
Added Vol:	239	56		3		30	50	393	411	134	219	4	148	33	
PasserByVol:	0	0		0		0	0	0	0	0	0	0	0	0	
Initial Fut:	265	75		3		30	68	435	448	134	230	4	148	33	
User Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Volume:	265	75		3		30	68	435	448	134	230	4	148	33	
Reduct Vol:	0	0		0		0	0	0	0	0	0	0	0	0	
FinalVolume:	265	75		3		30	68	435	448	134	230	4	148	33	
Critical Gap Module:															
Critical Gp:	4.1	xxxx		xxxxx		4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2	
FollowUpTim:	2.2	xxxx		xxxxx		2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3	
Capacity Module:															
Cnflict Vol:	503	xxxx		xxxxx		78	xxxx	xxxxx	1043	954	286	1134	1170	77	
Potent Cap.:	1072	xxxx		xxxxx		1533	xxxx	xxxxx	209	261	758	181	195	990	
Move Cap.:	1072	xxxx		xxxxx		1533	xxxx	xxxxx	0	182	758	40	135	990	
Volume/Cap:	0.25	xxxx		xxxx		0.02	xxxx	xxxx	xxxx	0.74	0.30	0.10	1.09	0.03	
Level Of Service Module:															
2Way95thQ:	1.0	xxxx		xxxxx		0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	9.5	xxxx		xxxxx		7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	A	*		*		A	*	*	*	*	*	*	*	*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx	xxxxx	xxxx	0	xxxxx	xxxx	151	xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.7	xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	205	xxxxx	
Shared LOS:	*	*		*		*	*	*	*	*	*	*	F	*	
ApproachDel:	xxxxxx					xxxxxx			xxxxxx				205.0		
ApproachLOS:	*					*			F				F		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.793
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 42.6
Optimal Cycle: 64 | Level Of Service: D

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0
Volume Module:	2007 Balanced											
Base Vol:	32	33	0	0	15	47	49	0	11	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	32	33	0	0	15	47	49	0	11	0	0	0
Added Vol:	239	56	3	30	50	332	310	134	219	4	148	33
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	271	89	3	30	65	379	359	134	230	4	148	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	271	89	3	30	65	379	359	134	230	4	148	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	271	89	3	30	65	379	359	134	230	4	148	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	271	89	3	30	65	379	359	134	230	4	148	33
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	0.95	0.87	0.87	0.95	0.91	0.91	0.98	0.98	0.98
Lanes:	1.00	0.97	0.03	1.00	0.15	0.85	1.00	0.37	0.63	0.02	0.80	0.18
Final Sat.:	1805	1829	62	1805	243	1414	1805	633	1086	40	1482	330
Capacity Analysis Module:												
Vol/Sat:	0.15	0.05	0.05	0.02	0.27	0.27	0.20	0.21	0.21	0.10	0.10	0.10
Crit Moves:	****				****				****	****		
Green/Cycle:	0.19	0.39	0.39	0.13	0.34	0.34	0.27	0.27	0.27	0.13	0.13	0.13
Volume/Cap:	0.79	0.12	0.12	0.12	0.79	0.79	0.75	0.79	0.79	0.79	0.79	0.79
Delay/Veh:	50.7	19.4	19.4	38.3	37.6	37.6	39.8	43.3	43.3	59.2	59.2	59.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	50.7	19.4	19.4	38.3	37.6	37.6	39.8	43.3	43.3	59.2	59.2	59.2
LOS by Move:	D	B	B	D	D	D	D	D	D	E	E	E
HCM2k95thQ:	19	4	4	2	25	25	19	20	20	14	14	14

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.869
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 48.3
Optimal Cycle: 86 | Level Of Service: D

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0
Volume Module:												
Base Vol:	26	19	0	0	18	42	37	0	11	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	26	19	0	0	18	42	37	0	11	0	0	0
Added Vol:	239	56	3	30	50	393	411	134	219	4	148	33
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	265	75	3	30	68	435	448	134	230	4	148	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	265	75	3	30	68	435	448	134	230	4	148	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	265	75	3	30	68	435	448	134	230	4	148	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	265	75	3	30	68	435	448	134	230	4	148	33
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.99	0.99	0.95	0.87	0.87	0.95	0.91	0.91	0.98	0.98	0.98
Lanes:	1.00	0.96	0.04	1.00	0.14	0.86	1.00	0.37	0.63	0.02	0.80	0.18
Final Sat.:	1805	1816	73	1805	223	1430	1805	633	1086	40	1482	330
Capacity Analysis Module:												
Vol/Sat:	0.15	0.04	0.04	0.02	0.30	0.30	0.25	0.21	0.21	0.10	0.10	0.10
Crit Moves:	****				****		****			****		
Green/Cycle:	0.17	0.37	0.37	0.15	0.35	0.35	0.29	0.29	0.29	0.11	0.11	0.11
Volume/Cap:	0.87	0.11	0.11	0.11	0.87	0.87	0.87	0.74	0.74	0.87	0.87	0.87
Delay/Veh:	62.8	20.8	20.8	37.0	43.6	43.6	48.5	38.3	38.3	73.0	73.0	73.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	62.8	20.8	20.8	37.0	43.6	43.6	48.5	38.3	38.3	73.0	73.0	73.0
LOS by Move:	E	C	C	D	D	D	D	D	D	E	E	E
HCM2k95thQ:	20	3	3	2	30	30	25	19	19	16	16	16

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

PM Buildout+ Project C Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	67	1.5	0.713	20.0	LOS C	167	0.90	1.13	19.7
16T	T	218	1.8	0.712	12.9	LOS B	167	0.90	1.09	22.0
16R	R	97	2.1	0.713	14.5	LOS B	167	0.90	1.10	21.0
Approach		**382**	**1.8**	**0.711**	**14.6**	**LOS B**	**167**	**0.90**	**1.10**	**21.3**
WB AV Resort										
1L	L	4	20.0	0.455	22.9	LOS C	90	0.88	1.04	19.4
6T	T	119	1.7	0.452	13.3	LOS B	90	0.88	0.99	21.7
6R	R	72	1.4	0.452	14.6	LOS B	90	0.88	0.98	21.0
Approach		**195**	**2.1**	**0.452**	**14.0**	**LOS B**	**90**	**0.88**	**0.99**	**21.4**
SB Asti										
17L	L	100	2.0	0.901	37.7	LOS D	368	1.00	1.51	14.7
14T	T	352	2.0	0.905	29.0	LOS C	368	1.00	1.51	15.1
14R	R	46	2.2	0.902	30.5	LOS C	368	1.00	1.51	14.6
Approach		**498**	**2.0**	**0.904**	**30.9**	**LOS C**	**368**	**1.00**	**1.51**	**14.9**
EB South Interchange										
5L	L	192	2.1	0.268	11.0	LOS B	58	0.33	0.60	24.2
2T	T	66	1.5	0.268	2.1	LOS A	58	0.33	0.23	29.4
2R	R	114	1.8	0.268	2.1	LOS A	58	0.33	0.23	29.4
Approach		**371**	**1.9**	**0.268**	**6.7**	**LOS A**	**58**	**0.33**	**0.42**	**26.2**
101 NB Offramp										
13L	L	698	2.0	0.587	15.7	LOS B	156	0.73	0.88	22.5
18T	T	308	1.9	0.587	5.6	LOS A	156	0.72	0.65	26.3
18R	R	203	2.0	0.587	6.7	LOS A	156	0.72	0.71	25.7
Approach		**1209**	**2.0**	**0.586**	**11.6**	**LOS B**	**156**	**0.73**	**0.79**	**23.7**
All Vehicles		**2655**	**2.0**	**0.905**	**15.1**	**LOS B**	**368**	**0.76**	**0.93**	**21.3**

Symbols which may appear in this table:

Movement Summary Page 1 of 2

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

Weekend Midday Buildout+ Project C Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	66	1.5	0.667	18.9	LOS B	149	0.89	1.10	20.1
16T	T	213	1.9	0.667	11.8	LOS B	149	0.89	1.05	22.8
16R	R	82	2.4	0.667	13.4	LOS B	149	0.89	1.06	21.7
Approach		**360**	**1.9**	**0.667**	**13.4**	**LOS B**	**149**	**0.89**	**1.06**	**21.9**
WB AV Resort										
1L	L	4	20.0	0.455	22.1	LOS C	86	0.88	1.03	19.7
6T	T	119	1.7	0.441	12.5	LOS B	86	0.88	0.97	22.3
6R	R	72	1.4	0.441	13.8	LOS B	86	0.88	0.97	21.5
Approach		**195**	**2.1**	**0.440**	**13.2**	**LOS B**	**86**	**0.88**	**0.97**	**21.9**
SB Asti										
17L	L	103	1.9	0.936	39.9	LOS D	441	1.00	1.61	14.3
14T	T	412	1.9	0.936	31.2	LOS C	441	1.00	1.61	14.4
14R	R	45	2.2	0.938	32.7	LOS C	441	1.00	1.61	14.0
Approach		**559**	**2.0**	**0.936**	**32.9**	**LOS C**	**441**	**1.00**	**1.61**	**14.4**
EB South Interchange										
5L	L	201	2.0	0.277	11.1	LOS B	61	0.34	0.60	24.1
2T	T	67	1.5	0.277	2.1	LOS A	61	0.34	0.23	29.4
2R	R	116	1.7	0.277	2.1	LOS A	61	0.34	0.23	29.4
Approach		**383**	**1.8**	**0.277**	**6.8**	**LOS A**	**61**	**0.34**	**0.43**	**26.1**
101 NB Offramp										
13L	L	568	1.9	0.582	15.9	LOS B	155	0.74	0.90	22.4
18T	T	414	1.9	0.583	5.8	LOS A	155	0.73	0.66	26.2
18R	R	203	2.0	0.582	6.8	LOS A	155	0.73	0.72	25.6
Approach		**1184**	**1.9**	**0.582**	**10.8**	**LOS B**	**155**	**0.73**	**0.79**	**23.9**
All Vehicles		**2681**	**1.9**	**0.938**	**15.4**	**LOS B**	**441**	**0.76**	**0.96**	**21.0**

Symbols which may appear in this table:

about:blank 1/9/2009

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	TAZ 2	25.00	26.00	25	26	51	1.2
	Zone 2 Subtotal					25	26	51	1.2
3		1.00	TAZ 3	4.00	2.00	4	2	6	0.1
	Zone 3 Subtotal					4	2	6	0.1
5		1.00	TAZ 5	6.00	3.00	6	3	9	0.2
	Zone 5 Subtotal					6	3	9	0.2
6		1.00	TAZ 6	27.00	14.00	27	14	41	1.0
	Zone 6 Subtotal					27	14	41	1.0
7	Jefferson Sp	1.00	TAZ 7	2.00	2.00	2	2	4	0.1
	Zone 7 Subtotal					2	2	4	0.1
8	12.4 (2/10)	1.00	TAZ 8	14.00	16.00	14	16	30	0.7
	Zone 8 Subtotal					14	16	30	0.7
9	12.4 (3/10)	1.00	TAZ 9	2.00	2.00	2	2	4	0.1
	Zone 9 Subtotal					2	2	4	0.1
12	Tall Trees	1.00	TAZ 12	25.00	15.00	25	15	40	0.9
	Zone 12 Subtotal					25	15	40	0.9
13	12.4 (9/10)	1.00	TAZ 13	13.00	7.00	13	7	20	0.5
	Zone 13 Subtotal					13	7	20	0.5
14	Downtown Com	1.00	TAZ 14	21.00	21.00	21	21	42	1.0
	Zone 14 Subtotal					21	21	42	1.0
16		1.00	TAZ 16	33.00	35.00	33	35	68	1.6
	Zone 16 Subtotal					33	35	68	1.6
17		1.00	TAZ 17	12.00	6.00	12	6	18	0.4
	Zone 17 Subtotal					12	6	18	0.4
18		1.00	TAZ 18	13.00	13.00	13	13	26	0.6
	Zone 18 Subtotal					13	13	26	0.6
19		1.00	TAZ 19	23.00	38.00	23	38	61	1.4
	Zone 19 Subtotal					23	38	61	1.4
20		1.00	TAZ 20	5.00	3.00	5	3	8	0.2

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	TAZ 2	25.00	26.00	25	26	51	1.1
	Zone 2 Subtotal					25	26	51	1.1
3		1.00	TAZ 3	4.00	2.00	4	2	6	0.1
	Zone 3 Subtotal					4	2	6	0.1
5		1.00	TAZ 5	6.00	3.00	6	3	9	0.2
	Zone 5 Subtotal					6	3	9	0.2
6		1.00	TAZ 6	27.00	14.00	27	14	41	0.9
	Zone 6 Subtotal					27	14	41	0.9
7	Jefferson Sp	1.00	TAZ 7	2.00	2.00	2	2	4	0.1
	Zone 7 Subtotal					2	2	4	0.1
8	12.4 (2/10)	1.00	TAZ 8	14.00	16.00	14	16	30	0.7
	Zone 8 Subtotal					14	16	30	0.7
9	12.4 (3/10)	1.00	TAZ 9	2.00	2.00	2	2	4	0.1
	Zone 9 Subtotal					2	2	4	0.1
12	Tall Trees	1.00	TAZ 12	25.00	15.00	25	15	40	0.9
	Zone 12 Subtotal					25	15	40	0.9
13	12.4 (9/10)	1.00	TAZ 13	13.00	7.00	13	7	20	0.4
	Zone 13 Subtotal					13	7	20	0.4
14	Downtown Com	1.00	TAZ 14	21.00	21.00	21	21	42	0.9
	Zone 14 Subtotal					21	21	42	0.9
16		1.00	TAZ 16	33.00	35.00	33	35	68	1.5
	Zone 16 Subtotal					33	35	68	1.5
17		1.00	TAZ 17	12.00	6.00	12	6	18	0.4
	Zone 17 Subtotal					12	6	18	0.4
18		1.00	TAZ 18	13.00	13.00	13	13	26	0.6
	Zone 18 Subtotal					13	13	26	0.6
19		1.00	TAZ 19	23.00	38.00	23	38	61	1.4
	Zone 19 Subtotal					23	38	61	1.4
20		1.00	TAZ 20	5.00	3.00	5	3	8	0.2

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 20 Subtotal					5	3	8	0.2
22		1.00	TAZ 22	109.00	112.00	109	112	221	5.2
	Zone 22 Subtotal					109	112	221	5.2
23		1.00	TAZ 23	33.00	35.00	33	35	68	1.6
	Zone 23 Subtotal					33	35	68	1.6
24	24 Vineyard	1.00	TAZ 24	16.00	10.00	16	10	26	0.6
	Zone 24 Subtotal					16	10	26	0.6
25	25 Westside	1.00	TAZ 25	15.00	9.00	15	9	24	0.6
	Zone 25 Subtotal					15	9	24	0.6
26		1.00	TAZ 26	30.00	33.00	30	33	63	1.5
	Zone 26 Subtotal					30	33	63	1.5
28	28 Citrus Ga	1.00	TAZ 28	23.00	20.00	23	20	43	1.0
	Zone 28 Subtotal					23	20	43	1.0
29		1.00	TAZ 29	14.00	13.00	14	13	27	0.6
	Zone 29 Subtotal					14	13	27	0.6
30		1.00	TAZ 30	17.00	25.00	17	25	42	1.0
	Zone 30 Subtotal					17	25	42	1.0
31		1.00	TAZ 31	46.00	51.00	46	51	97	2.3
	Zone 31 Subtotal					46	51	97	2.3
33		1.00	TAZ 33	18.00	10.00	18	10	28	0.7
	Zone 33 Subtotal					18	10	28	0.7
34		1.00	TAZ 34	1.00	1.00	1	1	2	0.0
	Zone 34 Subtotal					1	1	2	0.0
37		1.00	TAZ 37	54.00	27.00	54	27	81	1.9
	Zone 37 Subtotal					54	27	81	1.9
38	Casino Proje	1.00	Casino	0.00	0.00	0	0	0	0.0
39		1.00	TAZ 39	72.00	73.00	72	73	145	3.4
	Zone 39 Subtotal					72	73	145	3.4
40		1.00	TAZ 40	36.00	38.00	36	38	74	1.7
	Zone 40 Subtotal					36	38	74	1.7
42	42 Rancho de	1.00	TAZ 42	47.00	51.00	47	51	98	2.3
	Zone 42 Subtotal					47	51	98	2.3

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 20 Subtotal					5	3	8	0.2
22		1.00	TAZ 22	109.00	112.00	109	112	221	4.9
	Zone 22 Subtotal					109	112	221	4.9
23		1.00	TAZ 23	33.00	35.00	33	35	68	1.5
	Zone 23 Subtotal					33	35	68	1.5
24	24 Vineyard	1.00	TAZ 24	16.00	10.00	16	10	26	0.6
	Zone 24 Subtotal					16	10	26	0.6
25	25 Westside	1.00	TAZ 25	15.00	9.00	15	9	24	0.5
	Zone 25 Subtotal					15	9	24	0.5
26		1.00	TAZ 26	30.00	33.00	30	33	63	1.4
	Zone 26 Subtotal					30	33	63	1.4
28	28 Citrus Ga	1.00	TAZ 28	23.00	20.00	23	20	43	1.0
	Zone 28 Subtotal					23	20	43	1.0
29		1.00	TAZ 29	14.00	13.00	14	13	27	0.6
	Zone 29 Subtotal					14	13	27	0.6
30		1.00	TAZ 30	17.00	25.00	17	25	42	0.9
	Zone 30 Subtotal					17	25	42	0.9
31		1.00	TAZ 31	46.00	51.00	46	51	97	2.2
	Zone 31 Subtotal					46	51	97	2.2
33		1.00	TAZ 33	18.00	10.00	18	10	28	0.6
	Zone 33 Subtotal					18	10	28	0.6
34		1.00	TAZ 34	1.00	1.00	1	1	2	0.0
	Zone 34 Subtotal					1	1	2	0.0
37		1.00	TAZ 37	54.00	27.00	54	27	81	1.8
	Zone 37 Subtotal					54	27	81	1.8
38	Casino Proje	1.00	Casino	0.00	0.00	0	0	0	0.0
39		1.00	TAZ 39	72.00	73.00	72	73	145	3.2
	Zone 39 Subtotal					72	73	145	3.2
40		1.00	TAZ 40	36.00	38.00	36	38	74	1.7
	Zone 40 Subtotal					36	38	74	1.7
42	42 Rancho de	1.00	TAZ 42	47.00	51.00	47	51	98	2.2
	Zone 42 Subtotal					47	51	98	2.2

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
43		1.00	TAZ 43	53.00	67.00	53	67	120	2.8
	Zone 43 Subtotal					53	67	120	2.8
44		1.00	TAZ 44	167.00	185.00	167	185	352	8.3
	Zone 44 Subtotal					167	185	352	8.3
45		1.00	TAZ 45	7.00	38.00	7	38	45	1.1
	Zone 45 Subtotal					7	38	45	1.1
46		1.00	TAZ 46	27.00	27.00	27	27	54	1.3
	Zone 46 Subtotal					27	27	54	1.3
47		1.00	TAZ 47	9.00	9.00	9	9	18	0.4
	Zone 47 Subtotal					9	9	18	0.4
48		1.00	TAZ 48	10.00	51.00	10	51	61	1.4
	Zone 48 Subtotal					10	51	61	1.4
50		1.00	TAZ 50	8.00	5.00	8	5	13	0.3
	Zone 50 Subtotal					8	5	13	0.3
54		1.00	TAZ 54	29.00	21.00	29	21	50	1.2
	Zone 54 Subtotal					29	21	50	1.2
56		1.00	TAZ 56	4.00	3.00	4	3	7	0.2
	Zone 56 Subtotal					4	3	7	0.2
57		1.00	TAZ 57	4.00	3.00	4	3	7	0.2
	Zone 57 Subtotal					4	3	7	0.2
62		1.00	TAZ 62	4.00	2.00	4	2	6	0.1
	Zone 62 Subtotal					4	2	6	0.1
119		1.00	TAZ 19	23.00	38.00	23	38	61	1.4
	Zone 119 Subtotal					23	38	61	1.4
122		1.00	TAZ 22	110.00	112.00	110	112	222	5.2
	Zone 122 Subtotal					110	112	222	5.2
123		1.00	TAZ 23	33.00	36.00	33	36	69	1.6
	Zone 123 Subtotal					33	36	69	1.6
137		1.00	TAZ 37	53.00	26.00	53	26	79	1.9
	Zone 137 Subtotal					53	26	79	1.9
138	TAZ 38	1.00	TAZ 38	31.00	112.00	31	112	143	3.4

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
43		1.00	TAZ 43	53.00	67.00	53	67	120	2.7
	Zone 43 Subtotal					53	67	120	2.7
44		1.00	TAZ 44	167.00	185.00	167	185	352	7.9
	Zone 44 Subtotal					167	185	352	7.9
45		1.00	TAZ 45	7.00	38.00	7	38	45	1.0
	Zone 45 Subtotal					7	38	45	1.0
46		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 46 Subtotal					27	27	54	1.2
47		1.00	TAZ 47	9.00	9.00	9	9	18	0.4
	Zone 47 Subtotal					9	9	18	0.4
48		1.00	TAZ 48	10.00	51.00	10	51	61	1.4
	Zone 48 Subtotal					10	51	61	1.4
50		1.00	TAZ 50	8.00	5.00	8	5	13	0.3
	Zone 50 Subtotal					8	5	13	0.3
54		1.00	TAZ 54	29.00	21.00	29	21	50	1.1
	Zone 54 Subtotal					29	21	50	1.1
56		1.00	TAZ 56	4.00	3.00	4	3	7	0.2
	Zone 56 Subtotal					4	3	7	0.2
57		1.00	TAZ 57	4.00	3.00	4	3	7	0.2
	Zone 57 Subtotal					4	3	7	0.2
62		1.00	TAZ 62	4.00	2.00	4	2	6	0.1
	Zone 62 Subtotal					4	2	6	0.1
119		1.00	TAZ 19	23.00	38.00	23	38	61	1.4
	Zone 119 Subtotal					23	38	61	1.4
122		1.00	TAZ 22	110.00	112.00	110	112	222	5.0
	Zone 122 Subtotal					110	112	222	5.0
123		1.00	TAZ 23	33.00	36.00	33	36	69	1.5
	Zone 123 Subtotal					33	36	69	1.5
137		1.00	TAZ 37	53.00	26.00	53	26	79	1.8
	Zone 137 Subtotal					53	26	79	1.8
138	TAZ 38	1.00	TAZ 38	31.00	112.00	31	112	143	3.2

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 138 Subtotal					31	112	143	3.4
139		1.00	TAZ 39	72.00	72.00	72	72	144	3.4
	Zone 139 Subtotal					72	72	144	3.4
140		1.00	TAZ 40	36.00	38.00	36	38	74	1.7
	Zone 140 Subtotal					36	38	74	1.7
142		1.00	TAZ 42	48.00	51.00	48	51	99	2.3
	Zone 142 Subtotal					48	51	99	2.3
143		1.00	TAZ 43	53.00	66.00	53	66	119	2.8
	Zone 143 Subtotal					53	66	119	2.8
144		1.00	TAZ 44	167.00	184.00	167	184	351	8.3
	Zone 144 Subtotal					167	184	351	8.3
146		1.00	TAZ 46	27.00	27.00	27	27	54	1.3
	Zone 146 Subtotal					27	27	54	1.3
148		1.00	TAZ 48	10.00	51.00	10	51	61	1.4
	Zone 148 Subtotal					10	51	61	1.4
TOTAL						1741	1935	3676	86.9

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 138 Subtotal					31	112	143	3.2
139		1.00	TAZ 39	72.00	72.00	72	72	144	3.2
	Zone 139 Subtotal					72	72	144	3.2
140		1.00	TAZ 40	36.00	38.00	36	38	74	1.7
	Zone 140 Subtotal					36	38	74	1.7
142		1.00	TAZ 42	48.00	51.00	48	51	99	2.2
	Zone 142 Subtotal					48	51	99	2.2
143		1.00	TAZ 43	53.00	66.00	53	66	119	2.7
	Zone 143 Subtotal					53	66	119	2.7
144		1.00	TAZ 44	167.00	184.00	167	184	351	7.8
	Zone 144 Subtotal					167	184	351	7.8
146		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 146 Subtotal					27	27	54	1.2
148		1.00	TAZ 48	10.00	51.00	10	51	61	1.4
	Zone 148 Subtotal					10	51	61	1.4
TOTAL						1741	1935	3676	82.1

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt D

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	291.00	262.00	291	262	553	13.1
	Zone 38 Subtotal					291	262	553	13.1
TOTAL						291	262	553	13.1

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt D

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	448.00	354.00	448	354	802	17.9
	Zone 38 Subtotal					448	354	802	17.9
TOTAL						448	354	802	17.9

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.495
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	13.3
Optimal Cycle:	22	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm												
Base Vol:	47	317	71	34	212	15	16	35	69	109	36	38
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	52	349	78	37	233	17	18	39	76	120	40	42
Added Vol:	74	101	85	21	77	0	0	14	69	103	14	28
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	126	450	163	58	310	17	18	53	145	223	54	70
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	126	450	163	58	310	17	18	53	145	223	54	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	126	450	163	58	310	17	18	53	145	223	54	70
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	126	450	163	58	310	17	18	53	145	223	54	70
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.75	0.75	0.85	0.78	0.78	0.78	0.88	0.88	0.88	0.69	0.69	0.69
Lanes:	0.44	1.56	1.00	0.30	1.61	0.09	0.08	0.24	0.68	0.65	0.15	0.20
Final Sat.:	619	2215	1615	451	2396	127	137	408	1126	845	203	265
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.10	0.13	0.13	0.13	0.13	0.13	0.13	0.26	0.26	0.26
Crit Moves:		****									****	
Green/Cycle:	0.41	0.41	0.41	0.41	0.41	0.41	0.53	0.53	0.53	0.53	0.53	0.53
Volume/Cap:	0.50	0.50	0.25	0.32	0.32	0.32	0.24	0.24	0.24	0.50	0.50	0.50
Delay/Veh:	15.6	15.6	13.7	14.1	14.1	14.1	8.9	8.9	8.9	10.9	10.9	10.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.6	15.6	13.7	14.1	14.1	14.1	8.9	8.9	8.9	10.9	10.9	10.9
LOS by Move:	B	B	B	B	B	B	A	A	A	B	B	B
HCM2kAvgQ:	5	5	2	3	3	3	3	3	3	5	5	5

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.475
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	13.1
Optimal Cycle:	21	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	64	291	99	39	291	17	18	39	64	99	40	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	291	99	39	291	17	18	39	64	99	40	39
Added Vol:	74	102	91	21	79	0	0	14	69	111	14	28
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	138	393	190	60	370	17	18	53	133	210	54	67
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	138	393	190	60	370	17	18	53	133	210	54	67
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	138	393	190	60	370	17	18	53	133	210	54	67
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	138	393	190	60	370	17	18	53	133	210	54	67
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.70	0.70	0.85	0.80	0.80	0.80	0.88	0.88	0.88	0.71	0.71	0.71
Lanes:	0.52	1.48	1.00	0.27	1.65	0.08	0.09	0.26	0.65	0.64	0.16	0.20
Final Sat.:	688	1958	1615	406	2504	115	148	434	1090	850	219	271
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.12	0.15	0.15	0.15	0.12	0.12	0.12	0.25	0.25	0.25
Crit Moves:		****									****	
Green/Cycle:	0.42	0.42	0.42	0.42	0.42	0.42	0.52	0.52	0.52	0.52	0.52	0.52
Volume/Cap:	0.47	0.47	0.28	0.35	0.35	0.35	0.23	0.23	0.23	0.47	0.47	0.47
Delay/Veh:	14.9	14.9	13.4	13.9	13.9	13.9	9.3	9.3	9.3	11.2	11.2	11.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.9	14.9	13.4	13.9	13.9	13.9	9.3	9.3	9.3	11.2	11.2	11.2
LOS by Move:	B	B	B	B	B	B	A	A	A	B	B	B
HCM2kAvgQ:	5	5	3	4	4	4	2	2	2	5	5	5

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: E[47.2]

Street Name:	Cloverdale Blvd									Lake St										
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	466		95		46	399		0		0	0		0		61	0		34	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	466		95		46	399		0		0	0		0		61	0		34	
Added Vol:	0	259		57		1	249		0		0	0		0		46	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	725		152		47	648		0		0	0		0		107	0		34	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	725		152		47	648		0		0	0		0		107	0		34	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	725		152		47	648		0		0	0		0		107	0		34	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.8	xxxx		6.9	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		877	xxxx		xxxxx		xxxx	xxxx		xxxxx		1219	xxxx		439	
Potent Cap.:	xxxx	xxxx		xxxxx		779	xxxx		xxxxx		xxxx	xxxx		xxxxx		176	xxxx		572	
Move Cap.:	xxxx	xxxx		xxxxx		779	xxxx		xxxxx		xxxx	xxxx		xxxxx		167	xxxx		572	
Volume/Cap:	xxxx	xxxx		xxxx		0.06	xxxx		xxxx		xxxx	xxxx		xxxx		0.64	xxxx		0.06	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.2	xxxx		xxxxx		xxxx	xxxx		xxxxx		3.6	xxxx		0.2	
Control Del:	xxxxx	xxxx		xxxxx		9.9	xxxx		xxxxx		xxxxx	xxxx		xxxxx		58.5	xxxx		11.7	
LOS by Move:	*	*		*		A	*		*		*	*		*		F	*		B	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		9.9	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					47.2				
ApproachLOS:	*					*					*					E				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 5.1 Worst Case Level Of Service: F[51.1]

Street Name:	Cloverdale Blvd									Lake St										
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	432		78		40	432		0		0	0		0		78	0		40	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	432		78		40	432		0		0	0		0		78	0		40	
Added Vol:	0	266		57		1	258		0		0	0		0		46	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	698		135		41	690		0		0	0		0		124	0		40	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	698		135		41	690		0		0	0		0		124	0		40	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	698		135		41	690		0		0	0		0		124	0		40	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.8	xxxx		6.9	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		833	xxxx		xxxxx		xxxx	xxxx		xxxxx		1193	xxxx		417	
Potent Cap.:	xxxx	xxxx		xxxxx		809	xxxx		xxxxx		xxxx	xxxx		xxxxx		183	xxxx		591	
Move Cap.:	xxxx	xxxx		xxxxx		809	xxxx		xxxxx		xxxx	xxxx		xxxxx		175	xxxx		591	
Volume/Cap:	xxxx	xxxx		xxxx		0.05	xxxx		xxxx		xxxx	xxxx		xxxx		0.71	xxxx		0.07	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.2	xxxx		xxxxx		xxxx	xxxx		xxxxx		4.3	xxxx		0.2	
Control Del:	xxxxx	xxxx		xxxxx		9.7	xxxx		xxxxx		xxxxx	xxxx		xxxxx		63.9	xxxx		11.5	
LOS by Move:	*	*		*		A	*		*		*	*		*		F	*		B	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		9.7	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					51.1				
ApproachLOS:	*					*					*					F				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.604
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 17.9
Optimal Cycle: 32 | Level Of Service: B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0 1	1 0	1	0 1	1 0	0	0 1!	0 0	1	1 0	0 1
Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm												
Base Vol:	7	382	52	97	370	2	1	12	15	104	21	178
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	8	420	57	107	407	2	1	13	17	114	23	196
Added Vol:	22	143	241	161	122	12	14	3	26	255	5	160
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	30	563	298	268	529	14	15	16	43	369	28	356
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	30	563	298	268	529	14	15	16	43	369	28	356
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	30	563	298	268	529	14	15	16	43	369	28	356
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	30	563	298	268	529	14	15	16	43	369	28	356
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.90	0.90	0.95	0.95	0.95	0.91	0.91	0.91	0.96	0.96	0.85
Lanes:	1.00	1.31	0.69	1.00	1.95	0.05	0.20	0.22	0.58	1.86	0.14	1.00
Final Sat.:	1805	2238	1185	1805	3502	94	355	381	999	3376	257	1615
Capacity Analysis Module:												
Vol/Sat:	0.02	0.25	0.25	0.15	0.15	0.15	0.04	0.04	0.04	0.11	0.11	0.22
Crit Moves:		****		****					****	****		
Green/Cycle:	0.07	0.42	0.42	0.25	0.60	0.60	0.07	0.07	0.07	0.18	0.18	0.43
Volume/Cap:	0.25	0.60	0.60	0.60	0.25	0.25	0.60	0.60	0.60	0.60	0.60	0.52
Delay/Veh:	32.2	16.6	16.6	25.7	6.7	6.7	39.9	39.9	39.9	27.9	27.9	15.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	32.2	16.6	16.6	25.7	6.7	6.7	39.9	39.9	39.9	27.9	27.9	15.4
LOS by Move:	C	B	B	C	A	A	D	D	D	C	C	B
HCM2kAvgQ:	1	8	8	6	3	3	3	3	3	5	5	6

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.705
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 26.2
Optimal Cycle: 41 | Level Of Service: C

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0 1	1 0	1	0 1	1 0	0	0 1!	0 0	1	1 0	0 1
Volume Module:												
Base Vol:	68	6	88	0	8	9	5	255	50	80	230	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	6	88	0	8	9	5	255	50	80	230	0
Added Vol:	22	143	242	170	122	12	14	3	26	256	5	167
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	90	149	330	170	130	21	19	258	76	336	235	167
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	149	330	170	130	21	19	258	76	336	235	167
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	90	149	330	170	130	21	19	258	76	336	235	167
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	90	149	330	170	130	21	19	258	76	336	235	167
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.85	0.85	0.95	0.93	0.93	0.97	0.97	0.97	0.97	0.97	0.85
Lanes:	1.00	1.00	1.00	1.00	1.72	0.28	0.05	0.73	0.22	1.18	0.82	1.00
Final Sat.:	1805	1619	1619	1805	3043	492	99	1344	396	2171	1519	1615
Capacity Analysis Module:												
Vol/Sat:	0.05	0.09	0.20	0.09	0.04	0.04	0.19	0.19	0.19	0.15	0.15	0.10
Crit Moves:			****	****			****			****		
Green/Cycle:	0.23	0.29	0.29	0.13	0.20	0.20	0.27	0.27	0.27	0.22	0.22	0.35
Volume/Cap:	0.22	0.32	0.71	0.71	0.22	0.22	0.71	0.71	0.71	0.71	0.71	0.29
Delay/Veh:	22.2	19.6	25.6	38.1	23.9	23.9	27.5	27.5	27.5	28.1	28.1	16.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	22.2	19.6	25.6	38.1	23.9	23.9	27.5	27.5	27.5	28.1	28.1	16.6
LOS by Move:	C	B	C	D	C	C	C	C	C	C	C	B
HCM2kAvgQ:	2	3	8	5	2	2	8	8	8	7	7	3

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: C[16.7]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm																				
Base Vol:	0	0	0	4	0	24	0	43	97	25	345	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	4	0	24	0	43	97	25	345	0								
Added Vol:	0	0	0	33	0	53	0	94	312	123	367	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	37	0	77	0	137	409	148	712	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	37	0	77	0	137	409	148	712	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	37	0	77	0	137	409	148	712	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1077	1554	356	xxxx	xxxx	xxxxx	546	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	217	114	646	xxxx	xxxx	xxxxx	1033	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	193	98	646	xxxx	xxxx	xxxxx	1033	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.19	0.00	0.12	xxxx	xxxx	xxxx	0.14	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.5	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	28.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx								
LOS by Move:	*	*	*	D	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT																			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	646	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	11.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	B	*	*	*	*	*	*								
ApproachDel:	xxxxxx			16.7			xxxxxx			xxxxxx										
ApproachLOS:	*			C			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.4 Worst Case Level Of Service: C[15.9]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module:																				
Base Vol:	0	0	0	3	0	23	0	42	117	19	176	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	3	0	23	0	42	117	19	176	0								
Added Vol:	0	0	0	44	0	53	0	99	317	143	375	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	47	0	76	0	141	434	162	551	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	47	0	76	0	141	434	162	551	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	47	0	76	0	141	434	162	551	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	946	1450	276	xxxx	xxxx	xxxxx	575	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	264	132	728	xxxx	xxxx	xxxxx	1008	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	231	111	728	xxxx	xxxx	xxxxx	1008	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.20	0.00	0.10	xxxx	xxxx	xxxx	0.16	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	24.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.3	xxxx	xxxxx								
LOS by Move:	*	*	*	C	*	*	*	*	*	A	*	*								
Movement:	LT - LTR - RT																			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	728	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.5	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	B	*	*	*	*	*	*								
ApproachDel:	xxxxxx			15.9			xxxxxx			xxxxxx										
ApproachLOS:	*			C			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 24.7 Worst Case Level Of Service: E[39.9]

Street Name:	US 101 North Ramps												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm																				
Base Vol:	272		0		55	0		0		0	23		15		0	0		57		6
Growth Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00
Initial Bse:	272		0		55	0		0		0	23		15		0	0		57		6
Added Vol:	280		0		153	0		0		0	47		79		0	0		211		51
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	552		0		208	0		0		0	70		94		0	0		268		57
User Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00
PHF Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00
PHF Volume:	552		0		208	0		0		0	70		94		0	0		268		57
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	552		0		208	0		0		0	70		94		0	0		268		57
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	368	559			47	xxxx	xxxx	xxxxx			325	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	611	440			1019	xxxx	xxxx	xxxxx			1246	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	584	416			1019	xxxx	xxxx	xxxxx			1246	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.94	0.00			0.20	xxxx	xxxx	xxxx			0.06	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.8	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			9.4	xxxxx	xxxx	xxxxx			8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	584	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	12.5	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	51.4	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F	*		*		*	*	*			*	*	*			*	*	*		
ApproachDel:	39.9					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	E					*					*					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 13.0 Worst Case Level Of Service: C[23.2]

Street Name:	US 101 North Ramps												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module:																				
Base Vol:	144		0		27	0		0		0	26		20		0	0		58		8
Growth Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00
Initial Bse:	144		0		27	0		0		0	26		20		0	0		58		8
Added Vol:	280		0		195	0		0		0	47		95		0	0		238		57
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	424		0		222	0		0		0	73		115		0	0		296		65
User Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00
PHF Adj:	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00
PHF Volume:	424		0		222	0		0		0	73		115		0	0		296		65
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	424		0		222	0		0		0	73		115		0	0		296		65
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	409	622			58	xxxx	xxxx	xxxxx			361	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	576	405			1003	xxxx	xxxx	xxxxx			1209	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	549	381			1003	xxxx	xxxx	xxxxx			1209	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.77	0.00			0.22	xxxx	xxxx	xxxx			0.06	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.8	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			9.6	xxxxx	xxxx	xxxxx			8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	549	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	7.0	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	30.3	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	D	*		*		*	*	*			*	*	*			*	*	*		
ApproachDel:	23.2					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	C					*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.5 Worst Case Level Of Service: B[15.0]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	32	45		0		0	27		26		69		0		6		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	32	45		0		0	27		26		69		0		6		0		0	
Added Vol:	214	96		0		0	80		47		60		0		172		0		0	
PasserByVol:	0	0		0		0	0		0		0		0		0		0		0	
Initial Fut:	246	141		0		0	107		73		129		0		178		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	246	141		0		0	107		73		129		0		178		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	246	141		0		0	107		73		129		0		178		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	180	xxxx	xxxxx	xxxx	xxxx	xxxxx					740	xxxx			107	xxxx	xxxx	xxxxx		
Potent Cap.:	1408	xxxx	xxxxx	xxxx	xxxx	xxxxx					387	xxxx			953	xxxx	xxxx	xxxxx		
Move Cap.:	1408	xxxx	xxxxx	xxxx	xxxx	xxxxx					335	xxxx			953	xxxx	xxxx	xxxxx		
Volume/Cap:	0.17	xxxx	xxxx	xxxx	xxxx	xxxx					0.38	xxxx			0.19	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx					1.8	xxxx			0.7	xxxx	xxxx	xxxxx		
Control Del:	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					22.3	xxxx			9.6	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*					C	*			A	*	*	*		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*					*	*	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx							15.0					xxxxxx				
ApproachLOS:	*			*							B					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.1 Worst Case Level Of Service: B[12.8]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	11	28		0		0	26		28		32		0		10		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	11	28		0		0	26		28		32		0		10		0		0	
Added Vol:	248	96		0		0	80		47		60		0		230		0		0	
PasserByVol:	0	0		0		0	0		0		0		0		0		0		0	
Initial Fut:	259	124		0		0	106		75		92		0		240		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	259	124		0		0	106		75		92		0		240		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	259	124		0		0	106		75		92		0		240		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	181	xxxx	xxxxx	xxxx	xxxx	xxxxx					748	xxxx			106	xxxx	xxxx	xxxxx		
Potent Cap.:	1407	xxxx	xxxxx	xxxx	xxxx	xxxxx					383	xxxx			954	xxxx	xxxx	xxxxx		
Move Cap.:	1407	xxxx	xxxxx	xxxx	xxxx	xxxxx					329	xxxx			954	xxxx	xxxx	xxxxx		
Volume/Cap:	0.18	xxxx	xxxx	xxxx	xxxx	xxxx					0.28	xxxx			0.25	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx					1.1	xxxx			1.0	xxxx	xxxx	xxxxx		
Control Del:	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					20.2	xxxx			10.0	xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*	*	*	*					C	*			B	*	*	*		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx					xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx					xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*					*	*	*			*	*	*		
ApproachDel:	xxxxxx			xxxxxx							12.8					xxxxxx				
ApproachLOS:	*			*							B					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 7.2 Worst Case Level Of Service: C[21.9]

Street Name:	Asti (Frontage) Rd								Project Access							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	0	69		0		0	37		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	69		0		0	37		0		0	0		0		0	0		0	
Added Vol:	0	156		183		108	110		0		0	0		0		165	0		97	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	225		183		108	147		0		0	0		0		165	0		97	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	225		183		108	147		0		0	0		0		165	0		97	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	225		183		108	147		0		0	0		0		165	0		97	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		408	xxxx		xxxxx		xxxx	xxxx		xxxxx		680	680		317	
Potent Cap.:	xxxx	xxxx		xxxxx		1162	xxxx		xxxxx		xxxx	xxxx		xxxxx		420	376		729	
Move Cap.:	xxxx	xxxx		xxxxx		1162	xxxx		xxxxx		xxxx	xxxx		xxxxx		388	339		729	
Volume/Cap:	xxxx	xxxx		xxxx		0.09	xxxx		xxxx		xxxx	xxxx		xxxx		0.43	0.00		0.13	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.3	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		8.4	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	469		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.3	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	3.4		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.4	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	21.9		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	C		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						21.9			
ApproachLOS:	*					*					*						C			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 20.0 Worst Case Level Of Service: F[60.4]

Street Name:	Asti (Frontage) Rd								Project Access							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	40		0		0	37		0		0	0		0		0	0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	40		0		0	37		0		0	0		0		0	0		0	
Added Vol:	0	156		282		166	110		0		0	0		0		223	0		131	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	196		282		166	147		0		0	0		0		223	0		131	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	196		282		166	147		0		0	0		0		223	0		131	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	196		282		166	147		0		0	0		0		223	0		131	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		478	xxxx		xxxxx		xxxx	xxxx		xxxxx		816	816		337	
Potent Cap.:	xxxx	xxxx		xxxxx		1095	xxxx		xxxxx		xxxx	xxxx		xxxxx		349	314		710	
Move Cap.:	xxxx	xxxx		xxxxx		1095	xxxx		xxxxx		xxxx	xxxx		xxxxx		304	261		710	
Volume/Cap:	xxxx	xxxx		xxxx		0.15	xxxx		xxxx		xxxx	xxxx		xxxx		0.73	0.00		0.18	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.5	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		8.9	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	386		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.5	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	9.7		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.9	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	60.4		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	F		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						60.4			
ApproachLOS:	*					*					*						F			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: B[14.9]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	0	66		16		2	35		0		0	0		0		27	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	66		16		2	35		0		0	0		0		27	0		3	
Added Vol:	0	313		0		0	330		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	379		16		2	365		0		0	0		0		27	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	379		16		2	365		0		0	0		0		27	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	379		16		2	365		0		0	0		0		27	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		395	xxxx		xxxxx		xxxx	xxxx		xxxxx		756	756		387	
Potent Cap.:	xxxx	xxxx		xxxxx		1175	xxxx		xxxxx		xxxx	xxxx		xxxxx		379	340		665	
Move Cap.:	xxxx	xxxx		xxxxx		1175	xxxx		xxxxx		xxxx	xxxx		xxxxx		378	339		665	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		0.07	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		8.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	395		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	0.2		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	14.9		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	B		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						14.9			
ApproachLOS:	*					*					*						B			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: B[10.9]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Volume Module:																				
Base Vol:	0	37		2		1	36		0		0	0		0		0	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	37		2		1	36		0		0	0		0		0	0		3	
Added Vol:	0	412		0		0	388		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	449		2		1	424		0		0	0		0		0	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	449		2		1	424		0		0	0		0		0	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	449		2		1	424		0		0	0		0		0	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		451	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		450	
Potent Cap.:	xxxx	xxxx		xxxxx		1120	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		613	
Move Cap.:	xxxx	xxxx		xxxxx		1120	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		613	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		xxxx	xxxx		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		0.0	
Control Del:	xxxxx	xxxx		xxxxx		8.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		10.9	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		B	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						10.9			
ApproachLOS:	*					*					*						B			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.8 Worst Case Level Of Service: C[18.5]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm																
Base Vol:	177	343	0	0	135	47	33	0	71	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	177	343	0	0	135	47	33	0	71	0	0	0				
Added Vol:	77	321	0	0	252	9	10	0	71	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	254	664	0	0	387	56	43	0	142	0	0	0				
User Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	279	730	0	0	426	62	47	0	156	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	279	730	0	0	426	62	47	0	156	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	487	xxxx	xxxxx	xxxx	xxxx	xxxxx	1731	1731	426	xxxx	xxxx	xxxxx				
Potent Cap.:	1086	xxxx	xxxxx	xxxx	xxxx	xxxxx	91	83	633	xxxx	xxxx	xxxxx				
Move Cap.:	1086	xxxx	xxxxx	xxxx	xxxx	xxxxx	73	62	633	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	155	138	xxxxx	76	120	xxxxx				
Volume/Cap:	0.26	xxxx	xxxx	xxxx	xxxx	xxxx	0.31	0.00	0.25	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	1.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.0	xxxx	xxxx	xxxxx				
Control Del:	9.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	12.5	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	B	*	*	*				
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	155	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	38.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	E	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			18.5			xxxxxx						
ApproachLOS:	*			*			C			*						

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.8 Worst Case Level Of Service: C[16.5]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module:																
Base Vol:	124	239	0	0	239	40	40	0	124	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	124	239	0	0	239	40	40	0	124	0	0	0				
Added Vol:	80	322	0	0	252	9	10	0	73	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	204	561	0	0	491	49	50	0	197	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	204	561	0	0	491	49	50	0	197	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	204	561	0	0	491	49	50	0	197	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	540	xxxx	xxxxx	xxxx	xxxx	xxxxx	1460	1460	491	xxxx	xxxx	xxxxx				
Potent Cap.:	1039	xxxx	xxxxx	xxxx	xxxx	xxxxx	144	130	582	xxxx	xxxx	xxxxx				
Move Cap.:	1039	xxxx	xxxxx	xxxx	xxxx	xxxxx	122	105	582	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	230	205	xxxxx	90	178	xxxxx				
Volume/Cap:	0.20	xxxx	xxxx	xxxx	xxxx	xxxx	0.22	0.00	0.34	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	0.7	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.5	xxxx	xxxx	xxxxx				
Control Del:	9.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	14.3	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	B	*	*	*				
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	230	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	24.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	C	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			16.5			xxxxxx						
ApproachLOS:	*			*			C			*						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 35.3 Worst Case Level Of Service: F[65.9]

Street Name:	Cloverdale Blvd												South Interchange											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:2007 Balanced																				
Base Vol:	0	79		12		194	53		0		0		0		0	26		0		452
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	79		12		194	53		0		0		0		0	26		0		452
Added Vol:	0	80		175		258	62		0		0		0		0	123		0		313
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0
Initial Fut:	0	159		187		452	115		0		0		0		0	149		0		765
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	159		187		452	115		0		0		0		0	149		0		765
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	0	159		187		452	115		0		0		0		0	149		0		765
Critical Gap Module:																				
Critical Gp:xxxxx	xxxx	xxxxx				4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2
FollowUpTim:xxxxx	xxxx	xxxxx				2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx			294	xxxx	xxxxx	xxxx	xxxx	xxxxx					1261	xxxx			196
Potent Cap.:	xxxx	xxxx	xxxxx			1224	xxxx	xxxxx	xxxx	xxxx	xxxxx					181	xxxx			814
Move Cap.:	xxxx	xxxx	xxxxx			1224	xxxx	xxxxx	xxxx	xxxx	xxxxx					129	xxxx			814
Volume/Cap:	xxxx	xxxx	xxxx			0.37	xxxx	xxxx	xxxx	xxxx	xxxx					1.15	xxxx			0.94
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx			1.7	xxxx	xxxxx	xxxx	xxxx	xxxxx					8.8	xxxx			14.2
Control Del:xxxxx	xxxx	xxxxx				9.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx					192.1	xxxx			41.3
LOS by Move:	*	*	*			A	*	*	*	*	*					F	*			E
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*			*	*	*			*	*	*			*	*	*		
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					65.9				
ApproachLOS:	*					*					*					F				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 29.2 Worst Case Level Of Service: F[58.3]

Street Name:	Cloverdale Blvd												South Interchange											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	42		0		280	65		0		0		0		0	2		0		345
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	42		0		280	65		0		0		0		0	2		0		345
Added Vol:	0	80		175		262	62		0		0		0		0	123		0		316
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0
Initial Fut:	0	122		175		542	127		0		0		0		0	125		0		661
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	122		175		542	127		0		0		0		0	125		0		661
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	0	122		175		542	127		0		0		0		0	125		0		661
Critical Gap Module:																				
Critical Gp:xxxxx	xxxx	xxxxx				4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4	xxxx			6.2
FollowUpTim:xxxxx	xxxx	xxxxx				2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5	xxxx			3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx			297	xxxx	xxxxx	xxxx	xxxx	xxxxx					1421	xxxx			210
Potent Cap.:	xxxx	xxxx	xxxxx			1276	xxxx	xxxxx	xxxx	xxxx	xxxxx					152	xxxx			836
Move Cap.:	xxxx	xxxx	xxxxx			1276	xxxx	xxxxx	xxxx	xxxx	xxxxx					101	xxxx			836
Volume/Cap:	xxxx	xxxx	xxxx			0.42	xxxx	xxxx	xxxx	xxxx	xxxx					1.23	xxxx			0.79
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxx	xxxx	xxxxx					8.5	xxxx			8.2
Control Del:xxxxx	xxxx	xxxxx				9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx					242.5	xxxx			23.5
LOS by Move:	*	*	*			A	*	*	*	*	*					F	*			C
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*			*	*	*			*	*	*			*	*	*		
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					58.3				
ApproachLOS:	*					*					*					F				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.979
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 57.8
Optimal Cycle: 180 | Level Of Service: E

Street Name:	Cloverdale Blvd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	1 0	1	0 0	0 0	0	0 0	1 0	0	0 1
Volume Module:	2007 Balanced											
Base Vol:	0	79	12	194	53	0	0	0	0	26	0	452
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	79	12	194	53	0	0	0	0	26	0	452
Added Vol:	0	80	175	258	62	0	0	0	0	123	0	313
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	159	187	452	115	0	0	0	0	149	0	765
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	159	187	452	115	0	0	0	0	149	0	765
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	159	187	452	115	0	0	0	0	149	0	765
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	159	187	452	115	0	0	0	0	149	0	765
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.93	0.93	0.95	1.00	1.00	1.00	1.00	1.00	0.78	1.00	0.85
Lanes:	0.00	0.46	0.54	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	809	952	1805	1900	0	0	0	0	1480	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.20	0.20	0.25	0.06	0.00	0.00	0.00	0.00	0.10	0.00	0.47
Crit Moves:		****		****								****
Green/Cycle:	0.00	0.20	0.20	0.26	0.46	0.00	0.00	0.00	0.00	0.48	0.00	0.48
Volume/Cap:	0.00	0.98	0.98	0.98	0.13	0.00	0.00	0.00	0.00	0.21	0.00	0.98
Delay/Veh:	0.0	81.9	81.9	73.3	15.8	0.0	0.0	0.0	0.0	15.0	0.0	52.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	81.9	81.9	73.3	15.8	0.0	0.0	0.0	0.0	15.0	0.0	52.3
LOS by Move:	A	F	F	E	B	A	A	A	A	B	A	D
HCM2k95thQ:	0	27	27	33	4	0	0	0	0	5	0	48

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.936
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 49.6
Optimal Cycle: 119 | Level Of Service: D

Street Name:	Cloverdale Blvd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	1 0	1 0	1	0 0	0 0	0	0 0	1 0	0	0 1
Volume Module:												
Base Vol:	0	42	0	280	65	0	0	0	0	2	0	345
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	42	0	280	65	0	0	0	0	2	0	345
Added Vol:	0	80	175	262	62	0	0	0	0	123	0	316
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	122	175	542	127	0	0	0	0	125	0	661
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	122	175	542	127	0	0	0	0	125	0	661
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	122	175	542	127	0	0	0	0	125	0	661
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	122	175	542	127	0	0	0	0	125	0	661
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.92	0.92	0.95	1.00	1.00	1.00	1.00	1.00	0.78	1.00	0.85
Lanes:	0.00	0.41	0.59	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	718	1030	1805	1900	0	0	0	0	1490	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.17	0.17	0.30	0.07	0.00	0.00	0.00	0.00	0.08	0.00	0.41
Crit Moves:		****		****								****
Green/Cycle:	0.00	0.18	0.18	0.32	0.50	0.00	0.00	0.00	0.00	0.44	0.00	0.44
Volume/Cap:	0.00	0.94	0.94	0.94	0.13	0.00	0.00	0.00	0.00	0.19	0.00	0.94
Delay/Veh:	0.0	74.3	74.3	55.7	13.3	0.0	0.0	0.0	0.0	17.4	0.0	46.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	74.3	74.3	55.7	13.3	0.0	0.0	0.0	0.0	17.4	0.0	46.5
LOS by Move:	A	E	E	E	B	A	A	A	A	B	A	D
HCM2k95thQ:	0	23	23	35	4	0	0	0	0	5	0	40

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 101.1 Worst Case Level Of Service: F[957.3]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced																				
Base Vol:	0	0	0	5	0	49	0	100	106	16	429	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	5	0	49	0	100	106	16	429	0								
Added Vol:	0	0	0	121	0	46	0	126	307	457	389	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	126	0	95	0	226	413	473	818	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	126	0	95	0	226	413	473	818	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	126	0	95	0	226	413	473	818	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	2197	2403	818	xxxx	xxxx	xxxxx	639	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	50	34	379	xxxx	xxxx	xxxxx	955	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	31	17	379	xxxx	xxxx	xxxxx	955	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	4.12	0.00	0.25	xxxx	xxxx	xxxx	0.50	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	1.0	xxxx	xxxx	xxxxx	2.8	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	17.6	xxxxx	xxxx	xxxxx	12.4	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	C	*	*	*	B	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	31	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	15.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	1666	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			957.3			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 115.3 Worst Case Level Of Service: F[1079.5]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	0	0	60	0	124	201	1	299	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	0	0	60	0	124	201	1	299	0								
Added Vol:	0	0	0	121	0	46	0	126	311	512	392	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	121	0	106	0	250	512	513	691	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	121	0	106	0	250	512	513	691	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	121	0	106	0	250	512	513	691	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	2223	2479	691	xxxx	xxxx	xxxxx	762	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	48	30	448	xxxx	xxxx	xxxxx	859	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	25	12	448	xxxx	xxxx	xxxxx	859	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	4.78	0.00	0.24	xxxx	xxxx	xxxx	0.60	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.9	xxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	15.5	xxxxx	xxxx	xxxxx	15.2	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	C	*	*	*	C	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	25	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	15.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	2012	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			1079.5			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.770
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 22.3
Optimal Cycle: 52 | Level Of Service: C

Street Name:	101 S Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced												
Base Vol:	0	0	0	5	0	49	0	100	106	16	429	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	5	0	49	0	100	106	16	429	0
Added Vol:	0	0	0	121	0	46	0	126	307	457	389	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	126	0	95	0	226	413	473	818	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	126	0	95	0	226	413	473	818	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	126	0	95	0	226	413	473	818	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	126	0	95	0	226	413	473	818	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.71	1.00	0.84	1.00	0.91	0.91	0.95	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.35	0.65	1.00	1.00	0.00
Final Sat.:	0	0	0	1343	0	1599	0	614	1121	1805	1900	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.09	0.00	0.06	0.00	0.37	0.37	0.26	0.43	0.00
Crit Moves:				****				****		****		
Green/Cycle:	0.00	0.00	0.00	0.12	0.00	0.12	0.00	0.48	0.48	0.34	0.82	0.00
Volume/Cap:	0.00	0.00	0.00	0.77	0.00	0.49	0.00	0.77	0.77	0.77	0.53	0.00
Delay/Veh:	0.0	0.0	0.0	62.4	0.0	42.9	0.0	26.0	26.0	35.4	3.2	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	62.4	0.0	42.9	0.0	26.0	26.0	35.4	3.2	0.0
LOS by Move:	A	A	A	E	A	D	A	C	C	D	A	A
HCM2k95thQ:	0	0	0	11	0	7	0	30	30	22	14	0

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.868
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 28.9
Optimal Cycle: 78 | Level Of Service: C

Street Name:	101 S Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module:												
Base Vol:	0	0	0	0	0	60	0	124	201	1	299	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	60	0	124	201	1	299	0
Added Vol:	0	0	0	121	0	46	0	126	311	512	392	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	121	0	106	0	250	512	513	691	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	121	0	106	0	250	512	513	691	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	121	0	106	0	250	512	513	691	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	121	0	106	0	250	512	513	691	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.71	1.00	0.84	1.00	0.91	0.91	0.95	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.33	0.67	1.00	1.00	0.00
Final Sat.:	0	0	0	1343	0	1599	0	567	1160	1805	1900	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.09	0.00	0.07	0.00	0.44	0.44	0.28	0.36	0.00
Crit Moves:				****				****		****		
Green/Cycle:	0.00	0.00	0.00	0.10	0.00	0.10	0.00	0.51	0.51	0.33	0.84	0.00
Volume/Cap:	0.00	0.00	0.00	0.87	0.00	0.64	0.00	0.87	0.87	0.87	0.43	0.00
Delay/Veh:	0.0	0.0	0.0	84.0	0.0	51.1	0.0	30.8	30.8	44.5	2.3	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	84.0	0.0	51.1	0.0	30.8	30.8	44.5	2.3	0.0
LOS by Move:	A	A	A	F	A	D	A	C	C	D	A	A
HCM2k95thQ:	0	0	0	12	0	8	0	39	39	25	10	0

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange West Consolidated Roundabout

PM Buildout + Project D Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
WB South Interchange										
1L	L	639	2.0	0.493	12.0	LOS B	135	0.54	0.64	23.4
6T	T	720	1.9	0.464	2.5	LOS A	128	0.49	0.27	28.1
Approach		**1359**	**2.0**	**0.493**	**6.9**	**LOS A**	**135**	**0.51**	**0.44**	**25.4**
SB Offramp										
17L	L	134	2.2	0.428	18.0	LOS B	73	0.80	0.99	21.5
14T	T	17	5.6	0.429	8.2	LOS A	73	0.80	0.88	25.5
14R	R	83	2.4	0.428	9.9	LOS A	73	0.80	0.92	24.1
Approach		**235**	**2.6**	**0.428**	**14.4**	**LOS B**	**73**	**0.80**	**0.95**	**22.4**
SB Cloverdale Blvd										
15L	L	167	1.8	0.301	14.3	LOS B	52	0.81	0.84	22.5
12T	T	308	1.9	0.445	6.4	LOS A	119	0.90	0.70	25.3
12R	R	121	1.7	0.445	8.2	LOS A	119	0.90	0.81	24.4
Approach		**596**	**1.8**	**0.445**	**9.0**	**LOS A**	**119**	**0.87**	**0.76**	**24.2**
NB Cloverdale Blvd										
13L	L	167	1.8	0.621	21.3	LOS C	156	0.89	1.11	19.6
18T	T	71	1.4	0.619	12.9	LOS B	156	0.89	1.06	22.0
18R	R	126	2.4	0.620	14.5	LOS B	156	0.89	1.06	21.0
Approach		**364**	**1.9**	**0.621**	**17.3**	**LOS B**	**156**	**0.89**	**1.08**	**20.4**
All Vehicles		**2554**	**2.0**	**0.621**	**9.6**	**LOS A**	**156**	**0.68**	**0.65**	**24.0**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA INTERSECTION

Movement Summary

South Interchange West Consolidated Roundabout

WKD Buildout+Project D Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
WB South Interchange										
1L	L	656	2.0	0.408	11.6	LOS B	109	0.41	0.60	23.8
6T	T	612	2.0	0.451	2.5	LOS A	121	0.46	0.27	28.4
Approach		**1267**	**2.0**	**0.451**	**7.2**	**LOS A**	**121**	**0.43**	**0.44**	**25.5**
SB Offramp										
17L	L	128	2.3	0.393	16.7	LOS B	63	0.75	0.95	22.1
14T	T	18	5.3	0.396	6.9	LOS A	63	0.75	0.79	26.2
14R	R	94	2.1	0.393	8.6	LOS A	63	0.75	0.87	25.1
Approach		**242**	**2.5**	**0.393**	**12.8**	**LOS B**	**63**	**0.75**	**0.91**	**23.3**
SB Cloverdale Blvd										
15L	L	186	2.1	0.330	14.6	LOS B	57	0.81	0.85	22.3
12T	T	385	2.1	0.529	8.1	LOS A	165	0.92	0.90	25.1
12R	R	134	2.2	0.530	10.0	LOS A	165	0.92	0.92	24.0
Approach		**707**	**2.1**	**0.530**	**10.2**	**LOS B**	**165**	**0.89**	**0.89**	**24.0**
NB Cloverdale Blvd										
13L	L	128	2.3	0.608	23.5	LOS C	151	0.91	1.13	18.7
18T	T	61	1.6	0.610	15.1	LOS B	151	0.91	1.09	20.7
18R	R	123	1.6	0.609	16.7	LOS B	151	0.91	1.08	19.8
Approach		**313**	**1.9**	**0.608**	**19.2**	**LOS B**	**151**	**0.91**	**1.10**	**19.4**
All Vehicles		**2529**	**2.1**	**0.610**	**10.0**	**LOS B**	**165**	**0.65**	**0.69**	**24.0**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 341.0 Worst Case Level Of Service: F[683.0]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:	2007 Balanced																			
Base Vol:	371		0		18	0		0		0	63		42		0	0		74		5
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	371		0		18	0		0		0	63		42		0	0		74		5
Added Vol:	292		0		435	0		0		0	52		195		0	0		555		137
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	663		0		453	0		0		0	115		237		0	0		629		142
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	663		0		453	0		0		0	115		237		0	0		629		142
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	663		0		453	0		0		0	115		237		0	0		629		142
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
Capacity Module:																				
Cnflict Vol:	1167	1238			237	xxxx	xxxx	xxxxx			771	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Potent Cap.:	216	177			807	xxxx	xxxx	xxxxx			853	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Move Cap.:	194	153			807	xxxx	xxxx	xxxxx			853	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Volume/Cap:	3.42	0.00			0.56	xxxx	xxxx		xxxx		0.13	xxxx		xxxx		xxxx	xxxx		xxxx	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			3.6	xxxx	xxxx	xxxxx			0.5	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Control Del:	xxxxx	xxxx			15.0	xxxxx	xxxx	xxxxx			9.9	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
LOS by Move:	*	*			C	*	*		*		A	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	194	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	62.6	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	1139	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F		*		*		*		*		*		*		*		*		*	
ApproachDel:	683.0					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 252.2 Worst Case Level Of Service: F[522.2]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	248		6		11	0		0		0	77		41		0	0		57		1
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	248		6		11	0		0		0	77		41		0	0		57		1
Added Vol:	292		0		534	0		0		0	52		195		0	0		613		137
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	540		6		545	0		0		0	129		236		0	0		670		138
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	540		6		545	0		0		0	129		236		0	0		670		138
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	540		6		545	0		0		0	129		236		0	0		670		138
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
Capacity Module:																				
Cnflict Vol:	1233	1302			236	xxxx	xxxx	xxxxx			808	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Potent Cap.:	197	162			808	xxxx	xxxx	xxxxx			826	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Move Cap.:	174	137			808	xxxx	xxxx	xxxxx			826	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Volume/Cap:	3.11	0.04			0.67	xxxx	xxxx		xxxx		0.16	xxxx		xxxx		xxxx	xxxx		xxxx	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			5.3	xxxx	xxxx	xxxxx			0.6	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Control Del:	xxxxx	xxxx			18.2	xxxxx	xxxx	xxxxx			10.2	xxxx	xxxxx	xxxxx		xxxx	xxxxx			
LOS by Move:	*	*			C	*	*		*		B	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	173	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	50.7	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	1025	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F		*		*		*		*		*		*		*		*		*	
ApproachDel:	522.2					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 1.036
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 59.2
Optimal Cycle: 180 | Level Of Service: E

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0 0	0	1 0	1	0 0	0 0	0 1	0
Volume Module:	2007 Balanced											
Base Vol:	371	0	18	0	0	0	63	42	0	0	74	5
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	371	0	18	0	0	0	63	42	0	0	74	5
Added Vol:	292	0	435	0	0	0	52	195	0	0	555	137
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	663	0	453	0	0	0	115	237	0	0	629	142
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	663	0	453	0	0	0	115	237	0	0	629	142
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	663	0	453	0	0	0	115	237	0	0	629	142
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	663	0	453	0	0	0	115	237	0	0	629	142
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.82	0.18
Final Sat.:	1343	0	1599	0	0	0	1805	1900	0	0	1511	341
Capacity Analysis Module:												
Vol/Sat:	0.49	0.00	0.28	0.00	0.00	0.00	0.06	0.12	0.00	0.00	0.42	0.42
Crit Moves:	****						****				****	
Green/Cycle:	0.48	0.00	0.48	0.00	0.00	0.00	0.06	0.46	0.00	0.00	0.40	0.40
Volume/Cap:	1.04	0.00	0.59	0.00	0.00	0.00	1.04	0.27	0.00	0.00	1.04	1.04
Delay/Veh:	71.3	0.0	20.4	0.0	0.0	0.0	142.3	16.6	0.0	0.0	72.5	72.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	71.3	0.0	20.4	0.0	0.0	0.0	142.3	16.6	0.0	0.0	72.5	72.5
LOS by Move:	E	A	C	A	A	A	F	B	A	A	E	E
HCM2k95thQ:	47	0	19	0	0	0	9	8	0	0	47	47

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.902
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 39.2
Optimal Cycle: 94 | Level Of Service: D

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0 0	0	1 0	1	0 0	0 0	0 1	0
Volume Module:												
Base Vol:	248	6	11	0	0	0	77	41	0	0	57	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	248	6	11	0	0	0	77	41	0	0	57	1
Added Vol:	292	0	534	0	0	0	52	195	0	0	613	137
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	540	6	545	0	0	0	129	236	0	0	670	138
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	540	6	545	0	0	0	129	236	0	0	670	138
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	540	6	545	0	0	0	129	236	0	0	670	138
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	540	6	545	0	0	0	129	236	0	0	670	138
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	0.92	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	0.99	0.01	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.83	0.17
Final Sat.:	1723	19	1599	0	0	0	1805	1900	0	0	1539	317
Capacity Analysis Module:												
Vol/Sat:	0.31	0.31	0.34	0.00	0.00	0.00	0.07	0.12	0.00	0.00	0.44	0.44
Crit Moves:			****				****				****	
Green/Cycle:	0.38	0.38	0.38	0.00	0.00	0.00	0.08	0.56	0.00	0.00	0.48	0.48
Volume/Cap:	0.83	0.83	0.90	0.00	0.00	0.00	0.90	0.22	0.00	0.00	0.90	0.90
Delay/Veh:	36.8	36.8	46.1	0.0	0.0	0.0	92.8	11.1	0.0	0.0	35.9	35.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	36.8	36.8	46.1	0.0	0.0	0.0	92.8	11.1	0.0	0.0	35.9	35.9
LOS by Move:	D	D	D	A	A	A	F	B	A	A	D	D
HCM2k95thQ:	30	30	33	0	0	0	8	7	0	0	38	38

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 4888.2 Worst Case Level Of Service: F[11883.9]

Street Name:	Asti (Frontage) Rd									South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	32	33			0	0	15		47		49		0		11	0		0		0
Growth Adj:	1.00	1.00			1.00	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	32	33			0	0	15		47		49		0		11	0		0		0
Added Vol:	239	56			3	30	50		304		277		134		219	4		148		33
PasserByVol:	0	0			0	0	0		0		0		0		0	0		0		0
Initial Fut:	271	89			3	30	65		351		326		134		230	4		148		33
User Adj:	1.00	1.00			1.00	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00			1.00	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	271	89			3	30	65		351		326		134		230	4		148		33
Reduct Vol:	0	0			0	0	0		0		0		0		0	0		0		0
FinalVolume:	271	89			3	30	65		351		326		134		230	4		148		33
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx			4.1	xxxx	xxxxx			7.1		6.5		6.2	7.1		6.5		6.2
FollowUpTim:	2.2	xxxx	xxxxx			2.2	xxxx	xxxxx			3.5		4.0		3.3	3.5		4.0		3.3
Capacity Module:																				
Cnflict Vol:	416	xxxx	xxxxx			92	xxxx	xxxxx			1024		935		241	1115		1109		91
Potent Cap.:	1154	xxxx	xxxxx			1515	xxxx	xxxxx			216		268		803	187		212		973
Move Cap.:	1154	xxxx	xxxxx			1515	xxxx	xxxxx			13		190		803	46		150		973
Volume/Cap:	0.23	xxxx	xxxx			0.02	xxxx	xxxx			25.78		0.71		0.29	0.09		0.99		0.03
Level Of Service Module:																				
2Way95thQ:	0.9	xxxx	xxxxx			0.1	xxxx	xxxxx			xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
Control Del:	9.1	xxxx	xxxxx			7.4	xxxx	xxxxx			xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
LOS by Move:	A	*	*			A	*	*			*		*		*	*		*		*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx		26		xxxxx	xxxx		167		xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx		86.0		xxxxx	xxxxx		9.5		xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx		xxxx		xxxxx	xxxxx		157		xxxxx
Shared LOS:	*	*	*			*	*	*			*		F		*	*		F		*
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					157.3				
ApproachLOS:	*					*					F					F				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	Asti (Frontage) Rd									South Interchange							
Approach:	North Bound				South Bound				East Bound				West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	26	19			0	0	18		42		37		0		11	0		0		0
Growth Adj:	1.00	1.00			1.00	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	26	19			0	0	18		42		37		0		11	0		0		0
Added Vol:	239	56			3	30	50		362		376		134		219	4		148		33
PasserByVol:	0	0			0	0	0		0		0		0		0	0		0		0
Initial Fut:	265	75			3	30	68		404		413		134		230	4		148		33
User Adj:	1.00	1.00			1.00	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00			1.00	1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	265	75			3	30	68		404		413		134		230	4		148		33
Reduct Vol:	0	0			0	0	0		0		0		0		0	0		0		0
FinalVolume:	265	75			3	30	68		404		413		134		230	4		148		33
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx			4.1	xxxx	xxxxx			7.1		6.5		6.2	7.1		6.5		6.2
FollowUpTim:	2.2	xxxx	xxxxx			2.2	xxxx	xxxxx			3.5		4.0		3.3	3.5		4.0		3.3
Capacity Module:																				
Cnflict Vol:	472	xxxx	xxxxx			78	xxxx	xxxxx			1027		938		270	1119		1139		77
Potent Cap.:	1100	xxxx	xxxxx			1533	xxxx	xxxxx			215		266		774	186		203		990
Move Cap.:	1100	xxxx	xxxxx			1533	xxxx	xxxxx			0		187		774	44		143		990
Volume/Cap:	0.24	xxxx	xxxx			0.02	xxxx	xxxx			xxxx		0.72		0.30	0.09		1.04		0.03
Level Of Service Module:																				
2Way95thQ:	0.9	xxxx	xxxxx			0.1	xxxx	xxxxx			xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
Control Del:	9.3	xxxx	xxxxx			7.4	xxxx	xxxxx			xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
LOS by Move:	A	*	*			A	*	*			*		*		*	*		*		*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx		0		xxxxx	xxxx		159		xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx		xxxx		xxxxx	xxxxx		10.1		xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx		xxxx		xxxxx	xxxxx		178		xxxxx
Shared LOS:	*	*	*			*	*	*			*		*		*	*		F		*
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					178.2				
ApproachLOS:	*					*					F					F				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.774
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 40.9
Optimal Cycle: 60 | Level Of Service: D

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0
Volume Module:	2007 Balanced											
Base Vol:	32	33	0	0	15	47	49	0	11	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	32	33	0	0	15	47	49	0	11	0	0	0
Added Vol:	239	56	3	30	50	304	277	134	219	4	148	33
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	271	89	3	30	65	351	326	134	230	4	148	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	271	89	3	30	65	351	326	134	230	4	148	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	271	89	3	30	65	351	326	134	230	4	148	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	271	89	3	30	65	351	326	134	230	4	148	33
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	0.95	0.87	0.87	0.95	0.91	0.91	0.98	0.98	0.98
Lanes:	1.00	0.97	0.03	1.00	0.16	0.84	1.00	0.37	0.63	0.02	0.80	0.18
Final Sat.:	1805	1829	62	1805	259	1400	1805	633	1086	40	1482	330
Capacity Analysis Module:												
Vol/Sat:	0.15	0.05	0.05	0.02	0.25	0.25	0.18	0.21	0.21	0.10	0.10	0.10
Crit Moves:	****				****				****	****		
Green/Cycle:	0.19	0.39	0.39	0.13	0.32	0.32	0.27	0.27	0.27	0.13	0.13	0.13
Volume/Cap:	0.77	0.13	0.13	0.13	0.77	0.77	0.66	0.77	0.77	0.77	0.77	0.77
Delay/Veh:	48.6	19.9	19.9	38.6	37.4	37.4	35.5	41.4	41.4	56.7	56.7	56.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	48.6	19.9	19.9	38.6	37.4	37.4	35.5	41.4	41.4	56.7	56.7	56.7
LOS by Move:	D	B	B	D	D	D	D	D	D	E	E	E
HCM2k95thQ:	18	4	4	2	24	24	17	20	20	14	14	14

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.826
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 45.0
Optimal Cycle: 72 | Level Of Service: D

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0
Volume Module:												
Base Vol:	26	19	0	0	18	42	37	0	11	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	26	19	0	0	18	42	37	0	11	0	0	0
Added Vol:	239	56	3	30	50	362	376	134	219	4	148	33
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	265	75	3	30	68	404	413	134	230	4	148	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	265	75	3	30	68	404	413	134	230	4	148	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	265	75	3	30	68	404	413	134	230	4	148	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	265	75	3	30	68	404	413	134	230	4	148	33
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.99	0.99	0.95	0.87	0.87	0.95	0.91	0.91	0.98	0.98	0.98
Lanes:	1.00	0.96	0.04	1.00	0.14	0.86	1.00	0.37	0.63	0.02	0.80	0.18
Final Sat.:	1805	1816	73	1805	239	1418	1805	633	1086	40	1482	330
Capacity Analysis Module:												
Vol/Sat:	0.15	0.04	0.04	0.02	0.28	0.28	0.23	0.21	0.21	0.10	0.10	0.10
Crit Moves:	****				****		****			****		
Green/Cycle:	0.18	0.37	0.37	0.15	0.34	0.34	0.28	0.28	0.28	0.12	0.12	0.12
Volume/Cap:	0.83	0.11	0.11	0.11	0.83	0.83	0.83	0.76	0.76	0.83	0.83	0.83
Delay/Veh:	55.7	20.6	20.6	36.9	39.7	39.7	44.8	40.4	40.4	64.6	64.6	64.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	55.7	20.6	20.6	36.9	39.7	39.7	44.8	40.4	40.4	64.6	64.6	64.6
LOS by Move:	E	C	C	D	D	D	D	D	D	E	E	E
HCM2k95thQ:	19	3	3	2	27	27	23	20	20	15	15	15

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

PM Buildout+ Project D Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	67	1.5	0.691	19.2	LOS B	159	0.89	1.11	20.0
16T	T	218	1.8	0.692	12.1	LOS B	159	0.89	1.06	22.6
16R	R	97	2.1	0.693	13.7	LOS B	159	0.89	1.08	21.5
Approach		**382**	**1.8**	**0.692**	**13.7**	**LOS B**	**159**	**0.89**	**1.08**	**21.8**
WB AV Resort										
1L	L	4	20.0	0.455	22.2	LOS C	86	0.88	1.03	19.6
6T	T	119	1.7	0.439	12.7	LOS B	86	0.88	0.97	22.2
6R	R	72	1.4	0.438	13.9	LOS B	86	0.88	0.97	21.4
Approach		**195**	**2.1**	**0.439**	**13.4**	**LOS B**	**86**	**0.88**	**0.97**	**21.8**
SB Asti										
17L	L	100	2.0	0.847	32.2	LOS C	298	0.97	1.38	16.1
14T	T	323	1.9	0.850	23.5	LOS C	298	0.97	1.37	16.9
14R	R	46	2.2	0.852	25.1	LOS C	298	0.97	1.37	16.3
Approach		**469**	**1.9**	**0.850**	**25.5**	**LOS C**	**298**	**0.97**	**1.37**	**16.6**
EB South Interchange										
5L	L	192	2.1	0.268	11.0	LOS B	58	0.33	0.60	24.2
2T	T	66	1.5	0.267	2.1	LOS A	58	0.33	0.23	29.5
2R	R	114	1.8	0.268	2.1	LOS A	58	0.33	0.23	29.5
Approach		**371**	**1.9**	**0.268**	**6.7**	**LOS A**	**58**	**0.33**	**0.42**	**26.2**
101 NB Offramp										
13L	L	698	2.0	0.569	15.5	LOS B	146	0.72	0.87	22.6
18T	T	273	1.8	0.569	5.4	LOS A	146	0.71	0.62	26.4
18R	R	203	2.0	0.569	6.5	LOS A	146	0.71	0.70	25.8
Approach		**1173**	**2.0**	**0.569**	**11.6**	**LOS B**	**146**	**0.72**	**0.78**	**23.7**
All Vehicles		**2590**	**1.9**	**0.852**	**13.9**	**LOS B**	**298**	**0.74**	**0.89**	**22.0**

Symbols which may appear in this table:

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

Weekend Midday Buildout+ Project D Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	66	1.5	0.647	18.2	LOS B	142	0.87	1.08	20.5
16T	T	213	1.9	0.648	11.1	LOS B	142	0.87	1.03	23.2
16R	R	82	2.4	0.651	12.7	LOS B	142	0.87	1.05	22.2
Approach		**360**	**1.9**	**0.648**	**12.7**	**LOS B**	**142**	**0.87**	**1.04**	**22.4**
WB AV Resort										
1L	L	4	20.0	0.417	21.4	LOS C	82	0.87	1.02	19.9
6T	T	119	1.7	0.427	11.9	LOS B	82	0.87	0.96	22.7
6R	R	72	1.4	0.425	13.1	LOS B	82	0.87	0.95	21.9
Approach		**195**	**2.1**	**0.426**	**12.6**	**LOS B**	**82**	**0.87**	**0.96**	**22.3**
SB Asti										
17L	L	103	1.9	0.880	33.3	LOS C	351	0.99	1.45	15.8
14T	T	380	2.1	0.884	24.5	LOS C	351	0.99	1.45	16.5
14R	R	45	2.2	0.882	26.1	LOS C	351	0.99	1.45	16.0
Approach		**528**	**2.1**	**0.883**	**26.3**	**LOS C**	**351**	**0.99**	**1.45**	**16.3**
EB South Interchange										
5L	L	201	2.0	0.277	11.1	LOS B	61	0.33	0.60	24.1
2T	T	67	1.5	0.277	2.1	LOS A	61	0.33	0.23	29.4
2R	R	116	1.7	0.277	2.1	LOS A	61	0.33	0.23	29.4
Approach		**383**	**1.8**	**0.277**	**6.8**	**LOS A**	**61**	**0.33**	**0.43**	**26.1**
101 NB Offramp										
13L	L	568	1.9	0.564	15.7	LOS B	145	0.73	0.88	22.6
18T	T	376	2.1	0.564	5.6	LOS A	145	0.72	0.63	26.3
18R	R	203	2.0	0.564	6.6	LOS A	145	0.72	0.71	25.7
Approach		**1147**	**2.0**	**0.564**	**10.8**	**LOS B**	**145**	**0.72**	**0.77**	**24.0**
All Vehicles		**2613**	**2.0**	**0.884**	**13.7**	**LOS B**	**351**	**0.75**	**0.91**	**21.9**

Symbols which may appear in this table:

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	TAZ 2	25.00	26.00	25	26	51	1.2
	Zone 2 Subtotal					25	26	51	1.2
3		1.00	TAZ 3	4.00	2.00	4	2	6	0.1
	Zone 3 Subtotal					4	2	6	0.1
5		1.00	TAZ 5	6.00	3.00	6	3	9	0.2
	Zone 5 Subtotal					6	3	9	0.2
6		1.00	TAZ 6	27.00	14.00	27	14	41	0.9
	Zone 6 Subtotal					27	14	41	0.9
7	Jefferson Sp	1.00	TAZ 7	2.00	2.00	2	2	4	0.1
	Zone 7 Subtotal					2	2	4	0.1
8	12.4 (2/10)	1.00	TAZ 8	14.00	16.00	14	16	30	0.7
	Zone 8 Subtotal					14	16	30	0.7
9	12.4 (3/10)	1.00	TAZ 9	2.00	2.00	2	2	4	0.1
	Zone 9 Subtotal					2	2	4	0.1
12	Tall Trees	1.00	TAZ 12	25.00	15.00	25	15	40	0.9
	Zone 12 Subtotal					25	15	40	0.9
13	12.4 (9/10)	1.00	TAZ 13	13.00	7.00	13	7	20	0.5
	Zone 13 Subtotal					13	7	20	0.5
14	Downtown Com	1.00	TAZ 14	21.00	21.00	21	21	42	0.9
	Zone 14 Subtotal					21	21	42	0.9
16		1.00	TAZ 16	33.00	35.00	33	35	68	1.5
	Zone 16 Subtotal					33	35	68	1.5
17		1.00	TAZ 17	12.00	6.00	12	6	18	0.4
	Zone 17 Subtotal					12	6	18	0.4
18		1.00	TAZ 18	13.00	13.00	13	13	26	0.6
	Zone 18 Subtotal					13	13	26	0.6
19		1.00	TAZ 19	23.00	38.00	23	38	61	1.4
	Zone 19 Subtotal					23	38	61	1.4
20		1.00	TAZ 20	5.00	3.00	5	3	8	0.2

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
2		1.00	TAZ 2	25.00	26.00	25	26	51	1.2
	Zone 2 Subtotal					25	26	51	1.2
3		1.00	TAZ 3	4.00	2.00	4	2	6	0.1
	Zone 3 Subtotal					4	2	6	0.1
5		1.00	TAZ 5	6.00	3.00	6	3	9	0.2
	Zone 5 Subtotal					6	3	9	0.2
6		1.00	TAZ 6	27.00	14.00	27	14	41	0.9
	Zone 6 Subtotal					27	14	41	0.9
7	Jefferson Sp	1.00	TAZ 7	2.00	2.00	2	2	4	0.1
	Zone 7 Subtotal					2	2	4	0.1
8	12.4 (2/10)	1.00	TAZ 8	14.00	16.00	14	16	30	0.7
	Zone 8 Subtotal					14	16	30	0.7
9	12.4 (3/10)	1.00	TAZ 9	2.00	2.00	2	2	4	0.1
	Zone 9 Subtotal					2	2	4	0.1
12	Tall Trees	1.00	TAZ 12	25.00	15.00	25	15	40	0.9
	Zone 12 Subtotal					25	15	40	0.9
13	12.4 (9/10)	1.00	TAZ 13	13.00	7.00	13	7	20	0.5
	Zone 13 Subtotal					13	7	20	0.5
14	Downtown Com	1.00	TAZ 14	21.00	21.00	21	21	42	1.0
	Zone 14 Subtotal					21	21	42	1.0
16		1.00	TAZ 16	33.00	35.00	33	35	68	1.5
	Zone 16 Subtotal					33	35	68	1.5
17		1.00	TAZ 17	12.00	6.00	12	6	18	0.4
	Zone 17 Subtotal					12	6	18	0.4
18		1.00	TAZ 18	13.00	13.00	13	13	26	0.6
	Zone 18 Subtotal					13	13	26	0.6
19		1.00	TAZ 19	23.00	38.00	23	38	61	1.4
	Zone 19 Subtotal					23	38	61	1.4
20		1.00	TAZ 20	5.00	3.00	5	3	8	0.2

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 20 Subtotal					5	3	8	0.2
22		1.00	TAZ 22	109.00	112.00	109	112	221	5.0
	Zone 22 Subtotal					109	112	221	5.0
23		1.00	TAZ 23	33.00	35.00	33	35	68	1.5
	Zone 23 Subtotal					33	35	68	1.5
24	24 Vineyard	1.00	TAZ 24	16.00	10.00	16	10	26	0.6
	Zone 24 Subtotal					16	10	26	0.6
25	25 Westside	1.00	TAZ 25	15.00	9.00	15	9	24	0.5
	Zone 25 Subtotal					15	9	24	0.5
26		1.00	TAZ 26	30.00	33.00	30	33	63	1.4
	Zone 26 Subtotal					30	33	63	1.4
28	28 Citrus Ga	1.00	TAZ 28	23.00	20.00	23	20	43	1.0
	Zone 28 Subtotal					23	20	43	1.0
29		1.00	TAZ 29	14.00	13.00	14	13	27	0.6
	Zone 29 Subtotal					14	13	27	0.6
30		1.00	TAZ 30	17.00	25.00	17	25	42	0.9
	Zone 30 Subtotal					17	25	42	0.9
31		1.00	TAZ 31	46.00	51.00	46	51	97	2.2
	Zone 31 Subtotal					46	51	97	2.2
33		1.00	TAZ 33	18.00	10.00	18	10	28	0.6
	Zone 33 Subtotal					18	10	28	0.6
34		1.00	TAZ 34	1.00	1.00	1	1	2	0.0
	Zone 34 Subtotal					1	1	2	0.0
37		1.00	TAZ 37	54.00	27.00	54	27	81	1.8
	Zone 37 Subtotal					54	27	81	1.8
38	Casino Proje	1.00	Casino	0.00	0.00	0	0	0	0.0
39		1.00	TAZ 39	72.00	73.00	72	73	145	3.3
	Zone 39 Subtotal					72	73	145	3.3
40		1.00	TAZ 40	36.00	38.00	36	38	74	1.7
	Zone 40 Subtotal					36	38	74	1.7
42	42 Rancho de	1.00	TAZ 42	47.00	51.00	47	51	98	2.2
	Zone 42 Subtotal					47	51	98	2.2

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 20 Subtotal					5	3	8	0.2
22		1.00	TAZ 22	109.00	112.00	109	112	221	5.0
	Zone 22 Subtotal					109	112	221	5.0
23		1.00	TAZ 23	33.00	35.00	33	35	68	1.5
	Zone 23 Subtotal					33	35	68	1.5
24	24 Vineyard	1.00	TAZ 24	16.00	10.00	16	10	26	0.6
	Zone 24 Subtotal					16	10	26	0.6
25	25 Westside	1.00	TAZ 25	15.00	9.00	15	9	24	0.5
	Zone 25 Subtotal					15	9	24	0.5
26		1.00	TAZ 26	30.00	33.00	30	33	63	1.4
	Zone 26 Subtotal					30	33	63	1.4
28	28 Citrus Ga	1.00	TAZ 28	23.00	20.00	23	20	43	1.0
	Zone 28 Subtotal					23	20	43	1.0
29		1.00	TAZ 29	14.00	13.00	14	13	27	0.6
	Zone 29 Subtotal					14	13	27	0.6
30		1.00	TAZ 30	17.00	25.00	17	25	42	1.0
	Zone 30 Subtotal					17	25	42	1.0
31		1.00	TAZ 31	46.00	51.00	46	51	97	2.2
	Zone 31 Subtotal					46	51	97	2.2
33		1.00	TAZ 33	18.00	10.00	18	10	28	0.6
	Zone 33 Subtotal					18	10	28	0.6
34		1.00	TAZ 34	1.00	1.00	1	1	2	0.0
	Zone 34 Subtotal					1	1	2	0.0
37		1.00	TAZ 37	54.00	27.00	54	27	81	1.8
	Zone 37 Subtotal					54	27	81	1.8
38	Casino Proje	1.00	Casino	0.00	0.00	0	0	0	0.0
39		1.00	TAZ 39	72.00	73.00	72	73	145	3.3
	Zone 39 Subtotal					72	73	145	3.3
40		1.00	TAZ 40	36.00	38.00	36	38	74	1.7
	Zone 40 Subtotal					36	38	74	1.7
42	42 Rancho de	1.00	TAZ 42	47.00	51.00	47	51	98	2.2
	Zone 42 Subtotal					47	51	98	2.2

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
43		1.00	TAZ 43	53.00	67.00	53	67	120	2.7
	Zone 43 Subtotal					53	67	120	2.7
44		1.00	TAZ 44	167.00	185.00	167	185	352	7.9
	Zone 44 Subtotal					167	185	352	7.9
45		1.00	TAZ 45	7.00	38.00	7	38	45	1.0
	Zone 45 Subtotal					7	38	45	1.0
46		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 46 Subtotal					27	27	54	1.2
47		1.00	TAZ 47	9.00	9.00	9	9	18	0.4
	Zone 47 Subtotal					9	9	18	0.4
48		1.00	TAZ 48	10.00	51.00	10	51	61	1.4
	Zone 48 Subtotal					10	51	61	1.4
50		1.00	TAZ 50	8.00	5.00	8	5	13	0.3
	Zone 50 Subtotal					8	5	13	0.3
54		1.00	TAZ 54	29.00	21.00	29	21	50	1.1
	Zone 54 Subtotal					29	21	50	1.1
56		1.00	TAZ 56	4.00	3.00	4	3	7	0.2
	Zone 56 Subtotal					4	3	7	0.2
57		1.00	TAZ 57	4.00	3.00	4	3	7	0.2
	Zone 57 Subtotal					4	3	7	0.2
62		1.00	TAZ 62	4.00	2.00	4	2	6	0.1
	Zone 62 Subtotal					4	2	6	0.1
119		1.00	TAZ 19	23.00	38.00	23	38	61	1.4
	Zone 119 Subtotal					23	38	61	1.4
122		1.00	TAZ 22	110.00	112.00	110	112	222	5.0
	Zone 122 Subtotal					110	112	222	5.0
123		1.00	TAZ 23	33.00	36.00	33	36	69	1.6
	Zone 123 Subtotal					33	36	69	1.6
137		1.00	TAZ 37	53.00	26.00	53	26	79	1.8
	Zone 137 Subtotal					53	26	79	1.8
138	TAZ 38	1.00	TAZ 38	31.00	112.00	31	112	143	3.2

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
43		1.00	TAZ 43	53.00	67.00	53	67	120	2.7
	Zone 43 Subtotal					53	67	120	2.7
44		1.00	TAZ 44	167.00	185.00	167	185	352	8.0
	Zone 44 Subtotal					167	185	352	8.0
45		1.00	TAZ 45	7.00	38.00	7	38	45	1.0
	Zone 45 Subtotal					7	38	45	1.0
46		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 46 Subtotal					27	27	54	1.2
47		1.00	TAZ 47	9.00	9.00	9	9	18	0.4
	Zone 47 Subtotal					9	9	18	0.4
48		1.00	TAZ 48	10.00	51.00	10	51	61	1.4
	Zone 48 Subtotal					10	51	61	1.4
50		1.00	TAZ 50	8.00	5.00	8	5	13	0.3
	Zone 50 Subtotal					8	5	13	0.3
54		1.00	TAZ 54	29.00	21.00	29	21	50	1.1
	Zone 54 Subtotal					29	21	50	1.1
56		1.00	TAZ 56	4.00	3.00	4	3	7	0.2
	Zone 56 Subtotal					4	3	7	0.2
57		1.00	TAZ 57	4.00	3.00	4	3	7	0.2
	Zone 57 Subtotal					4	3	7	0.2
62		1.00	TAZ 62	4.00	2.00	4	2	6	0.1
	Zone 62 Subtotal					4	2	6	0.1
119		1.00	TAZ 19	23.00	38.00	23	38	61	1.4
	Zone 119 Subtotal					23	38	61	1.4
122		1.00	TAZ 22	110.00	112.00	110	112	222	5.0
	Zone 122 Subtotal					110	112	222	5.0
123		1.00	TAZ 23	33.00	36.00	33	36	69	1.6
	Zone 123 Subtotal					33	36	69	1.6
137		1.00	TAZ 37	53.00	26.00	53	26	79	1.8
	Zone 137 Subtotal					53	26	79	1.8
138	TAZ 38	1.00	TAZ 38	31.00	112.00	31	112	143	3.2

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 138 Subtotal					31	112	143	3.2
139		1.00	TAZ 39	72.00	72.00	72	72	144	3.2
	Zone 139 Subtotal					72	72	144	3.2
140		1.00	TAZ 40	36.00	38.00	36	38	74	1.7
	Zone 140 Subtotal					36	38	74	1.7
142		1.00	TAZ 42	48.00	51.00	48	51	99	2.2
	Zone 142 Subtotal					48	51	99	2.2
143		1.00	TAZ 43	53.00	66.00	53	66	119	2.7
	Zone 143 Subtotal					53	66	119	2.7
144		1.00	TAZ 44	167.00	184.00	167	184	351	7.9
	Zone 144 Subtotal					167	184	351	7.9
146		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 146 Subtotal					27	27	54	1.2
148		1.00	TAZ 48	10.00	51.00	10	51	61	1.4
	Zone 148 Subtotal					10	51	61	1.4
TOTAL						1741	1935	3676	83.0

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
	Zone 138 Subtotal					31	112	143	3.2
139		1.00	TAZ 39	72.00	72.00	72	72	144	3.3
	Zone 139 Subtotal					72	72	144	3.3
140		1.00	TAZ 40	36.00	38.00	36	38	74	1.7
	Zone 140 Subtotal					36	38	74	1.7
142		1.00	TAZ 42	48.00	51.00	48	51	99	2.2
	Zone 142 Subtotal					48	51	99	2.2
143		1.00	TAZ 43	53.00	66.00	53	66	119	2.7
	Zone 143 Subtotal					53	66	119	2.7
144		1.00	TAZ 44	167.00	184.00	167	184	351	8.0
	Zone 144 Subtotal					167	184	351	8.0
146		1.00	TAZ 46	27.00	27.00	27	27	54	1.2
	Zone 146 Subtotal					27	27	54	1.2
148		1.00	TAZ 48	10.00	51.00	10	51	61	1.4
	Zone 148 Subtotal					10	51	61	1.4
TOTAL						1741	1935	3676	83.4

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt E

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	281.00	474.00	281	474	755	17.0
	Zone 38 Subtotal					281	474	755	17.0
TOTAL						281	474	755	17.0

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt E

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
38	Casino Proje	1.00	Casino	374.00	358.00	374	358	732	16.6
	Zone 38 Subtotal					374	358	732	16.6
TOTAL						374	358	732	16.6

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.535
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	13.1
Optimal Cycle:	23	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm												
Base Vol:	47	317	71	34	212	15	16	35	69	109	36	38
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	52	349	78	37	233	17	18	39	76	120	40	42
Added Vol:	97	146	92	21	102	0	0	14	83	100	14	28
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	149	495	170	58	335	17	18	53	159	220	54	70
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	149	495	170	58	335	17	18	53	159	220	54	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	149	495	170	58	335	17	18	53	159	220	54	70
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	149	495	170	58	335	17	18	53	159	220	54	70
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.72	0.85	0.78	0.78	0.78	0.88	0.88	0.88	0.67	0.67	0.67
Lanes:	0.46	1.54	1.00	0.28	1.64	0.08	0.08	0.23	0.69	0.64	0.16	0.20
Final Sat.:	631	2098	1615	420	2408	119	128	382	1156	819	200	260
Capacity Analysis Module:												
Vol/Sat:	0.24	0.24	0.11	0.14	0.14	0.14	0.14	0.14	0.14	0.27	0.27	0.27
Crit Moves:		****									****	
Green/Cycle:	0.44	0.44	0.44	0.44	0.44	0.44	0.50	0.50	0.50	0.50	0.50	0.50
Volume/Cap:	0.53	0.53	0.24	0.32	0.32	0.32	0.27	0.27	0.27	0.53	0.53	0.53
Delay/Veh:	14.8	14.8	12.4	12.8	12.8	12.8	10.2	10.2	10.2	12.8	12.8	12.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.8	14.8	12.4	12.8	12.8	12.8	10.2	10.2	10.2	12.8	12.8	12.8
LOS by Move:	B	B	B	B	B	B	B	B	B	B	B	B
HCM2kAvgQ:	6	6	2	3	3	3	3	3	3	6	6	6

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec):	70	Critical Vol./Cap.(X):	0.503
Loss Time (sec):	4 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.8
Optimal Cycle:	22	Level Of Service:	B

Street Name:	Cloverdale Blvd						First St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1 0	1	0 1	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	64	291	99	39	291	17	18	39	64	99	40	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	291	99	39	291	17	18	39	64	99	40	39
Added Vol:	92	134	86	21	112	0	0	14	88	104	14	28
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	156	425	185	60	403	17	18	53	152	203	54	67
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	156	425	185	60	403	17	18	53	152	203	54	67
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	156	425	185	60	403	17	18	53	152	203	54	67
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	156	425	185	60	403	17	18	53	152	203	54	67
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.67	0.67	0.85	0.80	0.80	0.80	0.88	0.88	0.88	0.69	0.69	0.69
Lanes:	0.54	1.46	1.00	0.25	1.68	0.07	0.08	0.24	0.68	0.62	0.17	0.21
Final Sat.:	688	1875	1615	378	2539	107	135	397	1138	819	218	270
Capacity Analysis Module:												
Vol/Sat:	0.23	0.23	0.11	0.16	0.16	0.16	0.13	0.13	0.13	0.25	0.25	0.25
Crit Moves:		****									****	
Green/Cycle:	0.45	0.45	0.45	0.45	0.45	0.45	0.49	0.49	0.49	0.49	0.49	0.49
Volume/Cap:	0.50	0.50	0.25	0.35	0.35	0.35	0.27	0.27	0.27	0.50	0.50	0.50
Delay/Veh:	14.0	14.0	12.1	12.7	12.7	12.7	10.6	10.6	10.6	12.6	12.6	12.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.0	14.0	12.1	12.7	12.7	12.7	10.6	10.6	10.6	12.6	12.6	12.6
LOS by Move:	B	B	B	B	B	B	B	B	B	B	B	B
HCM2kAvgQ:	5	5	3	4	4	4	3	3	3	5	5	5

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 5.1 Worst Case Level Of Service: F[63.0]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	466	95	46	399	0	0	0	0	61	0	34								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	466	95	46	399	0	0	0	0	61	0	34								
Added Vol:	0	334	57	1	285	0	0	0	0	46	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	800	152	47	684	0	0	0	0	107	0	34								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	800	152	47	684	0	0	0	0	107	0	34								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	800	152	47	684	0	0	0	0	107	0	34								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	952	xxxx	xxxxx	xxxx	xxxx	xxxxx	1312	xxxx	476								
Potent Cap.:	xxxx	xxxx	xxxxx	730	xxxx	xxxxx	xxxx	xxxx	xxxxx	153	xxxx	541								
Move Cap.:	xxxx	xxxx	xxxxx	730	xxxx	xxxxx	xxxx	xxxx	xxxxx	145	xxxx	541								
Volume/Cap:	xxxx	xxxx	xxxx	0.06	xxxx	xxxx	xxxx	xxxx	xxxx	0.74	xxxx	0.06								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	4.4	xxxx	0.2								
Control Del:	xxxxx	xxxx	xxxxx	10.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	79.1	xxxx	12.1								
LOS by Move:	*	*	*	B	*	*	*	*	*	F	*	B								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	10.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	B	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			63.0										
ApproachLOS:	*			*			*			F										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 6.0 Worst Case Level Of Service: F[64.1]

Street Name:	Cloverdale Blvd												Lake St											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	432	78	40	432	0	0	0	0	78	0	40								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	432	78	40	432	0	0	0	0	78	0	40								
Added Vol:	0	311	57	1	303	0	0	0	0	46	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	743	135	41	735	0	0	0	0	124	0	40								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	743	135	41	735	0	0	0	0	124	0	40								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	743	135	41	735	0	0	0	0	124	0	40								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9								
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	878	xxxx	xxxxx	xxxx	xxxx	xxxxx	1260	xxxx	439								
Potent Cap.:	xxxx	xxxx	xxxxx	778	xxxx	xxxxx	xxxx	xxxx	xxxxx	165	xxxx	571								
Move Cap.:	xxxx	xxxx	xxxxx	778	xxxx	xxxxx	xxxx	xxxx	xxxxx	158	xxxx	571								
Volume/Cap:	xxxx	xxxx	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx	0.78	xxxx	0.07								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	5.0	xxxx	0.2								
Control Del:	xxxxx	xxxx	xxxxx	9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	80.9	xxxx	11.8								
LOS by Move:	*	*	*	A	*	*	*	*	*	F	*	B								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			64.1										
ApproachLOS:	*			*			*			F										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.636
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 18.7
Optimal Cycle: 34 | Level Of Service: B

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0 1	1 0	1	0 1	1 0	0	0 1!	0 0	1	1 0	0 1
Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm												
Base Vol:	7	382	52	97	370	2	1	12	15	104	21	178
Growth Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Initial Bse:	8	420	57	107	407	2	1	13	17	114	23	196
Added Vol:	22	143	253	197	122	12	14	3	26	277	5	235
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	30	563	310	304	529	14	15	16	43	391	28	431
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	30	563	310	304	529	14	15	16	43	391	28	431
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	30	563	310	304	529	14	15	16	43	391	28	431
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	30	563	310	304	529	14	15	16	43	391	28	431
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.90	0.90	0.95	0.95	0.95	0.91	0.91	0.91	0.96	0.96	0.85
Lanes:	1.00	1.29	0.71	1.00	1.95	0.05	0.20	0.22	0.58	1.87	0.13	1.00
Final Sat.:	1805	2204	1214	1805	3502	94	355	381	999	3386	243	1615
Capacity Analysis Module:												
Vol/Sat:	0.02	0.26	0.26	0.17	0.15	0.15	0.04	0.04	0.04	0.12	0.12	0.27
Crit Moves:		****		****					****	****		
Green/Cycle:	0.07	0.40	0.40	0.26	0.60	0.60	0.07	0.07	0.07	0.18	0.18	0.45
Volume/Cap:	0.25	0.64	0.64	0.64	0.25	0.25	0.64	0.64	0.64	0.64	0.64	0.60
Delay/Veh:	32.2	17.8	17.8	25.6	6.6	6.6	43.0	43.0	43.0	28.6	28.6	16.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	32.2	17.8	17.8	25.6	6.6	6.6	43.0	43.0	43.0	28.6	28.6	16.0
LOS by Move:	C	B	B	C	A	A	D	D	D	C	C	B
HCM2kAvgQ:	1	9	9	7	3	3	3	3	3	5	5	8

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.748
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 27.5
Optimal Cycle: 46 | Level Of Service: C

Street Name:	Cloverdale Blvd						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0 1	1 0	1	0 1	1 0	0	0 1!	0 0	1	1 0	0 1
Volume Module:												
Base Vol:	68	6	88	0	8	9	5	255	50	80	230	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	6	88	0	8	9	5	255	50	80	230	0
Added Vol:	22	143	257	216	122	12	14	3	26	271	5	212
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	90	149	345	216	130	21	19	258	76	351	235	212
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	149	345	216	130	21	19	258	76	351	235	212
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	90	149	345	216	130	21	19	258	76	351	235	212
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	90	149	345	216	130	21	19	258	76	351	235	212
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.85	0.85	0.95	0.93	0.93	0.97	0.97	0.97	0.97	0.97	0.85
Lanes:	1.00	1.00	1.00	1.00	1.72	0.28	0.05	0.73	0.22	1.20	0.80	1.00
Final Sat.:	1805	1615	1615	1805	3043	492	99	1344	396	2210	1480	1615
Capacity Analysis Module:												
Vol/Sat:	0.05	0.09	0.21	0.12	0.04	0.04	0.19	0.19	0.19	0.16	0.16	0.13
Crit Moves:			****	****			****				****	
Green/Cycle:	0.24	0.29	0.29	0.16	0.21	0.21	0.26	0.26	0.26	0.21	0.21	0.37
Volume/Cap:	0.21	0.32	0.75	0.75	0.21	0.21	0.75	0.75	0.75	0.75	0.75	0.35
Delay/Veh:	21.5	19.8	27.4	38.4	23.2	23.2	30.4	30.4	30.4	29.8	29.8	16.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.5	19.8	27.4	38.4	23.2	23.2	30.4	30.4	30.4	29.8	29.8	16.2
LOS by Move:	C	B	C	D	C	C	C	C	C	C	C	B
HCM2kAvgQ:	2	3	9	6	2	2	9	9	9	8	8	4

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.5 Worst Case Level Of Service: C[22.3]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm																				
Base Vol:	0	0	0	4	0	24	0	43	97		25	345	0							
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00							
Initial Bse:	0	0	0	4	0	24	0	43	97		25	345	0							
Added Vol:	0	0	0	68	0	53	0	155	298		67	464	0							
PasserByVol:	0	0	0	0	0	0	0	0	0		0	0	0							
Initial Fut:	0	0	0	72	0	77	0	198	395		92	809	0							
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00							
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00							
PHF Volume:	0	0	0	72	0	77	0	198	395		92	809	0							
Reduct Vol:	0	0	0	0	0	0	0	0	0		0	0	0							
FinalVolume:	0	0	0	72	0	77	0	198	395		92	809	0							
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx							
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx							
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	1092	1586	405	xxxx	xxxx	xxxxx		593	xxxx	xxxxx							
Potent Cap.:	xxxx	xxxx	xxxxx	212	109	601	xxxx	xxxx	xxxxx		993	xxxx	xxxxx							
Move Cap.:	xxxx	xxxx	xxxxx	197	99	601	xxxx	xxxx	xxxxx		993	xxxx	xxxxx							
Volume/Cap:	xxxx	xxxx	xxxx	0.37	0.00	0.13	xxxx	xxxx	xxxx		0.09	xxxx	xxxx							
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	1.6	xxxx	xxxxx	xxxx	xxxx	xxxxx		0.3	xxxx	xxxxx							
Control Del:	xxxxx	xxxx	xxxxx	33.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx		9.0	xxxx	xxxxx							
LOS by Move:	*	*	*	D	*	*	*	*	*		A	*	*							
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	601	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.4	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	11.9	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shared LOS:	*	*	*	*	*	B	*	*	*		*	*	*							
ApproachDel:	xxxxxx			22.3			xxxxxx				xxxxxx									
ApproachLOS:	*			C			*				*									

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.6 Worst Case Level Of Service: C[18.7]

Street Name:	US 101 South Ramps									Citrus Fair Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Volume Module:																				
Base Vol:	0	0	0	3	0	23	0	42	117		19	176	0							
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00							
Initial Bse:	0	0	0	3	0	23	0	42	117		19	176	0							
Added Vol:	0	0	0	87	0	53	0	179	298		67	435	0							
PasserByVol:	0	0	0	0	0	0	0	0	0		0	0	0							
Initial Fut:	0	0	0	90	0	76	0	221	415		86	611	0							
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00							
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00							
PHF Volume:	0	0	0	90	0	76	0	221	415		86	611	0							
Reduct Vol:	0	0	0	0	0	0	0	0	0		0	0	0							
FinalVolume:	0	0	0	90	0	76	0	221	415		86	611	0							
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx							
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx							
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	894	1419	306	xxxx	xxxx	xxxxx		636	xxxx	xxxxx							
Potent Cap.:	xxxx	xxxx	xxxxx	285	138	696	xxxx	xxxx	xxxxx		957	xxxx	xxxxx							
Move Cap.:	xxxx	xxxx	xxxxx	265	126	696	xxxx	xxxx	xxxxx		957	xxxx	xxxxx							
Volume/Cap:	xxxx	xxxx	xxxx	0.34	0.00	0.11	xxxx	xxxx	xxxx		0.09	xxxx	xxxx							
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	1.4	xxxx	xxxxx	xxxx	xxxx	xxxxx		0.3	xxxx	xxxxx							
Control Del:	xxxxx	xxxx	xxxxx	25.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx		9.1	xxxx	xxxxx							
LOS by Move:	*	*	*	D	*	*	*	*	*		A	*	*							
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	696	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx							
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.4	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.8	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
Shared LOS:	*	*	*	*	*	B	*	*	*		*	*	*							
ApproachDel:	xxxxxx			18.7			xxxxxx				xxxxxx									
ApproachLOS:	*			C			*				*									

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 44.0 Worst Case Level Of Service: F[88.5]

Street Name:	US 101 North Ramps												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm																				
Base Vol:	272		0		55	0		0		0	23		15		0	0		57		6
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	272		0		55	0		0		0	23		15		0	0		57		6
Added Vol:	280		0		74	0		0		0	47		177		0	0		250		127
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	552		0		129	0		0		0	70		192		0	0		307		133
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	552		0		129	0		0		0	70		192		0	0		307		133
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	552		0		129	0		0		0	70		192		0	0		307		133
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	486	772			96	xxxx	xxxx	xxxxx			440	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	516	333			948	xxxx	xxxx	xxxxx			1131	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	491	312			948	xxxx	xxxx	xxxxx			1131	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	1.12	0.00			0.14	xxxx	xxxx	xxxx			0.06	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.5	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			9.4	xxxxx	xxxx	xxxxx			8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	491	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	18.7	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	107.0	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F		*		*	*		*		*	*		*		*	*		*		*
ApproachDel:			88.5			xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:			F			*					*					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 19.5 Worst Case Level Of Service: E[44.5]

Street Name:	US 101 North Ramps												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Volume Module:																				
Base Vol:	144		0		27	0		0		0	26		20		0	0		58		8
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	144		0		27	0		0		0	26		20		0	0		58		8
Added Vol:	280		0		74	0		0		0	47		219		0	0		221		104
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	424		0		101	0		0		0	73		239		0	0		279		112
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	424		0		101	0		0		0	73		239		0	0		279		112
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	424		0		101	0		0		0	73		239		0	0		279		112
Critical Gap Module:																				
Critical Gp:	6.8	6.5			6.9	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	525	776			120	xxxx	xxxx	xxxxx			391	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	488	331			916	xxxx	xxxx	xxxxx			1179	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	464	310			916	xxxx	xxxx	xxxxx			1179	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	0.91	0.00			0.11	xxxx	xxxx	xxxx			0.06	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			0.4	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			9.4	xxxxx	xxxx	xxxxx			8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			A	*	*	*			A	*	*	*	*	*				
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	464	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	10.3	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	52.9	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F		*		*	*		*		*	*		*		*	*		*		*
ApproachDel:			44.5			xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:			E			*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.623
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 24.1
Optimal Cycle: 40 | Level Of Service: C

Street Name:	US 101 North Ramps						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	1	0	0	1	0	0	0	0	1	0	2
	0	0	1	1	0							
Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm												
Base Vol:	272	0	55	0	0	0	23	15	0	0	57	6
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	272	0	55	0	0	0	23	15	0	0	57	6
Added Vol:	280	0	74	0	0	0	47	177	0	0	250	127
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	552	0	129	0	0	0	70	192	0	0	307	133
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	552	0	129	0	0	0	70	192	0	0	307	133
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	552	0	129	0	0	0	70	192	0	0	307	133
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	552	0	129	0	0	0	70	192	0	0	307	133
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.85	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	0.91
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	2.00	0.00	0.00	1.40	0.60
Final Sat.:	1357	0	1615	0	0	0	1805	3610	0	0	2405	1042
Capacity Analysis Module:												
Vol/Sat:	0.41	0.00	0.08	0.00	0.00	0.00	0.04	0.05	0.00	0.00	0.13	0.13
Crit Moves:	****						****				****	
Green/Cycle:	0.65	0.00	0.65	0.00	0.00	0.00	0.06	0.27	0.00	0.00	0.20	0.20
Volume/Cap:	0.62	0.00	0.12	0.00	0.00	0.00	0.62	0.20	0.00	0.00	0.62	0.62
Delay/Veh:	11.5	0.0	6.6	0.0	0.0	0.0	56.2	28.5	0.0	0.0	38.0	38.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.5	0.0	6.6	0.0	0.0	0.0	56.2	28.5	0.0	0.0	38.0	38.0
LOS by Move:	B	A	A	A	A	A	E	C	A	A	D	D
HCM2k95thQ:	19	0	3	0	0	0	6	5	0	0	14	14

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.507
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 23.4
Optimal Cycle: 32 | Level Of Service: C

Street Name:	US 101 North Ramps						Citrus Fair Dr					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	1	0	0	1	0	0	0	0	1	0	2
	0	0	1	1	0							
Volume Module:												
Base Vol:	144	0	27	0	0	0	26	20	0	0	58	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	144	0	27	0	0	0	26	20	0	0	58	8
Added Vol:	280	0	74	0	0	0	47	219	0	0	221	104
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	424	0	101	0	0	0	73	239	0	0	279	112
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	424	0	101	0	0	0	73	239	0	0	279	112
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	424	0	101	0	0	0	73	239	0	0	279	112
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	424	0	101	0	0	0	73	239	0	0	279	112
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.85	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	0.91
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	2.00	0.00	0.00	1.43	0.57
Final Sat.:	1357	0	1615	0	0	0	1805	3610	0	0	2465	990
Capacity Analysis Module:												
Vol/Sat:	0.31	0.00	0.06	0.00	0.00	0.00	0.04	0.07	0.00	0.00	0.11	0.11
Crit Moves:	****						****				****	
Green/Cycle:	0.62	0.00	0.62	0.00	0.00	0.00	0.08	0.30	0.00	0.00	0.22	0.22
Volume/Cap:	0.51	0.00	0.10	0.00	0.00	0.00	0.51	0.22	0.00	0.00	0.51	0.51
Delay/Veh:	11.2	0.0	7.9	0.0	0.0	0.0	47.0	26.1	0.0	0.0	34.6	34.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.2	0.0	7.9	0.0	0.0	0.0	47.0	26.1	0.0	0.0	34.6	34.6
LOS by Move:	B	A	A	A	A	A	D	C	A	A	C	C
HCM2k95thQ:	14	0	3	0	0	0	6	6	0	0	12	12

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 10.1 Worst Case Level Of Service: C[21.9]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	32	45	0	0	27	26	69	0	6	0	0	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	32	45	0	0	27	26	69	0	6	0	0	0								
Added Vol:	331	96	0	0	80	47	60	0	191	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	363	141	0	0	107	73	129	0	197	0	0	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	363	141	0	0	107	73	129	0	197	0	0	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	363	141	0	0	107	73	129	0	197	0	0	0								
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx								
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	180	xxxx	xxxxx	xxxx	xxxx	xxxxx	974	xxxx	107	xxxx	xxxx	xxxxx								
Potent Cap.:	1408	xxxx	xxxxx	xxxx	xxxx	xxxxx	282	xxxx	953	xxxx	xxxx	xxxxx								
Move Cap.:	1408	xxxx	xxxxx	xxxx	xxxx	xxxxx	226	xxxx	953	xxxx	xxxx	xxxxx								
Volume/Cap:	0.26	xxxx	xxxx	xxxx	xxxx	xxxx	0.57	xxxx	0.21	xxxx	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	1.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	3.2	xxxx	0.8	xxxx	xxxx	xxxxx								
Control Del:	8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	40.3	xxxx	9.8	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	*	*	*	E	*	A	*	*	*								
Movement:	LT - LTR - RT																			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			21.9			xxxxxx										
ApproachLOS:	*			*			C			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.4 Worst Case Level Of Service: B[13.5]

Street Name:	Asti (Frontage) Rd												Citrus Fair Dr											
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Volume Module:																				
Base Vol:	11	28	0	0	26	28	32	0	10	0	0	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	11	28	0	0	26	28	32	0	10	0	0	0								
Added Vol:	278	96	0	0	80	47	60	0	233	0	0	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	289	124	0	0	106	75	92	0	243	0	0	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	289	124	0	0	106	75	92	0	243	0	0	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	289	124	0	0	106	75	92	0	243	0	0	0								
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx								
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	181	xxxx	xxxxx	xxxx	xxxx	xxxxx	808	xxxx	106	xxxx	xxxx	xxxxx								
Potent Cap.:	1407	xxxx	xxxxx	xxxx	xxxx	xxxxx	353	xxxx	954	xxxx	xxxx	xxxxx								
Move Cap.:	1407	xxxx	xxxxx	xxxx	xxxx	xxxxx	297	xxxx	954	xxxx	xxxx	xxxxx								
Volume/Cap:	0.21	xxxx	xxxx	xxxx	xxxx	xxxx	0.31	xxxx	0.25	xxxx	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx	1.3	xxxx	1.0	xxxx	xxxx	xxxxx								
Control Del:	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	22.4	xxxx	10.1	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	*	*	*	C	*	B	*	*	*								
Movement:	LT - LTR - RT																			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			13.5			xxxxxx										
ApproachLOS:	*			*			B			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 29.4 Worst Case Level Of Service: F[67.8]

Street Name:	Asti (Frontage) Rd									Project Access												
Approach:	North Bound					South Bound				East Bound					West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0		
Volume Module:	2007 Balanced																					
Base Vol:	0	69		0		0	37		0		0	0		0		0	0		0			
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00			
Initial Bse:	0	69		0		0	37		0		0	0		0		0	0		0			
Added Vol:	0	156		155		126	110		0		0	0		0		261	0		213			
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0			
Initial Fut:	0	225		155		126	147		0		0	0		0		261	0		213			
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00			
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00			
PHF Volume:	0	225		155		126	147		0		0	0		0		261	0		213			
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0			
FinalVolume:	0	225		155		126	147		0		0	0		0		261	0		213			
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	6.5		6.2							
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	4.0		3.3							
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx	xxxxx		380	xxxx	xxxxx	xxxx	xxxx	xxxxx		702	702		303							
Potent Cap.:	xxxx	xxxx	xxxxx		1190	xxxx	xxxxx	xxxx	xxxx	xxxxx		408	365		742							
Move Cap.:	xxxx	xxxx	xxxxx		1190	xxxx	xxxxx	xxxx	xxxx	xxxxx		372	324		742							
Volume/Cap:	xxxx	xxxx	xxxx		0.11	xxxx	xxxx	xxxx	xxxx	xxxx		0.70	0.00		0.29							
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx	xxxxx		0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx									
Control Del:	xxxxx	xxxx	xxxxx		8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx									
LOS by Move:	*	*	*		A	*	*	*	*	*	*	*	*									
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx		480	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx		0.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx		13.0	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx		8.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx		67.8	xxxxx								
Shared LOS:	*	*	*		A	*	*	*	*	*	*		F	*								
ApproachDel:	xxxxxx				xxxxxx			xxxxxx					67.8									
ApproachLOS:	*				*			*					F									

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 15.6 Worst Case Level Of Service: E[42.7]

Street Name:	Asti (Frontage) Rd									Project Access												
Approach:	North Bound					South Bound				East Bound					West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R		
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign						
Rights:	Include					Include					Include					Include						
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0		
Volume Module:																						
Base Vol:	0	40		0		0	37		0		0	0		0		0	0		0			
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00			
Initial Bse:	0	40		0		0	37		0		0	0		0		0	0		0			
Added Vol:	0	156		206		168	110		0		0	0		0		197	0		161			
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0			
Initial Fut:	0	196		206		168	147		0		0	0		0		197	0		161			
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00			
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00			
PHF Volume:	0	196		206		168	147		0		0	0		0		197	0		161			
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0			
FinalVolume:	0	196		206		168	147		0		0	0		0		197	0		161			
Critical Gap Module:																						
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	6.5		6.2							
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	4.0		3.3							
Capacity Module:																						
Cnflict Vol:	xxxx	xxxx	xxxxx		402	xxxx	xxxxx	xxxx	xxxx	xxxxx		782	782		299							
Potent Cap.:	xxxx	xxxx	xxxxx		1168	xxxx	xxxxx	xxxx	xxxx	xxxxx		366	328		745							
Move Cap.:	xxxx	xxxx	xxxxx		1168	xxxx	xxxxx	xxxx	xxxx	xxxxx		321	276		745							
Volume/Cap:	xxxx	xxxx	xxxx		0.14	xxxx	xxxx	xxxx	xxxx	xxxx		0.61	0.00		0.22							
Level Of Service Module:																						
2Way95thQ:	xxxx	xxxx	xxxxx		0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx									
Control Del:	xxxxx	xxxx	xxxxx		8.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx									
LOS by Move:	*	*	*		A	*	*	*	*	*	*	*	*									
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT		
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx		432	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx		0.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx		7.9	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx		8.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx		42.7	xxxxx								
Shared LOS:	*	*	*		A	*	*	*	*	*	*		E	*								
ApproachDel:	xxxxxx				xxxxxx			xxxxxx					42.7									
ApproachLOS:	*				*			*					E									

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.390
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 20.3
Optimal Cycle: 23 | Level Of Service: C

Street Name:	Asti (Frontage) Rd						Project Access					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1	0	1	1	0	1	0	0	0	1
Volume Module:	2007 Balanced											
Base Vol:	0	69	0	0	37	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	69	0	0	37	0	0	0	0	0	0	0
Added Vol:	0	156	155	126	110	0	0	0	0	261	0	213
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	225	155	126	147	0	0	0	0	261	0	213
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	225	155	126	147	0	0	0	0	261	0	213
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	225	155	126	147	0	0	0	0	261	0	213
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	225	155	126	147	0	0	0	0	261	0	213
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.85	0.95	1.00	1.00	1.00	1.00	1.00	0.77	1.00	0.85
Lanes:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1900	1615	1805	1900	0	0	0	0	1461	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.12	0.10	0.07	0.08	0.00	0.00	0.00	0.00	0.18	0.00	0.13
Crit Moves:		****		****						****		
Green/Cycle:	0.00	0.30	0.30	0.50	0.48	0.00	0.00	0.00	0.00	0.46	0.00	0.46
Volume/Cap:	0.00	0.39	0.32	0.22	0.16	0.00	0.00	0.00	0.00	0.39	0.00	0.29
Delay/Veh:	0.0	28.0	27.2	14.1	14.6	0.0	0.0	0.0	0.0	18.3	0.0	17.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	28.0	27.2	14.1	14.6	0.0	0.0	0.0	0.0	18.3	0.0	17.2
LOS by Move:	A	C	C	B	B	A	A	A	A	B	A	B
HCM2k95thQ:	0	11	7	5	5	0	0	0	0	11	0	8

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.378
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 20.1
Optimal Cycle: 22 | Level Of Service: C

Street Name:	Asti (Frontage) Rd						Project Access					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1	0	1	1	0	1	0	0	0	1
Volume Module:												
Base Vol:	0	40	0	0	37	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	40	0	0	37	0	0	0	0	0	0	0
Added Vol:	0	156	206	168	110	0	0	0	0	197	0	161
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	196	206	168	147	0	0	0	0	197	0	161
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	196	206	168	147	0	0	0	0	197	0	161
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	196	206	168	147	0	0	0	0	197	0	161
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	196	206	168	147	0	0	0	0	197	0	161
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.85	0.95	1.00	1.00	1.00	1.00	1.00	0.77	1.00	0.85
Lanes:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1900	1615	1805	1900	0	0	0	0	1461	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.10	0.13	0.09	0.08	0.00	0.00	0.00	0.00	0.13	0.00	0.10
Crit Moves:			****	****						****		
Green/Cycle:	0.00	0.34	0.34	0.60	0.58	0.00	0.00	0.00	0.00	0.36	0.00	0.36
Volume/Cap:	0.00	0.31	0.38	0.22	0.13	0.00	0.00	0.00	0.00	0.38	0.00	0.28
Delay/Veh:	0.0	24.8	25.6	9.2	9.5	0.0	0.0	0.0	0.0	24.4	0.0	23.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	24.8	25.6	9.2	9.5	0.0	0.0	0.0	0.0	24.4	0.0	23.3
LOS by Move:	A	C	C	A	A	A	A	A	A	C	A	C
HCM2k95thQ:	0	9	10	5	4	0	0	0	0	9	0	7

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: C[15.8]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Volume Module:	2007 Balanced																			
Base Vol:	0	66		16		2	35		0		0	0		0		27	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	66		16		2	35		0		0	0		0		27	0		3	
Added Vol:	0	285		0		0	426		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	351		16		2	461		0		0	0		0		27	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	351		16		2	461		0		0	0		0		27	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	351		16		2	461		0		0	0		0		27	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		6.4	6.5		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		3.5	4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		367	xxxx		xxxxx		xxxx	xxxx		xxxxx		824	824		359	
Potent Cap.:	xxxx	xxxx		xxxxx		1203	xxxx		xxxxx		xxxx	xxxx		xxxxx		346	310		690	
Move Cap.:	xxxx	xxxx		xxxxx		1203	xxxx		xxxxx		xxxx	xxxx		xxxxx		345	310		690	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		0.08	0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
Control Del:	xxxxx	xxxx		xxxxx		8.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		*	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	363		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	0.3		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	15.8		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	C		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						15.8			
ApproachLOS:	*					*					*						C			

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: B[10.3]

Street Name:	Asti (Frontage) Rd									Santana Dr								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Volume Module:																				
Base Vol:	0	37		2		1	36		0		0	0		0		0	0		3	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	37		2		1	36		0		0	0		0		0	0		3	
Added Vol:	0	336		0		0	362		0		0	0		0		0	0		0	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	0	373		2		1	398		0		0	0		0		0	0		3	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	373		2		1	398		0		0	0		0		0	0		3	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	373		2		1	398		0		0	0		0		0	0		3	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		6.2	
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		375	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		374	
Potent Cap.:	xxxx	xxxx		xxxxx		1195	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		677	
Move Cap.:	xxxx	xxxx		xxxxx		1195	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		677	
Volume/Cap:	xxxx	xxxx		xxxx		0.00	xxxx		xxxx		xxxx	xxxx		xxxx		xxxx	xxxx		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		0.0	
Control Del:	xxxxx	xxxx		xxxxx		8.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		10.3	
LOS by Move:	*	*		*		A	*		*		*	*		*		*	*		B	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx	
SharedQueue:	xxxxx	xxxx		xxxxx		0.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shrd ConDel:	xxxxx	xxxx		xxxxx		8.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx	
Shared LOS:	*	*		*		A	*		*		*	*		*		*	*		*	
ApproachDel:	xxxxxx					xxxxxx					xxxxxx						10.3			
ApproachLOS:	*					*					*						B			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 4.0 Worst Case Level Of Service: C[20.3]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm																
Base Vol:	177	343	0	0	135	47	33	0	71	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	177	343	0	0	135	47	33	0	71	0	0	0				
Added Vol:	94	366	0	0	277	9	10	0	78	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	271	709	0	0	412	56	43	0	149	0	0	0				
User Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	298	780	0	0	453	62	47	0	164	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	298	780	0	0	453	62	47	0	164	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	515	xxxx	xxxxx	xxxx	xxxx	xxxxx	1857	1857	453	xxxx	xxxx	xxxxx				
Potent Cap.:	1061	xxxx	xxxxx	xxxx	xxxx	xxxxx	76	69	611	xxxx	xxxx	xxxxx				
Move Cap.:	1061	xxxx	xxxxx	xxxx	xxxx	xxxxx	59	49	611	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	135	121	xxxxx	54	103	xxxxx				
Volume/Cap:	0.28	xxxx	xxxx	xxxx	xxxx	xxxx	0.35	0.00	0.27	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	1.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.1	xxxx	xxxx	xxxxx				
Control Del:	9.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	13.0	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	B	*	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	135	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	45.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	E	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			20.3			xxxxxx						
ApproachLOS:	*			*			C			*						

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 4.0 Worst Case Level Of Service: C[17.5]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Volume Module:																
Base Vol:	124	239	0	0	239	40	40	0	124	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	124	239	0	0	239	40	40	0	124	0	0	0				
Added Vol:	88	355	0	0	287	9	10	0	82	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	212	594	0	0	526	49	50	0	206	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	212	594	0	0	526	49	50	0	206	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	212	594	0	0	526	49	50	0	206	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	575	xxxx	xxxxx	xxxx	xxxx	xxxxx	1544	1544	526	xxxx	xxxx	xxxxx				
Potent Cap.:	1008	xxxx	xxxxx	xxxx	xxxx	xxxxx	128	116	556	xxxx	xxxx	xxxxx				
Move Cap.:	1008	xxxx	xxxxx	xxxx	xxxx	xxxxx	107	92	556	xxxx	xxxx	xxxxx				
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	213	190	xxxxx	65	162	xxxxx				
Volume/Cap:	0.21	xxxx	xxxx	xxxx	xxxx	xxxx	0.23	0.00	0.37	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1.7	xxxx	xxxx	xxxxx				
Control Del:	9.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	15.2	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	C	*	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	213	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	27.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	D	*	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			17.5			xxxxxx						
ApproachLOS:	*			*			C			*						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 46.3 Worst Case Level Of Service: F[86.3]

Street Name:	Cloverdale Blvd									South Interchange													
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:2007 Balanced																				
Base Vol:	0	79		12		194	53		0		0		0		0	26		0		452
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	79		12		194	53		0		0		0		0	26		0		452
Added Vol:	0	80		175		291	62		0		0		0		0	123		0		374
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0
Initial Fut:	0	159		187		485	115		0		0		0		0	149		0		826
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	159		187		485	115		0		0		0		0	149		0		826
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	0	159		187		485	115		0		0		0		0	149		0		826
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx		xxxx		xxxxx	6.4		xxxx		6.2
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	3.5		xxxx		3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		264	xxxx		xxxxx		xxxx		xxxx		xxxxx	1326		xxxx		164
Potent Cap.:	xxxx	xxxx		xxxxx		1225	xxxx		xxxxx		xxxx		xxxx		xxxxx	162		xxxx		827
Move Cap.:	xxxx	xxxx		xxxxx		1225	xxxx		xxxxx		xxxx		xxxx		xxxxx	112		xxxx		827
Volume/Cap:	xxxx	xxxx		xxxx		0.40	xxxx		xxxx		xxxx		xxxx		xxxx	1.33		xxxx		1.00
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		1.9	xxxx		xxxxx		xxxx		xxxx		xxxxx	10.1		xxxx		17.5
Control Del:	xxxxx	xxxx		xxxxx		9.9	xxxx		xxxxx		xxxxx		xxxx		xxxxx	269.6		xxxx		53.3
LOS by Move:	*	*		*		A	*		*		*		*		*	F		*		F
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
Shared LOS:	*	*		*		*	*		*		*		*		*	*		*		*
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					86.3				
ApproachLOS:	*					*					*					F				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 37.0 Worst Case Level Of Service: F[74.9]

Street Name:	Cloverdale Blvd									South Interchange													
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	42		0		280	65		0		0		0		0	2		0		345
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	0	42		0		280	65		0		0		0		0	2		0		345
Added Vol:	0	80		175		305	62		0		0		0		0	123		0		357
PasserByVol:	0	0		0		0	0		0		0		0		0	0		0		0
Initial Fut:	0	122		175		585	127		0		0		0		0	125		0		702
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	0	122		175		585	127		0		0		0		0	125		0		702
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	0	122		175		585	127		0		0		0		0	125		0		702
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx		xxxxx		4.1	xxxx		xxxxx		xxxxx		xxxx		xxxxx	6.4		xxxx		6.2
FollowUpTim:	xxxxx	xxxx		xxxxx		2.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	3.5		xxxx		3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx		xxxxx		297	xxxx		xxxxx		xxxx		xxxx		xxxxx	1507		xxxx		210
Potent Cap.:	xxxx	xxxx		xxxxx		1276	xxxx		xxxxx		xxxx		xxxx		xxxxx	135		xxxx		836
Move Cap.:	xxxx	xxxx		xxxxx		1276	xxxx		xxxxx		xxxx		xxxx		xxxxx	86		xxxx		836
Volume/Cap:	xxxx	xxxx		xxxx		0.46	xxxx		xxxx		xxxx		xxxx		xxxx	1.45		xxxx		0.84
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx		xxxxx		2.5	xxxx		xxxxx		xxxx		xxxx		xxxxx	9.7		xxxx		9.9
Control Del:	xxxxx	xxxx		xxxxx		10.2	xxxx		xxxxx		xxxxx		xxxx		xxxxx	341.6		xxxx		27.4
LOS by Move:	*	*		*		B	*		*		*		*		*	F		*		D
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx		xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx		xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
Shared LOS:	*	*		*		*	*		*		*		*		*	*		*		*
ApproachDel:	xxxxxx					xxxxxx					xxxxxx					74.9				
ApproachLOS:	*					*					*					F				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec):	100	Critical Vol./Cap.(X):	1.039
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	71.9
Optimal Cycle:	180	Level Of Service:	E

Street Name:	Cloverdale Blvd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0 1	0	1 0	1 0	0	0 0	0 0	0	1 0	0 0	1
Volume Module:2007 Balanced												
Base Vol:	0	79	12	194	53	0	0	0	0	26	0	452
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	79	12	194	53	0	0	0	0	26	0	452
Added Vol:	0	80	175	291	62	0	0	0	0	123	0	374
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	159	187	485	115	0	0	0	0	149	0	826
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	159	187	485	115	0	0	0	0	149	0	826
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	159	187	485	115	0	0	0	0	149	0	826
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	159	187	485	115	0	0	0	0	149	0	826
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.93	0.93	0.95	1.00	1.00	1.00	1.00	1.00	0.78	1.00	0.85
Lanes:	0.00	0.46	0.54	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	809	952	1805	1900	0	0	0	0	1480	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.20	0.20	0.27	0.06	0.00	0.00	0.00	0.00	0.10	0.00	0.51
Crit Moves:		****		****								****
Green/Cycle:	0.00	0.19	0.19	0.26	0.45	0.00	0.00	0.00	0.00	0.49	0.00	0.49
Volume/Cap:	0.00	1.04	1.04	1.04	0.14	0.00	0.00	0.00	0.00	0.20	0.00	1.04
Delay/Veh:	0.0	100	100.3	89.2	16.3	0.0	0.0	0.0	0.0	14.5	0.0	67.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	100	100.3	89.2	16.3	0.0	0.0	0.0	0.0	14.5	0.0	67.8
LOS by Move:	A	F	F	F	B	A	A	A	A	B	A	E
HCM2k95thQ:	0	30	30	38	4	0	0	0	0	5	0	56

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec):	100	Critical Vol./Cap.(X):	0.988
Loss Time (sec):	6 (Y+R=4.0 sec)	Average Delay (sec/veh):	60.4
Optimal Cycle:	180	Level Of Service:	E

Street Name:	Cloverdale Blvd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0 1	0	1 0	1 0	0	0 0	0 0	0	1 0	0 0	1
Volume Module:												
Base Vol:	0	42	0	280	65	0	0	0	0	2	0	345
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	42	0	280	65	0	0	0	0	2	0	345
Added Vol:	0	80	175	305	62	0	0	0	0	123	0	357
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	122	175	585	127	0	0	0	0	125	0	702
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	122	175	585	127	0	0	0	0	125	0	702
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	122	175	585	127	0	0	0	0	125	0	702
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	122	175	585	127	0	0	0	0	125	0	702
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.92	0.92	0.95	1.00	1.00	1.00	1.00	1.00	0.78	1.00	0.85
Lanes:	0.00	0.41	0.59	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	718	1030	1805	1900	0	0	0	0	1490	0	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.17	0.17	0.32	0.07	0.00	0.00	0.00	0.00	0.08	0.00	0.43
Crit Moves:		****		****								****
Green/Cycle:	0.00	0.17	0.17	0.33	0.50	0.00	0.00	0.00	0.00	0.44	0.00	0.44
Volume/Cap:	0.00	0.99	0.99	0.99	0.13	0.00	0.00	0.00	0.00	0.19	0.00	0.99
Delay/Veh:	0.0	89.8	89.8	67.2	13.5	0.0	0.0	0.0	0.0	17.3	0.0	58.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	89.8	89.8	67.2	13.5	0.0	0.0	0.0	0.0	17.3	0.0	58.4
LOS by Move:	A	F	F	E	B	A	A	A	A	B	A	E
HCM2k95thQ:	0	25	25	40	4	0	0	0	0	5	0	46

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 138.5 Worst Case Level Of Service: F[1398.2]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced																				
Base Vol:	0	0	0	5	0	49	0	100	106	16	429	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	5	0	49	0	100	106	16	429	0								
Added Vol:	0	0	0	121	0	46	0	168	298	491	451	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	126	0	95	0	268	404	507	880	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	126	0	95	0	268	404	507	880	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	126	0	95	0	268	404	507	880	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	2364	2566	880	xxxx	xxxx	xxxxx	672	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	39	26	349	xxxx	xxxx	xxxxx	928	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	22	12	349	xxxx	xxxx	xxxxx	928	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	5.65	0.00	0.27	xxxx	xxxx	xxxx	0.55	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	1.1	xxxx	xxxx	xxxxx	3.4	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	19.1	xxxxx	xxxx	xxxxx	13.4	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	C	*	*	*	B	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	22	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	15.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	2438	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			1398.2			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 94.9 Worst Case Level Of Service: F[895.9]

Street Name:	101 S Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	0	0	60	0	124	201	1	299	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	0	0	60	0	124	201	1	299	0								
Added Vol:	0	0	0	121	0	46	0	182	298	445	433	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	121	0	106	0	306	499	446	732	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Volume:	0	0	0	121	0	106	0	306	499	446	732	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	121	0	106	0	306	499	446	732	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	2180	2429	732	xxxx	xxxx	xxxxx	805	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	51	32	424	xxxx	xxxx	xxxxx	828	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	30	15	424	xxxx	xxxx	xxxxx	828	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	4.10	0.00	0.25	xxxx	xxxx	xxxx	0.54	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	1.0	xxxx	xxxx	xxxxx	3.3	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	16.3	xxxxx	xxxx	xxxxx	14.3	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	C	*	*	*	B	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	30	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	14.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	1666	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			895.9			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.808
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 23.5
Optimal Cycle: 60 Level Of Service: C

Street Name:	101 S Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced												
Base Vol:	0	0	0	5	0	49	0	100	106	16	429	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	5	0	49	0	100	106	16	429	0
Added Vol:	0	0	0	121	0	46	0	168	298	491	451	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	126	0	95	0	268	404	507	880	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	126	0	95	0	268	404	507	880	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	126	0	95	0	268	404	507	880	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	126	0	95	0	268	404	507	880	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.71	1.00	0.84	1.00	0.92	0.92	0.95	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.40	0.60	1.00	1.00	0.00
Final Sat.:	0	0	0	1343	0	1599	0	696	1050	1805	1900	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.09	0.00	0.06	0.00	0.38	0.38	0.28	0.46	0.00
Crit Moves:				****				****		****		
Green/Cycle:	0.00	0.00	0.00	0.12	0.00	0.12	0.00	0.48	0.48	0.35	0.82	0.00
Volume/Cap:	0.00	0.00	0.00	0.81	0.00	0.51	0.00	0.81	0.81	0.81	0.56	0.00
Delay/Veh:	0.0	0.0	0.0	69.0	0.0	43.9	0.0	28.2	28.2	37.3	3.4	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	69.0	0.0	43.9	0.0	28.2	28.2	37.3	3.4	0.0
LOS by Move:	A	A	A	E	A	D	A	C	C	D	A	A
HCM2k95thQ:	0	0	0	11	0	7	0	33	33	23	15	0

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.851
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 26.6
Optimal Cycle: 72 Level Of Service: C

Street Name:	101 S Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0	0 1	0	0 1	0 0	0	1 0	1 0	1	0 0
Volume Module:												
Base Vol:	0	0	0	0	0	60	0	124	201	1	299	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	60	0	124	201	1	299	0
Added Vol:	0	0	0	121	0	46	0	182	298	445	433	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	121	0	106	0	306	499	446	732	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	121	0	106	0	306	499	446	732	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	121	0	106	0	306	499	446	732	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	121	0	106	0	306	499	446	732	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.71	1.00	0.84	1.00	0.92	0.92	0.95	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.38	0.62	1.00	1.00	0.00
Final Sat.:	0	0	0	1343	0	1599	0	662	1079	1805	1900	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.09	0.00	0.07	0.00	0.46	0.46	0.25	0.39	0.00
Crit Moves:				****				****		****		
Green/Cycle:	0.00	0.00	0.00	0.11	0.00	0.11	0.00	0.54	0.54	0.29	0.83	0.00
Volume/Cap:	0.00	0.00	0.00	0.85	0.00	0.63	0.00	0.85	0.85	0.85	0.46	0.00
Delay/Veh:	0.0	0.0	0.0	79.7	0.0	50.0	0.0	26.8	26.8	46.0	2.5	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	79.7	0.0	50.0	0.0	26.8	26.8	46.0	2.5	0.0
LOS by Move:	A	A	A	E	A	D	A	C	C	D	A	A
HCM2k95thQ:	0	0	0	12	0	8	0	39	39	23	11	0

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange West Consolidated Roundabout

PM Buildout + Project E Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
WB South Interchange										
1L	L	675	1.9	0.522	12.1	LOS B	147	0.56	0.64	23.3
6T	T	785	2.0	0.506	2.5	LOS A	146	0.52	0.27	27.9
Approach		**1460**	**2.0**	**0.521**	**6.9**	**LOS A**	**147**	**0.53**	**0.44**	**25.3**
SB Offramp										
17L	L	134	2.2	0.460	19.1	LOS B	81	0.82	1.01	20.9
14T	T	17	5.6	0.462	9.4	LOS A	81	0.82	0.92	24.5
14R	R	83	2.4	0.461	11.1	LOS B	81	0.82	0.95	23.2
Approach		**235**	**2.6**	**0.460**	**15.5**	**LOS B**	**81**	**0.82**	**0.98**	**21.8**
SB Cloverdale Blvd										
15L	L	212	1.9	0.391	15.0	LOS B	71	0.86	0.88	22.1
12T	T	299	2.0	0.454	7.0	LOS A	126	0.92	0.77	25.1
12R	R	121	1.7	0.455	8.8	LOS A	126	0.92	0.85	24.3
Approach		**631**	**1.9**	**0.454**	**10.0**	**LOS B**	**126**	**0.90**	**0.82**	**23.8**
NB Cloverdale Blvd										
13L	L	167	1.8	0.652	22.8	LOS C	169	0.91	1.14	19.0
18T	T	71	1.4	0.654	14.5	LOS B	169	0.91	1.10	21.1
18R	R	126	2.4	0.651	16.1	LOS B	169	0.91	1.11	20.2
Approach		**364**	**1.9**	**0.652**	**18.9**	**LOS B**	**169**	**0.91**	**1.12**	**19.7**
All Vehicles		**2690**	**2.0**	**0.654**	**10.0**	**LOS B**	**169**	**0.70**	**0.67**	**23.7**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA INTERSECTION

Movement Summary

South Interchange West Consolidated Roundabout

WKD Buildout+Project E Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
WB South Interchange										
1L	L	585	2.0	0.434	11.7	LOS B	114	0.44	0.62	23.7
6T	T	655	2.0	0.407	2.2	LOS A	108	0.41	0.24	28.8
Approach		**1241**	**2.0**	**0.434**	**6.7**	**LOS A**	**114**	**0.42**	**0.42**	**25.8**
SB Offramp										
17L	L	128	2.3	0.389	16.6	LOS B	62	0.74	0.95	22.1
14T	T	18	5.3	0.388	6.8	LOS A	62	0.74	0.78	26.3
14R	R	94	2.1	0.388	8.6	LOS A	62	0.74	0.86	25.2
Approach		**242**	**2.5**	**0.389**	**12.7**	**LOS B**	**62**	**0.74**	**0.90**	**23.3**
SB Cloverdale Blvd										
15L	L	245	2.0	0.406	14.1	LOS B	71	0.80	0.85	22.6
12T	T	371	1.9	0.486	6.4	LOS A	135	0.87	0.72	25.4
12R	R	134	2.2	0.486	8.3	LOS A	135	0.87	0.82	24.6
Approach		**749**	**2.0**	**0.485**	**9.3**	**LOS A**	**135**	**0.85**	**0.78**	**24.2**
NB Cloverdale Blvd										
13L	L	128	2.3	0.571	20.6	LOS C	131	0.88	1.08	19.9
18T	T	61	1.6	0.570	12.2	LOS B	131	0.88	1.02	22.5
18R	R	123	1.6	0.572	13.8	LOS B	131	0.88	1.03	21.5
Approach		**313**	**1.9**	**0.571**	**16.3**	**LOS B**	**131**	**0.88**	**1.05**	**20.9**
All Vehicles		**2545**	**2.0**	**0.572**	**9.2**	**LOS A**	**135**	**0.64**	**0.65**	**24.4**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 430.9 Worst Case Level Of Service: F[949.3]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:	2007 Balanced																			
Base Vol:	371		0		18	0		0		0	63		42		0	0		74		5
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	371		0		18	0		0		0	63		42		0	0		74		5
Added Vol:	292		0		364	0		0		0	52		237		0	0		650		137
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	663		0		382	0		0		0	115		279		0	0		724		142
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	663		0		382	0		0		0	115		279		0	0		724		142
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	663		0		382	0		0		0	115		279		0	0		724		142
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	1304	1375			279	xxxx	xxxx	xxxxx			866	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	179	147			765	xxxx	xxxx	xxxxx			786	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	159	125			765	xxxx	xxxx	xxxxx			786	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	4.18	0.00			0.50	xxxx	xxxx	xxxx			0.15	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			2.8	xxxx	xxxx	xxxxx			0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			14.3	xxxxx	xxxx	xxxxx			10.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			B	*	*	*			B	*	*	*	*	*				
Movement:	LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT		
Shared Cap.:	159	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	66.8	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	1488	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F	*			*	*		*			*	*				*	*			
ApproachDel:	949.3					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 277.1 Worst Case Level Of Service: F[623.7]

Street Name:	101 N Ramps									South Interchange								
Approach:	North Bound					South Bound				East Bound					West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	248		6		11	0		0		0	77		41		0	0		57		1
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	248		6		11	0		0		0	77		41		0	0		57		1
Added Vol:	292		0		401	0		0		0	52		251		0	0		587		137
PasserByVol:	0		0		0	0		0		0	0		0		0	0		0		0
Initial Fut:	540		6		412	0		0		0	129		292		0	0		644		138
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	540		6		412	0		0		0	129		292		0	0		644		138
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	540		6		412	0		0		0	129		292		0	0		644		138
Critical Gap Module:																				
Critical Gp:	6.4	6.5			6.2	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0			3.3	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																				
Cnflict Vol:	1263	1332			292	xxxx	xxxx	xxxxx			782	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	189	156			752	xxxx	xxxx	xxxxx			845	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	167	132			752	xxxx	xxxx	xxxxx			845	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	3.23	0.05			0.55	xxxx	xxxx	xxxx			0.15	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx			3.4	xxxx	xxxx	xxxxx			0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx			15.4	xxxxx	xxxx	xxxxx			10.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*			C	*	*	*			B	*	*	*	*	*				
Movement:	LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT		
Shared Cap.:	166	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	51.4	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	1083	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	F	*			*	*		*			*	*				*	*			
ApproachDel:	623.7					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	F					*					*					*				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 1.089
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 72.1
Optimal Cycle: 180 | Level Of Service: E

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0 0	0	1 0	1 0	0	0 0	0 1	0
Volume Module:	2007 Balanced											
Base Vol:	371	0	18	0	0	0	63	42	0	0	74	5
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	371	0	18	0	0	0	63	42	0	0	74	5
Added Vol:	292	0	364	0	0	0	52	237	0	0	650	137
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	663	0	382	0	0	0	115	279	0	0	724	142
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	663	0	382	0	0	0	115	279	0	0	724	142
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	663	0	382	0	0	0	115	279	0	0	724	142
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	663	0	382	0	0	0	115	279	0	0	724	142
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.84	0.16
Final Sat.:	1343	0	1599	0	0	0	1805	1900	0	0	1554	305
Capacity Analysis Module:												
Vol/Sat:	0.49	0.00	0.24	0.00	0.00	0.00	0.06	0.15	0.00	0.00	0.47	0.47
Crit Moves:	****						****				****	
Green/Cycle:	0.45	0.00	0.45	0.00	0.00	0.00	0.06	0.49	0.00	0.00	0.43	0.43
Volume/Cap:	1.09	0.00	0.53	0.00	0.00	0.00	1.09	0.30	0.00	0.00	1.09	1.09
Delay/Veh:	90.3	0.0	20.4	0.0	0.0	0.0	160.6	15.6	0.0	0.0	87.4	87.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	90.3	0.0	20.4	0.0	0.0	0.0	160.6	15.6	0.0	0.0	87.4	87.4
LOS by Move:	F	A	C	A	A	A	F	B	A	A	F	F
HCM2k95thQ:	51	0	16	0	0	0	10	9	0	0	56	56

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.862
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 33.8
Optimal Cycle: 76 | Level Of Service: C

Street Name:	101 N Ramps						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0 0	0 0	0	1 0	1 0	0	0 0	0 1	0
Volume Module:												
Base Vol:	248	6	11	0	0	0	77	41	0	0	57	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	248	6	11	0	0	0	77	41	0	0	57	1
Added Vol:	292	0	401	0	0	0	52	251	0	0	587	137
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	540	6	412	0	0	0	129	292	0	0	644	138
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	540	6	412	0	0	0	129	292	0	0	644	138
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	540	6	412	0	0	0	129	292	0	0	644	138
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	540	6	412	0	0	0	129	292	0	0	644	138
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.91	0.91	0.84	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	0.99	0.01	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.82	0.18
Final Sat.:	1702	19	1599	0	0	0	1805	1900	0	0	1527	327
Capacity Analysis Module:												
Vol/Sat:	0.32	0.32	0.26	0.00	0.00	0.00	0.07	0.15	0.00	0.00	0.42	0.42
Crit Moves:		****					****				****	
Green/Cycle:	0.37	0.37	0.37	0.00	0.00	0.00	0.08	0.57	0.00	0.00	0.49	0.49
Volume/Cap:	0.86	0.86	0.70	0.00	0.00	0.00	0.86	0.27	0.00	0.00	0.86	0.86
Delay/Veh:	40.9	40.9	30.7	0.0	0.0	0.0	82.1	11.0	0.0	0.0	31.1	31.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	40.9	40.9	30.7	0.0	0.0	0.0	82.1	11.0	0.0	0.0	31.1	31.1
LOS by Move:	D	D	C	A	A	A	F	B	A	A	C	C
HCM2k95thQ:	32	32	21	0	0	0	8	8	0	0	36	36

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	Asti (Frontage) Rd							South Interchange							
Approach:	North Bound				South Bound			East Bound				West Bound			
Movement:	L - T - R				L - T - R			L - T - R				L - T - R			
Control:	Uncontrolled				Uncontrolled			Stop Sign				Stop Sign			
Rights:	Include				Include			Include				Include			
Lanes:	0 0 1! 0 0				0 0 1! 0 0			0 0 1! 0 0				0 0 1! 0 0			
Volume Module:	2007 Balanced														
Base Vol:	32	33	0	0	15	47	49	0	11	0	0	0			
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Initial Bse:	32	33	0	0	15	47	49	0	11	0	0	0			
Added Vol:	239	56	3	30	50	400	248	134	219	4	148	33			
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0			
Initial Fut:	271	89	3	30	65	447	297	134	230	4	148	33			
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
PHF Volume:	271	89	3	30	65	447	297	134	230	4	148	33			
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0			
FinalVolume:	271	89	3	30	65	447	297	134	230	4	148	33			
Critical Gap Module:															
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2			
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3			
Capacity Module:															
Cnflict Vol:	512	xxxx	xxxxx	92	xxxx	xxxxx	1072	983	289	1163	1205	91			
Potent Cap.:	1064	xxxx	xxxxx	1515	xxxx	xxxxx	200	251	755	173	186	973			
Move Cap.:	1064	xxxx	xxxxx	1515	xxxx	xxxxx	0	172	755	34	127	973			
Volume/Cap:	0.25	xxxx	xxxx	0.02	xxxx	xxxx	xxxx	0.78	0.30	0.12	1.16	0.03			
Level Of Service Module:															
2Way95thQ:	1.0	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			
Control Del:	9.5	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*			
Movement:	LT - LTR - RT				LT - LTR - RT			LT - LTR - RT				LT - LTR - RT			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0	xxxxx	xxxx	141	xxxxx			
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.5	xxxxx			
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	243	xxxxx			
Shared LOS:	*	*	*	*	*	*	*	*	*	*	F	*			
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			242.8					
ApproachLOS:	*			*			F			F					

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 6307.6 Worst Case Level Of Service: F[15309.0]

Street Name:	Asti (Frontage) Rd							South Interchange							
Approach:	North Bound				South Bound			East Bound				West Bound			
Movement:	L - T - R				L - T - R			L - T - R				L - T - R			
Control:	Uncontrolled				Uncontrolled			Stop Sign				Stop Sign			
Rights:	Include				Include			Include				Include			
Lanes:	0 0 1! 0 0				0 0 1! 0 0			0 0 1! 0 0				0 0 1! 0 0			
Volume Module:															
Base Vol:	26	19	0	0	18	42	37	0	11	0	0	0			
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Initial Bse:	26	19	0	0	18	42	37	0	11	0	0	0			
Added Vol:	239	56	3	30	50	336	299	134	219	4	148	33			
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0			
Initial Fut:	265	75	3	30	68	378	336	134	230	4	148	33			
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
PHF Volume:	265	75	3	30	68	378	336	134	230	4	148	33			
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0			
FinalVolume:	265	75	3	30	68	378	336	134	230	4	148	33			
Critical Gap Module:															
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2			
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3			
Capacity Module:															
Cnflict Vol:	446	xxxx	xxxxx	78	xxxx	xxxxx	1014	925	257	1106	1113	77			
Potent Cap.:	1125	xxxx	xxxxx	1533	xxxx	xxxxx	219	271	787	190	210	990			
Move Cap.:	1125	xxxx	xxxxx	1533	xxxx	xxxxx	10	192	787	47	149	990			
Volume/Cap:	0.24	xxxx	xxxx	0.02	xxxx	xxxx	33.23	0.70	0.29	0.08	0.99	0.03			
Level Of Service Module:															
2Way95thQ:	0.9	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			
Control Del:	9.2	xxxx	xxxxx	7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*			
Movement:	LT - LTR - RT				LT - LTR - RT			LT - LTR - RT				LT - LTR - RT			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	20	xxxxx	xxxx	167	xxxxx			
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	87.9	xxxxx	xxxxx	9.6	xxxxx			
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	158	xxxxx			
Shared LOS:	*	*	*	*	*	*	*	F	*	*	F	*			
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			158.1					
ApproachLOS:	*			*			F			F					

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.839
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 45.3
Optimal Cycle: 75 | Level Of Service: D

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0
Volume Module:	2007 Balanced											
Base Vol:	32	33	0	0	15	47	49	0	11	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	32	33	0	0	15	47	49	0	11	0	0	0
Added Vol:	239	56	3	30	50	400	248	134	219	4	148	33
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	271	89	3	30	65	447	297	134	230	4	148	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	271	89	3	30	65	447	297	134	230	4	148	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	271	89	3	30	65	447	297	134	230	4	148	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	271	89	3	30	65	447	297	134	230	4	148	33
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	0.95	0.87	0.87	0.95	0.91	0.91	0.98	0.98	0.98
Lanes:	1.00	0.97	0.03	1.00	0.13	0.87	1.00	0.37	0.63	0.02	0.80	0.18
Final Sat.:	1805	1829	62	1805	210	1441	1805	633	1086	40	1482	330
Capacity Analysis Module:												
Vol/Sat:	0.15	0.05	0.05	0.02	0.31	0.31	0.16	0.21	0.21	0.10	0.10	0.10
Crit Moves:	****				****				****	****		
Green/Cycle:	0.18	0.41	0.41	0.14	0.37	0.37	0.25	0.25	0.25	0.12	0.12	0.12
Volume/Cap:	0.84	0.12	0.12	0.12	0.84	0.84	0.65	0.84	0.84	0.84	0.84	0.84
Delay/Veh:	57.0	18.4	18.4	37.8	38.8	38.8	36.8	49.0	49.0	66.9	66.9	66.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.0	18.4	18.4	37.8	38.8	38.8	36.8	49.0	49.0	66.9	66.9	66.9
LOS by Move:	E	B	B	D	D	D	D	D	D	E	E	E
HCM2k95thQ:	20	4	4	2	29	29	15	21	21	15	15	15

Note: Queue reported is the number of cars per lane.

Midday Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.790
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 42.2
Optimal Cycle: 63 | Level Of Service: D

Street Name:	Asti (Frontage) Rd						South Interchange					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0
Volume Module:												
Base Vol:	26	19	0	0	18	42	37	0	11	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	26	19	0	0	18	42	37	0	11	0	0	0
Added Vol:	239	56	3	30	50	336	299	134	219	4	148	33
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	265	75	3	30	68	378	336	134	230	4	148	33
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	265	75	3	30	68	378	336	134	230	4	148	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	265	75	3	30	68	378	336	134	230	4	148	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	265	75	3	30	68	378	336	134	230	4	148	33
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.99	0.99	0.95	0.87	0.87	0.95	0.91	0.91	0.98	0.98	0.98
Lanes:	1.00	0.96	0.04	1.00	0.15	0.85	1.00	0.37	0.63	0.02	0.80	0.18
Final Sat.:	1805	1816	73	1805	253	1406	1805	633	1086	40	1482	330
Capacity Analysis Module:												
Vol/Sat:	0.15	0.04	0.04	0.02	0.27	0.27	0.19	0.21	0.21	0.10	0.10	0.10
Crit Moves:	****				****				****	****		
Green/Cycle:	0.19	0.37	0.37	0.15	0.34	0.34	0.27	0.27	0.27	0.13	0.13	0.13
Volume/Cap:	0.79	0.11	0.11	0.11	0.79	0.79	0.70	0.79	0.79	0.79	0.79	0.79
Delay/Veh:	50.8	20.4	20.4	36.8	37.2	37.2	37.3	43.0	43.0	58.9	58.9	58.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	50.8	20.4	20.4	36.8	37.2	37.2	37.3	43.0	43.0	58.9	58.9	58.9
LOS by Move:	D	C	C	D	D	D	D	D	D	E	E	E
HCM2k95thQ:	18	3	3	2	25	25	17	20	20	14	14	14

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

PM Buildout+ Project E Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	67	1.5	0.705	20.1	LOS C	167	0.90	1.13	19.6
16T	T	218	1.8	0.706	13.0	LOS B	167	0.90	1.09	22.0
16R	R	97	2.1	0.708	14.6	LOS B	167	0.90	1.10	21.0
Approach		**382**	**1.8**	**0.706**	**14.6**	**LOS B**	**167**	**0.90**	**1.10**	**21.2**
WB AV Resort										
1L	L	4	20.0	0.455	23.3	LOS C	91	0.89	1.04	19.2
6T	T	119	1.7	0.452	13.7	LOS B	91	0.89	0.99	21.5
6R	R	72	1.4	0.452	15.0	LOS B	91	0.89	0.98	20.8
Approach		**195**	**2.1**	**0.452**	**14.4**	**LOS B**	**91**	**0.89**	**0.99**	**21.2**
SB Asti										
17L	L	100	2.0	1.042	66.6	LOS E	690	1.00	2.09	10.2
14T	T	424	1.9	1.042	57.9	LOS E	690	1.00	2.09	9.6
14R	R	46	2.2	1.045	59.4	LOS E	690	1.00	2.09	9.4
Approach		**570**	**1.9**	**1.041**	**59.5**	**LOS E**	**690**	**1.00**	**2.09**	**9.7**
EB South Interchange										
5L	L	236	2.1	0.296	10.7	LOS B	66	0.33	0.60	24.2
2T	T	66	1.5	0.296	2.1	LOS A	66	0.33	0.23	29.4
2R	R	114	1.8	0.297	2.1	LOS A	66	0.33	0.23	29.4
Approach		**415**	**1.9**	**0.296**	**7.0**	**LOS A**	**66**	**0.33**	**0.44**	**26.0**
101 NB Offramp										
13L	L	698	2.0	0.571	15.9	LOS B	150	0.74	0.90	22.4
18T	T	238	2.1	0.571	5.8	LOS A	150	0.74	0.67	26.2
18R	R	203	2.0	0.572	6.9	LOS A	150	0.74	0.73	25.6
Approach		**1139**	**2.0**	**0.571**	**12.2**	**LOS B**	**150**	**0.74**	**0.82**	**23.5**
All Vehicles		**2701**	**2.0**	**1.045**	**21.9**	**LOS C**	**690**	**0.77**	**1.08**	**18.2**

Symbols which may appear in this table:

SIDRA INTERSECTION

Movement Summary

South Interchange East Consolidated Roundabout

Weekend Midday Buildout+ Project E Alternative

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
NB Asti										
11L	L	66	1.5	0.569	15.7	LOS B	116	0.82	1.02	21.7
16T	T	213	1.9	0.571	8.6	LOS A	116	0.82	0.94	25.1
16R	R	82	2.4	0.569	10.2	LOS B	116	0.82	0.97	23.9
Approach		**360**	**1.9**	**0.571**	**10.3**	**LOS B**	**116**	**0.82**	**0.96**	**24.0**
WB AV Resort										
1L	L	4	20.0	0.357	19.0	LOS B	67	0.82	0.97	21.0
6T	T	119	1.7	0.371	9.5	LOS A	67	0.82	0.89	24.4
6R	R	72	1.4	0.370	10.7	LOS B	67	0.82	0.87	23.5
Approach		**195**	**2.1**	**0.370**	**10.2**	**LOS B**	**67**	**0.82**	**0.89**	**24.0**
SB Asti										
17L	L	103	1.9	0.837	29.6	LOS C	294	0.96	1.35	16.9
14T	T	353	2.0	0.835	20.8	LOS C	294	0.96	1.33	17.9
14R	R	45	2.2	0.833	22.4	LOS C	294	0.96	1.34	17.3
Approach		**501**	**2.0**	**0.834**	**22.8**	**LOS C**	**294**	**0.96**	**1.34**	**17.6**
EB South Interchange										
5L	L	201	2.0	0.277	11.1	LOS B	60	0.33	0.60	24.1
2T	T	67	1.5	0.277	2.1	LOS A	60	0.33	0.23	29.4
2R	R	116	1.7	0.277	2.1	LOS A	60	0.33	0.23	29.4
Approach		**383**	**1.8**	**0.277**	**6.8**	**LOS A**	**60**	**0.33**	**0.43**	**26.1**
101 NB Offramp										
13L	L	568	1.9	0.476	14.6	LOS B	102	0.67	0.82	22.9
18T	T	197	2.0	0.476	4.7	LOS A	102	0.67	0.51	26.6
18R	R	203	2.0	0.477	5.7	LOS A	102	0.67	0.58	26.0
Approach		**968**	**2.0**	**0.476**	**10.7**	**LOS B**	**102**	**0.67**	**0.71**	**24.0**
All Vehicles		**2407**	**2.0**	**0.837**	**12.5**	**LOS B**	**294**	**0.71**	**0.85**	**22.7**

Symbols which may appear in this table:

APPENDIX A .

Signal Warrant Analysis

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	466			95	46	399			0	0		0		0	61		0		34

Major Street Volume: 1006
Minor Approach Volume: 95
Minor Approach Volume Threshold: 372

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	432			78	40	432			0	0		0		0	78		0		40

Major Street Volume: 982
Minor Approach Volume: 118
Minor Approach Volume Threshold: 382

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			1 0 0 1 0			0 0 1 1 0			1 0 2 0 0		
Initial Vol:	0	0	0	4	0	24	0	43	97	25	345	0

Major Street Volume: 510
Minor Approach Volume: 28
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			1 0 0 1 0			0 0 1 1 0			1 0 2 0 0		
Initial Vol:	0	0	0	3	0	23	0	42	117	19	176	0

Major Street Volume: 354
Minor Approach Volume: 26
Minor Approach Volume Threshold: 821

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0 0	1	0 0	0 0	0	1 0	2 0	0	0 0	1 1	0
Initial Vol:	272	0	55	0	0	0	23	15	0	0	57	6

Major Street Volume: 101
Minor Approach Volume: 327
Minor Approach Volume Threshold: 1360

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0 0	1	0 0	0 0	0	1 0	2 0	0	0 0	1 1	0
Initial Vol:	144	0	27	0	0	0	26	20	0	0	58	8

Major Street Volume: 112
Minor Approach Volume: 171
Minor Approach Volume Threshold: 1316

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 1 0 0			0 0 1 0 1			1 0 0 0 1			0 0 0 0 0		
Initial Vol:	32	45	0	0	27	26	69	0	6	0	0	0

Major Street Volume: 130
Minor Approach Volume: 75
Minor Approach Volume Threshold: 1251

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 1 0 0			0 0 1 0 1			1 0 0 0 1			0 0 0 0 0		
Initial Vol:	11	28	0	0	26	28	32	0	10	0	0	0

Major Street Volume: 93
Minor Approach Volume: 42
Minor Approach Volume Threshold: 1396

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1	0	0	0 0 1	0	0	0 0 0	0	0	0 0 1!	0	0
Initial Vol:	0	69	0	0	37	0	0	0	0	0	0	0

Major Street Volume: 106
Minor Approach Volume: 0
Minor Approach Volume Threshold: 818

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1	0	0	0 0 1	0	0	0 0 0	0	0	0 0 1!	0	0
Initial Vol:	0	40	0	0	37	0	0	0	0	0	0	0

Major Street Volume: 77
Minor Approach Volume: 0
Minor Approach Volume Threshold: 903

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 0	1	0	0 1 0	0	0	0 0 0	0	0	0 0 1!	0	0
Initial Vol:	0	66	16	2	35	0	0	0	0	27	0	3

Major Street Volume: 119
Minor Approach Volume: 30
Minor Approach Volume Threshold: 787

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 0	1	0	0 1 0	0	0	0 0 0	0	0	0 0 0	0	1
Initial Vol:	0	37	2	1	36	0	0	0	0	0	0	3

Major Street Volume: 76
Minor Approach Volume: 3
Minor Approach Volume Threshold: 907

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	0	1	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0	0
Initial Vol:	177	343			0	0	135		47		33		0		71	0		0		0

Major Street Volume: 702
Minor Approach Volume: 104
Minor Approach Volume Threshold: 526

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	0	1	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0	0
Initial Vol:	124	239			0	0	239		40		40		0		124	0		0		0

Major Street Volume: 642
Minor Approach Volume: 164
Minor Approach Volume Threshold: 565

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0		87		13	213		58		0	0		0		0	29		0		497

Major Street Volume: 372
Minor Approach Volume: 526
Minor Approach Volume Threshold: 800

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0		42		0	280		65		0	0		0		0	2		0		345

Major Street Volume: 387
Minor Approach Volume: 347
Minor Approach Volume Threshold: 782

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Initial Vol:	0	0	0	6	0	54	0	110	117	18	472	0

Major Street Volume: 716
Minor Approach Volume: 59
Minor Approach Volume Threshold: 518

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Initial Vol:	0	0	0	0	0	60	0	124	201	1	299	0

Major Street Volume: 625
Minor Approach Volume: 60
Minor Approach Volume Threshold: 576

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0 0	1	0 0	0 0	0	1 0	1 0	0	0 0	0 1	0
Initial Vol:	408	0	20	0	0	0	69	46	0	0	81	6

Major Street Volume: 202
Minor Approach Volume: 428
Minor Approach Volume Threshold: 1061

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0 0	1	0 0	0 0	0	1 0	1 0	0	0 0	0 1	0
Initial Vol:	248	6	11	0	0	0	77	41	0	0	57	1

Major Street Volume: 176
Minor Approach Volume: 265
Minor Approach Volume Threshold: 1121

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	1	0	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0	0
Initial Vol:	32		33		0	0		15		47	49		0		11	0		0		0

Major Street Volume: 127
Minor Approach Volume: 60
Minor Approach Volume Threshold: 770

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	1	0	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0	0
Initial Vol:	26		19		0	0		18		42	37		0		11	0		0		0

Major Street Volume: 105
Minor Approach Volume: 48
Minor Approach Volume Threshold: 820

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	573		113		46	506		0		0	0		0		76	0		34	

Major Street Volume: 1238
Minor Approach Volume: 110
Minor Approach Volume Threshold: 282

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	415		71		28	415		0		0	0		0		68	0		27	

Major Street Volume: 929
Minor Approach Volume: 95
Minor Approach Volume Threshold: 406

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	42		0		41	0		85		215	137		490		0

Major Street Volume: 927
Minor Approach Volume: 83
Minor Approach Volume Threshold: 407

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	57		0		33	0		78		207	160		279		0

Major Street Volume: 724
Minor Approach Volume: 90
Minor Approach Volume Threshold: 513

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled			
Lanes:	0	1	0	0 1	0	0	0	0 0	1	0	2	0 0	0	0	1	1 0
Initial Vol:	361		0	211	0		0	0	38		80	0	0	225		45

Major Street Volume: 388
Minor Approach Volume: 572
Minor Approach Volume Threshold: 781

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled			
Lanes:	0	1	0	0 1	0	0	0	0 0	1	0	2	0 0	0	0	1	1 0
Initial Vol:	187		0	240	0		0	0	33		103	0	0	257		57

Major Street Volume: 450
Minor Approach Volume: 427
Minor Approach Volume Threshold: 717

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 1 0 0			0 0 1 0 1			1 0 0 0 1			0 0 0 0 0		
Initial Vol:	224	76	0	0	52	41	88	0	207	0	0	0

Major Street Volume: 393
Minor Approach Volume: 295
Minor Approach Volume Threshold: 776

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 1 0 0			0 0 1 0 1			1 0 0 0 1			0 0 0 0 0		
Initial Vol:	261	50	0	0	43	34	41	0	298	0	0	0

Major Street Volume: 388
Minor Approach Volume: 339
Minor Approach Volume Threshold: 781

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	119	308		181	72		0	0	0		0	264		0	155

Major Street Volume: 680
Minor Approach Volume: 419
Minor Approach Volume Threshold: 322

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	77	461		271	60		0	0	0		0	369		0	216

Major Street Volume: 869
Minor Approach Volume: 585
Minor Approach Volume Threshold: 257

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	414		16	5	350		0	0	0		0	27	0		3

Major Street Volume: 785
Minor Approach Volume: 30
Minor Approach Volume Threshold: 284

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	0	0 1
Initial Vol:	0	526		1	4	444		0	0	0		0	0	0		2

Major Street Volume: 975
Minor Approach Volume: 2
Minor Approach Volume Threshold: 226

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	210	448		0	0	218		50	36		0	102	0		0	0

Major Street Volume: 926
Minor Approach Volume: 138
Minor Approach Volume Threshold: 407

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	162	345		0	0	323		43	43		0	160	0		0	0

Major Street Volume: 873
Minor Approach Volume: 203
Minor Approach Volume Threshold: 432

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	110		68	301		76	0	0		0	0	67		0	594

Major Street Volume: 555
Minor Approach Volume: 661
Minor Approach Volume Threshold: 627

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	54		56	291		64	0	0		0	0	40		0	353

Major Street Volume: 465
Minor Approach Volume: 393
Minor Approach Volume Threshold: 703

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	44		0		67	0		147		223	362		594		0

Major Street Volume: 1326
Minor Approach Volume: 111
Minor Approach Volume Threshold: 253

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	38		0		56	0		125		253	444		345		0

Major Street Volume: 1167
Minor Approach Volume: 94
Minor Approach Volume Threshold: 308

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0	1 0
Initial Vol:	489	0	407	0	0	0	84	107	0	0	467	49

Major Street Volume: 707
Minor Approach Volume: 896
Minor Approach Volume Threshold: 523

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0	1 0
Initial Vol:	262	4	548	0	0	0	69	90	0	0	532	44

Major Street Volume: 735
Minor Approach Volume: 814
Minor Approach Volume Threshold: 506

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	108	51	1	10	31	355	387	43	81	1	47	10

Major Street Volume: 556
Minor Approach Volume: 511
Minor Approach Volume Threshold: 376

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	94	31	1	10	28	442	516	43	77	1	47	10

Major Street Volume: 606
Minor Approach Volume: 636
Minor Approach Volume Threshold: 353

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	566		113		46	497		0		0	0		0		76	0		34	

Major Street Volume: 1222
Minor Approach Volume: 110
Minor Approach Volume Threshold: 288

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	404		71		28	403		0		0	0		0		68	0		27	

Major Street Volume: 906
Minor Approach Volume: 95
Minor Approach Volume Threshold: 417

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	33		0		41	0		81		209	116		482		0

Major Street Volume: 888
Minor Approach Volume: 74
Minor Approach Volume Threshold: 425

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	44		0		33	0		72		199	129		267		0

Major Street Volume: 667
Minor Approach Volume: 77
Minor Approach Volume Threshold: 548

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Initial Vol:	361		0		177	0		0		0	38		67		0	0		196		39

Major Street Volume: 340
Minor Approach Volume: 538
Minor Approach Volume Threshold: 838

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Initial Vol:	187		0		189	0		0		0	33		85		0	0		214		47

Major Street Volume: 379
Minor Approach Volume: 376
Minor Approach Volume Threshold: 791

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	1	0 0	0	0	1	0 1	1	0	0	0 1	0	0	0	0 0
Initial Vol:	189		76	0	0		52	41	88		0	160	0		0	0

Major Street Volume: 358
Minor Approach Volume: 248
Minor Approach Volume Threshold: 816

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	1	0 0	0	0	1	0 1	1	0	0	0 1	0	0	0	0 0
Initial Vol:	207		50	0	0		43	34	41		0	229	0		0	0

Major Street Volume: 334
Minor Approach Volume: 270
Minor Approach Volume Threshold: 846

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	119		229		134	72		0		0	0		0		203	0		120	

Major Street Volume: 554
Minor Approach Volume: 323
Minor Approach Volume Threshold: 377

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	77		343		202	60		0		0	0		0		277	0		162	

Major Street Volume: 682
Minor Approach Volume: 439
Minor Approach Volume Threshold: 321

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	335		16	5	289		0	0	0		0	27		0	3

Major Street Volume: 645
Minor Approach Volume: 30
Minor Approach Volume Threshold: 336

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	0	0 1
Initial Vol:	0	408		1	4	352		0	0	0		0	0		0	2

Major Street Volume: 765
Minor Approach Volume: 2
Minor Approach Volume Threshold: 291

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	208	447		0	0	217		50	36		0	100	0		0	0

Major Street Volume: 922
Minor Approach Volume: 136
Minor Approach Volume Threshold: 409

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	158	344		0	0	322		43	43		0	156	0		0	0

Major Street Volume: 867
Minor Approach Volume: 199
Minor Approach Volume Threshold: 435

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	110		68	298		76	0	0		0	0	67		0	591

Major Street Volume: 552
Minor Approach Volume: 658
Minor Approach Volume Threshold: 630

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	54		56	286		64	0	0		0	0	40		0	348

Major Street Volume: 460
Minor Approach Volume: 388
Minor Approach Volume Threshold: 708

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	44		0		67	0		147		220	305		591		0

Major Street Volume: 1263
Minor Approach Volume: 111
Minor Approach Volume Threshold: 274

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	38		0		56	0		125		248	358		340		0

Major Street Volume: 1071
Minor Approach Volume: 94
Minor Approach Volume Threshold: 345

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	489		0	328		0		0		0	84		107		0	0		406		49

Major Street Volume: 646
Minor Approach Volume: 817
Minor Approach Volume Threshold: 562

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	262		4	430		0		0		0	69		90		0	0		440		44

Major Street Volume: 643
Minor Approach Volume: 696
Minor Approach Volume Threshold: 564

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	108	51	1	10	31	294	308	43	81	1	47	10

Major Street Volume: 495
Minor Approach Volume: 432
Minor Approach Volume Threshold: 407

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	94	31	1	10	28	350	398	43	77	1	47	10

Major Street Volume: 514
Minor Approach Volume: 518
Minor Approach Volume Threshold: 397

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	565		113		46	496		0		0	0		0		76	0		34	

Major Street Volume: 1220
Minor Approach Volume: 110
Minor Approach Volume Threshold: 289

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	401		71		28	400		0		0	0		0		68	0		27	

Major Street Volume: 900
Minor Approach Volume: 95
Minor Approach Volume Threshold: 419

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	32		0		41	0		80		208	112		481		0

Major Street Volume: 881
Minor Approach Volume: 73
Minor Approach Volume Threshold: 429

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	41		0		33	0		71		197	121		264		0

Major Street Volume: 653
Minor Approach Volume: 74
Minor Approach Volume Threshold: 557

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Initial Vol:	361	0	172	0	0	0	38	65	0	0	190	37

Major Street Volume: 330
Minor Approach Volume: 533
Minor Approach Volume Threshold: 851

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Initial Vol:	187	0	178	0	0	0	33	80	0	0	203	44

Major Street Volume: 360
Minor Approach Volume: 365
Minor Approach Volume Threshold: 813

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 1 0 0			0 0 1 0 1			1 0 0 0 1			0 0 0 0 0		
Initial Vol:	182	76	0	0	52	41	88	0	153	0	0	0

Major Street Volume: 351
Minor Approach Volume: 241
Minor Approach Volume Threshold: 824

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	1 0 1 0 0			0 0 1 0 1			1 0 0 0 1			0 0 0 0 0		
Initial Vol:	194	50	0	0	43	34	41	0	213	0	0	0

Major Street Volume: 321
Minor Approach Volume: 254
Minor Approach Volume Threshold: 863

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	119		217		127		72		0	0		0		0	192		0		113

Major Street Volume: 535
Minor Approach Volume: 305
Minor Approach Volume Threshold: 386

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	77		318		186		60		0	0		0		0	253		0		149

Major Street Volume: 641
Minor Approach Volume: 402
Minor Approach Volume Threshold: 338

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	323		16		5	278		0		0		0		0	27		0		3

Major Street Volume: 622
Minor Approach Volume: 30
Minor Approach Volume Threshold: 346

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Initial Vol:	0	383		1		4	328		0		0		0		0	0		0		2

Major Street Volume: 716
Minor Approach Volume: 2
Minor Approach Volume Threshold: 308

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	207	447		0	0	217		50	36		0	99	0		0	0

Major Street Volume: 921
Minor Approach Volume: 135
Minor Approach Volume Threshold: 409

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	157	344		0	0	322		43	43		0	155	0		0	0

Major Street Volume: 866
Minor Approach Volume: 198
Minor Approach Volume Threshold: 436

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	110		68	297		76	0	0		0	0	67		0	590

Major Street Volume: 551
Minor Approach Volume: 657
Minor Approach Volume Threshold: 630

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	54		56	284		64	0	0		0	0	40		0	346

Major Street Volume: 458
Minor Approach Volume: 386
Minor Approach Volume Threshold: 710

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	44		0		67	0	147		219		294	590			0

Major Street Volume: 1250
Minor Approach Volume: 111
Minor Approach Volume Threshold: 278

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	38		0		56	0	125		246		336	338			0

Major Street Volume: 1045
Minor Approach Volume: 94
Minor Approach Volume Threshold: 355

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Initial Vol:	489	0	316	0	0	0	84	107	0	0	395	49

Major Street Volume: 635
Minor Approach Volume: 805
Minor Approach Volume Threshold: 569

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0 1	0
Initial Vol:	262	4	405	0	0	0	69	90	0	0	416	44

Major Street Volume: 619
Minor Approach Volume: 671
Minor Approach Volume Threshold: 580

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	108	51	1	10	31	283	296	43	81	1	47	10

Major Street Volume: 484
Minor Approach Volume: 420
Minor Approach Volume Threshold: 413

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	94	31	1	10	28	326	373	43	77	1	47	10

Major Street Volume: 490
Minor Approach Volume: 493
Minor Approach Volume Threshold: 410

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	562		113		46	493		0		0	0		0		76	0		34	

Major Street Volume: 1214
Minor Approach Volume: 110
Minor Approach Volume Threshold: 291

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	398		71		28	396		0		0	0		0		68	0		27	

Major Street Volume: 893
Minor Approach Volume: 95
Minor Approach Volume Threshold: 423

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	28		0		41	0		79		206	103		477		0

Major Street Volume: 865
Minor Approach Volume: 69
Minor Approach Volume Threshold: 436

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	37		0		33	0		69		194	110		260		0

Major Street Volume: 633
Minor Approach Volume: 70
Minor Approach Volume Threshold: 571

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled			
Lanes:	0	1	0	0 1	0	0	0	0 0	1	0	2	0 0	0	0	1	1 0
Initial Vol:	361		0	158	0		0	0	38		60	0	0	178		34

Major Street Volume: 310
Minor Approach Volume: 519
Minor Approach Volume Threshold: 878

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled			
Lanes:	0	1	0	0 1	0	0	0	0 0	1	0	2	0 0	0	0	1	1 0
Initial Vol:	187		0	163	0		0	0	33		75	0	0	188		41

Major Street Volume: 337
Minor Approach Volume: 350
Minor Approach Volume Threshold: 842

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	1	0 0	0	0	1	0 1	1	0	0	0 1	0	0	0	0 0
Initial Vol:	166		76	0	0		52	41	88		0	134	0		0	0

Major Street Volume: 335
Minor Approach Volume: 222
Minor Approach Volume Threshold: 844

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	1	0 0	0	0	1	0 1	1	0	0	0 1	0	0	0	0 0
Initial Vol:	176		50	0	0		43	34	41		0	193	0		0	0

Major Street Volume: 303
Minor Approach Volume: 234
Minor Approach Volume Threshold: 888

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	119		183		108		72		0	0		0		0	165		0		97

Major Street Volume: 482
Minor Approach Volume: 262
Minor Approach Volume Threshold: 414

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	77		282		166		60		0	0		0		0	223		0		131

Major Street Volume: 585
Minor Approach Volume: 354
Minor Approach Volume Threshold: 362

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	289		16	5	251		0	0	0		0	27		0	3

Major Street Volume: 561
Minor Approach Volume: 30
Minor Approach Volume Threshold: 374

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	0	0 1
Initial Vol:	0	347		1	4	298		0	0	0		0	0		0	2

Major Street Volume: 650
Minor Approach Volume: 2
Minor Approach Volume Threshold: 334

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	206	446		0	0	216		50	36		0	98	0		0	0

Major Street Volume: 918
Minor Approach Volume: 134
Minor Approach Volume Threshold: 411

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	156	343		0	0	321		43	43		0	154	0		0	0

Major Street Volume: 863
Minor Approach Volume: 197
Minor Approach Volume Threshold: 437

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	110		68	295		76	0	0		0	0	67		0	588

Major Street Volume: 549
Minor Approach Volume: 655
Minor Approach Volume Threshold: 632

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	54		56	283		64	0	0		0	0	40		0	345

Major Street Volume: 457
Minor Approach Volume: 385
Minor Approach Volume Threshold: 711

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	44		0		67	0	147		217		269	588			0

Major Street Volume: 1221
Minor Approach Volume: 111
Minor Approach Volume Threshold: 288

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	38		0		56	0	125		245		307	337			0

Major Street Volume: 1014
Minor Approach Volume: 94
Minor Approach Volume Threshold: 368

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	489		0	282		0		0		0	84		107		0	0		368		49

Major Street Volume: 608
Minor Approach Volume: 771
Minor Approach Volume Threshold: 588

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	262		4	369		0		0		0	69		90		0	0		386		44

Major Street Volume: 589
Minor Approach Volume: 635
Minor Approach Volume Threshold: 602

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	108	51	1	10	31	256	262	43	81	1	47	10

Major Street Volume: 457
Minor Approach Volume: 386
Minor Approach Volume Threshold: 428

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	94	31	1	10	28	296	337	43	77	1	47	10

Major Street Volume: 460
Minor Approach Volume: 457
Minor Approach Volume Threshold: 427

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1 1 0			0 1 1 0 0			0 0 0 0 0			1 0 0 0 1		
Initial Vol:	0	556	113	46	480	0	0	0	0	76	0	34

Major Street Volume: 1195
Minor Approach Volume: 110
Minor Approach Volume Threshold: 297

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1 1 0			0 1 1 0 0			0 0 0 0 0			1 0 0 0 1		
Initial Vol:	0	382	71	28	378	0	0	0	0	68	0	27

Major Street Volume: 859
Minor Approach Volume: 95
Minor Approach Volume Threshold: 439

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	28		0		41	0		78		192	174		469		0

Major Street Volume: 913
Minor Approach Volume: 69
Minor Approach Volume Threshold: 413

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	32		0		33	0		67		175	131		241		0

Major Street Volume: 614
Minor Approach Volume: 65
Minor Approach Volume Threshold: 584

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1 0	0 1		0 0 0	0 0		1 0 2	0 0		0 0 1	1 0	
Initial Vol:	361	0	155	0	0	0	38	59	0	0	241	49

Major Street Volume: 387
Minor Approach Volume: 516
Minor Approach Volume Threshold: 782

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1 0	0 1		0 0 0	0 0		1 0 2	0 0		0 0 1	1 0	
Initial Vol:	187	0	143	0	0	0	33	67	0	0	189	41

Major Street Volume: 330
Minor Approach Volume: 330
Minor Approach Volume Threshold: 851

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	1	0 0	0	0	1	0 1	1	0	0	0 1	0	0	0	0 0
Initial Vol:	244		76	0	0		52	41	88		0	130	0		0	0

Major Street Volume: 413
Minor Approach Volume: 218
Minor Approach Volume Threshold: 754

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	1	0 0	0	0	1	0 1	1	0	0	0 1	0	0	0	0 0
Initial Vol:	177		50	0	0		43	34	41		0	165	0		0	0

Major Street Volume: 304
Minor Approach Volume: 206
Minor Approach Volume Threshold: 886

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	119		177		104		72		0	0		0		0	299		0		175

Major Street Volume: 472
Minor Approach Volume: 474
Minor Approach Volume Threshold: 420

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	77		236		138		60		0	0		0		0	226		0		132

Major Street Volume: 511
Minor Approach Volume: 358
Minor Approach Volume Threshold: 398

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	283		16	5	385		0	0		0	0	27		0	3

Major Street Volume: 689
Minor Approach Volume: 30
Minor Approach Volume Threshold: 319

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	0	0 1
Initial Vol:	0	301		1	4	301		0	0		0	0	0		0	2

Major Street Volume: 607
Minor Approach Volume: 2
Minor Approach Volume Threshold: 353

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	199	444		0	0	214		50	36		0	91	0		0	0

Major Street Volume: 907
Minor Approach Volume: 127
Minor Approach Volume Threshold: 416

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	146	340		0	0	318		43	43		0	144	0		0	0

Major Street Volume: 847
Minor Approach Volume: 187
Minor Approach Volume Threshold: 445

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	110		68	286		76	0	0		0	0	67		0	579

Major Street Volume: 540
Minor Approach Volume: 646
Minor Approach Volume Threshold: 639

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	54		56	270		64	0	0		0	0	40		0	332

Major Street Volume: 444
Minor Approach Volume: 372
Minor Approach Volume Threshold: 723

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Initial Vol:	0	0	0	44	0	67	0	147	208	412	579	0

Major Street Volume: 1346
Minor Approach Volume: 111
Minor Approach Volume Threshold: 246

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Initial Vol:	0	0	0	38	0	56	0	125	232	323	324	0

Major Street Volume: 1004
Minor Approach Volume: 94
Minor Approach Volume Threshold: 372

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0	1 0
Initial Vol:	489	0	276	0	0	0	84	107	0	0	502	49

Major Street Volume: 742
Minor Approach Volume: 765
Minor Approach Volume Threshold: 502

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0	1 0
Initial Vol:	262	4	323	0	0	0	69	90	0	0	389	44

Major Street Volume: 592
Minor Approach Volume: 589
Minor Approach Volume Threshold: 600

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	108	51	1	10	31	390	256	43	81	1	47	10

Major Street Volume: 591
Minor Approach Volume: 380
Minor Approach Volume Threshold: 360

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	94	31	1	10	28	299	291	43	77	1	47	10

Major Street Volume: 463
Minor Approach Volume: 411
Minor Approach Volume Threshold: 425

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	705		152		47	628		0		0		0		0	107		0		34

Major Street Volume: 1532
Minor Approach Volume: 141
Minor Approach Volume Threshold: 191

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	671		135		41	661		0		0		0		0	124		0		40

Major Street Volume: 1508
Minor Approach Volume: 164
Minor Approach Volume Threshold: 197

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	16		0		77	0		128		395	92		690		0

Major Street Volume: 1305
Minor Approach Volume: 93
Minor Approach Volume Threshold: 260

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	15		0		76	0		127		415	86		521		0

Major Street Volume: 1149
Minor Approach Volume: 91
Minor Approach Volume Threshold: 314

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Initial Vol:	552	0	129	0	0	0	70	65	0	0	189	38

Major Street Volume: 362
Minor Approach Volume: 681
Minor Approach Volume Threshold: 811

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Initial Vol:	424	0	101	0	0	0	73	70	0	0	190	40

Major Street Volume: 373
Minor Approach Volume: 525
Minor Approach Volume Threshold: 798

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	1	0 0	0	0	1	0 1	1	0	0	0 1	0	0	0	0 0
Initial Vol:	149	141		0	0	107		73	129		0	70	0		0	0

Major Street Volume: 470
Minor Approach Volume: 199
Minor Approach Volume Threshold: 699

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	1	0 0	0	0	1	0 1	1	0	0	0 1	0	0	0	0 0
Initial Vol:	128	124		0	0	106		75	92		0	74	0		0	0

Major Street Volume: 433
Minor Approach Volume: 166
Minor Approach Volume Threshold: 734

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1	0	0	0 0 1	0	0	0 0 0	0	0	0 0 1!	0	0
Initial Vol:	0 225		0	0 147		0	0	0	0	0	0	0

Major Street Volume: 372
Minor Approach Volume: 0
Minor Approach Volume Threshold: 483

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0 1	0	0	0 0 1	0	0	0 0 0	0	0	0 0 1!	0	0
Initial Vol:	0 196		0	0 147		0	0	0	0	0	0	0

Major Street Volume: 343
Minor Approach Volume: 0
Minor Approach Volume Threshold: 505

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	196		16		2	200		0		0	0		0		27	0		3	

Major Street Volume: 414
Minor Approach Volume: 30
Minor Approach Volume Threshold: 455

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Initial Vol:	0	167		2		1	201		0		0	0		0		0	0		3	

Major Street Volume: 371
Minor Approach Volume: 3
Minor Approach Volume Threshold: 484

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	247	662		0	0	384		56	43		0	135	0		0	0

Major Street Volume: 1349
Minor Approach Volume: 178
Minor Approach Volume Threshold: 245

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	194	558		0	0	488		49	50		0	188	0		0	0

Major Street Volume: 1289
Minor Approach Volume: 238
Minor Approach Volume Threshold: 265

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	159		187	443	115		0	0	0		0	149	0		755

Major Street Volume: 904
Minor Approach Volume: 904
Minor Approach Volume Threshold: 417

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	122		175	529	127		0	0	0		0	125	0		648

Major Street Volume: 953
Minor Approach Volume: 773
Minor Approach Volume Threshold: 395

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Initial Vol:	0	0	0	126	0	95	0	226	404	318	808	0

Major Street Volume: 1756
Minor Approach Volume: 221
Minor Approach Volume Threshold: 132 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 0			0 1 0 0 1			0 0 0 1 0			1 0 1 0 0		
Initial Vol:	0	0	0	121	0	106	0	250	499	303	678	0

Major Street Volume: 1730
Minor Approach Volume: 227
Minor Approach Volume Threshold: 138 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0	1 0
Initial Vol:	663	0	269	0	0	0	115	237	0	0	464	142

Major Street Volume: 958
Minor Approach Volume: 932
Minor Approach Volume Threshold: 393

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	0	1 0
Initial Vol:	540	6	262	0	0	0	129	236	0	0	447	138

Major Street Volume: 950
Minor Approach Volume: 808
Minor Approach Volume Threshold: 396

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	271	89	3	30	65	186	142	134	230	4	148	33

Major Street Volume: 644
Minor Approach Volume: 506
Minor Approach Volume Threshold: 337

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	265	75	3	30	68	181	130	134	230	4	148	33

Major Street Volume: 622
Minor Approach Volume: 494
Minor Approach Volume Threshold: 346

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	737		152		47	661		0		0		0		0	107		0		34

Major Street Volume: 1597
Minor Approach Volume: 141
Minor Approach Volume Threshold: 173

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	715		135		41	709		0		0		0		0	124		0		40

Major Street Volume: 1600
Minor Approach Volume: 164
Minor Approach Volume Threshold: 172

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	50		0		77	0		143		417	182		725		0

Major Street Volume: 1467
Minor Approach Volume: 127
Minor Approach Volume Threshold: 209

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	66		0		76	0		149		446	212		570		0

Major Street Volume: 1377
Minor Approach Volume: 142
Minor Approach Volume Threshold: 237

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Initial Vol:	552		0		261	0		0		0	70		114		0	0		315		68

Major Street Volume: 567
Minor Approach Volume: 813
Minor Approach Volume Threshold: 618

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	1	1	0
Initial Vol:	424		0		299	0		0		0	73		144		0	0		365		81

Major Street Volume: 663
Minor Approach Volume: 723
Minor Approach Volume Threshold: 551

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	1	0 0	0	0	1	0 1	1	0	0	0 1	0	0	0	0 0
Initial Vol:	304	141		0	0	107		73	129		0	251	0		0	0

Major Street Volume: 625
Minor Approach Volume: 380
Minor Approach Volume Threshold: 576

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	1	0 0	0	0	1	0 1	1	0	0	0 1	0	0	0	0 0
Initial Vol:	345	124		0	0	106		75	92		0	345	0		0	0

Major Street Volume: 650
Minor Approach Volume: 437
Minor Approach Volume Threshold: 559

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	225	308		181	147		0	0	0		0	264		0	155

Major Street Volume: 861
Minor Approach Volume: 419
Minor Approach Volume Threshold: 259

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	196	461		271	147		0	0	0		0	369		0	216

Major Street Volume: 1075
Minor Approach Volume: 585
Minor Approach Volume Threshold: 200

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	504		16		2	464		0		0	0		0		27	0		3	

Major Street Volume: 986
Minor Approach Volume: 30
Minor Approach Volume Threshold: 223

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Initial Vol:	0	628		2		1	570		0		0	0		0		0	0		3	

Major Street Volume: 1201
Minor Approach Volume: 3
Minor Approach Volume Threshold: 171

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	258	666		0	0	388		56	43		0	146	0		0	0

Major Street Volume: 1368
Minor Approach Volume: 189
Minor Approach Volume Threshold: 239

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	210	563		0	0	493		49	50		0	204	0		0	0

Major Street Volume: 1315
Minor Approach Volume: 254
Minor Approach Volume Threshold: 256

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	159		187	458		115	0	0		0	0	149		0	770

Major Street Volume: 919
Minor Approach Volume: 919
Minor Approach Volume Threshold: 410

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	122		175	550		127	0	0		0	0	125		0	669

Major Street Volume: 974
Minor Approach Volume: 794
Minor Approach Volume Threshold: 385

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	126		0		95	0	226		419		567	823			0

Major Street Volume: 2035
Minor Approach Volume: 221
Minor Approach Volume Threshold: 69 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	121		0		106	0	250		520		650	699			0

Major Street Volume: 2119
Minor Approach Volume: 227
Minor Approach Volume Threshold: 51 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	663		0		577	0		0		0	115		237		0	0		728		142

Major Street Volume: 1222
Minor Approach Volume: 1240
Minor Approach Volume Threshold: 288

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	540		6		724	0		0		0	129		236		0	0		815		138

Major Street Volume: 1318
Minor Approach Volume: 1270
Minor Approach Volume Threshold: 255

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	271	89	3	30	65	450	450	134	230	4	148	33

Major Street Volume: 908
Minor Approach Volume: 814
Minor Approach Volume Threshold: 245

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	265	75	3	30	68	550	592	134	230	4	148	33

Major Street Volume: 991
Minor Approach Volume: 956
Minor Approach Volume Threshold: 222

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	1	1 0	0	1	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	730		152	47	653		0	0	0		0	107	0		34

Major Street Volume: 1582
Minor Approach Volume: 141
Minor Approach Volume Threshold: 177

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	1	1 0	0	1	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	704		135	41	697		0	0	0		0	124	0		40

Major Street Volume: 1577
Minor Approach Volume: 164
Minor Approach Volume Threshold: 178

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	42		0		77	0		139		412	162		717		0

Major Street Volume: 1430
Minor Approach Volume: 119
Minor Approach Volume Threshold: 220

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	53		0		76	0		143		438	181		558		0

Major Street Volume: 1320
Minor Approach Volume: 129
Minor Approach Volume Threshold: 255

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Initial Vol:	552	0	227	0	0	0	70	102	0	0	286	61

Major Street Volume: 519
Minor Approach Volume: 779
Minor Approach Volume Threshold: 656

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Initial Vol:	424	0	248	0	0	0	73	125	0	0	322	71

Major Street Volume: 591
Minor Approach Volume: 672
Minor Approach Volume Threshold: 600

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Initial Vol:	269	141			0		0	107		73	129		0		205		0		0	0

Major Street Volume: 590
Minor Approach Volume: 334
Minor Approach Volume Threshold: 601

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Initial Vol:	291	124			0		0	106		75	92		0		276		0		0	0

Major Street Volume: 596
Minor Approach Volume: 368
Minor Approach Volume Threshold: 597

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	225		229	134	147		0	0	0		0	203		0	120

Major Street Volume: 735
Minor Approach Volume: 323
Minor Approach Volume Threshold: 302

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	196		343	202	147		0	0	0		0	277		0	162

Major Street Volume: 888
Minor Approach Volume: 439
Minor Approach Volume Threshold: 251

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	425		16	2	404		0	0		0	0	27		0	3

Major Street Volume: 847
Minor Approach Volume: 30
Minor Approach Volume Threshold: 264

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	0	0 1
Initial Vol:	0	510		2	1	478		0	0		0	0	0		0	3

Major Street Volume: 991
Minor Approach Volume: 3
Minor Approach Volume Threshold: 222

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	256	665		0	0	387		56	43		0	143	0		0	0

Major Street Volume: 1364
Minor Approach Volume: 186
Minor Approach Volume Threshold: 241

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	206	562		0	0	492		49	50		0	200	0		0	0

Major Street Volume: 1309
Minor Approach Volume: 250
Minor Approach Volume Threshold: 258

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	159		187	455	115		0	0	0		0	149	0		767

Major Street Volume: 916
Minor Approach Volume: 916
Minor Approach Volume Threshold: 412

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	122		175	545	127		0	0	0		0	125	0		664

Major Street Volume: 969
Minor Approach Volume: 789
Minor Approach Volume Threshold: 388

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	126		0		95	0	226		416		510	820			0

Major Street Volume: 1972
Minor Approach Volume: 221
Minor Approach Volume Threshold: 82 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	121		0		106	0	250		515		564	694			0

Major Street Volume: 2023
Minor Approach Volume: 227
Minor Approach Volume Threshold: 71 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	663		0	498		0		0		0	115		237		0	0		667		142

Major Street Volume: 1161
Minor Approach Volume: 1161
Minor Approach Volume Threshold: 310

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	540		6	606		0		0		0	129		236		0	0		723		138

Major Street Volume: 1226
Minor Approach Volume: 1152
Minor Approach Volume Threshold: 286

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	271	89	3	30	65	390	371	134	230	4	148	33

Major Street Volume: 848
Minor Approach Volume: 735
Minor Approach Volume Threshold: 263

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	265	75	3	30	68	458	474	134	230	4	148	33

Major Street Volume: 899
Minor Approach Volume: 838
Minor Approach Volume Threshold: 248

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	728		152		47	652		0		0		0		0	107		0		34

Major Street Volume: 1579
Minor Approach Volume: 141
Minor Approach Volume Threshold: 178

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	702		135		41	694		0		0		0		0	124		0		40

Major Street Volume: 1572
Minor Approach Volume: 164
Minor Approach Volume Threshold: 180

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	40		0		77	0		138		411	158		716		0

Major Street Volume: 1423
Minor Approach Volume: 117
Minor Approach Volume Threshold: 222

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	50		0		76	0		142		436	173		555		0

Major Street Volume: 1306
Minor Approach Volume: 126
Minor Approach Volume Threshold: 259

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Initial Vol:	552	0	222	0	0	0	70	100	0	0	280	60

Major Street Volume: 510
Minor Approach Volume: 774
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Initial Vol:	424	0	237	0	0	0	73	121	0	0	311	68

Major Street Volume: 573
Minor Approach Volume: 661
Minor Approach Volume Threshold: 614

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Initial Vol:	262	141			0		0	107		73	129		0		198		0		0	0

Major Street Volume: 583
Minor Approach Volume: 327
Minor Approach Volume Threshold: 606

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Initial Vol:	277	124			0		0	106		75	92		0		261		0		0	0

Major Street Volume: 582
Minor Approach Volume: 353
Minor Approach Volume Threshold: 607

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	225		217		127	147		0		0	0		0		192	0		113	

Major Street Volume: 716
Minor Approach Volume: 305
Minor Approach Volume Threshold: 308

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	196		318		186	147		0		0	0		0		253	0		149	

Major Street Volume: 847
Minor Approach Volume: 402
Minor Approach Volume Threshold: 264

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	413		16	2	392		0	0		0	0	27		0	3

Major Street Volume: 823
Minor Approach Volume: 30
Minor Approach Volume Threshold: 271

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	0	0 1
Initial Vol:	0	484		2	1	454		0	0		0	0	0		0	3

Major Street Volume: 941
Minor Approach Volume: 3
Minor Approach Volume Threshold: 236

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	255	665		0	0	387		56	43		0	143	0		0	0

Major Street Volume: 1363
Minor Approach Volume: 186
Minor Approach Volume Threshold: 241

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	205	561		0	0	492		49	50		0	199	0		0	0

Major Street Volume: 1307
Minor Approach Volume: 249
Minor Approach Volume Threshold: 259

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	159		187	454	115		0	0	0		0	149	0		766

Major Street Volume: 915
Minor Approach Volume: 915
Minor Approach Volume Threshold: 412

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	122		175	543	127		0	0	0		0	125	0		663

Major Street Volume: 967
Minor Approach Volume: 788
Minor Approach Volume Threshold: 389

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	126		0		95	0	226		415		499	819			0

Major Street Volume: 1959
Minor Approach Volume: 221
Minor Approach Volume Threshold: 85 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	121		0		106	0	250		513		542	693			0

Major Street Volume: 1998
Minor Approach Volume: 227
Minor Approach Volume Threshold: 76 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	663		0	486		0		0		0	115		237		0	0		656		142

Major Street Volume: 1150
Minor Approach Volume: 1149
Minor Approach Volume Threshold: 314

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	540		6	580		0		0		0	129		236		0	0		700		138

Major Street Volume: 1203
Minor Approach Volume: 1126
Minor Approach Volume Threshold: 295

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	271	89	3	30	65	379	359	134	230	4	148	33

Major Street Volume: 837
Minor Approach Volume: 723
Minor Approach Volume Threshold: 267

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	265	75	3	30	68	435	448	134	230	4	148	33

Major Street Volume: 876
Minor Approach Volume: 812
Minor Approach Volume Threshold: 255

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	725			152	47	648			0	0		0		0	107		0		34

Major Street Volume: 1572
Minor Approach Volume: 141
Minor Approach Volume Threshold: 180

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1
Initial Vol:	0	698			135	41	690			0	0		0		0	124		0		40

Major Street Volume: 1564
Minor Approach Volume: 164
Minor Approach Volume Threshold: 182

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	37		0		77	0		137		409	148		712		0

Major Street Volume: 1406
Minor Approach Volume: 114
Minor Approach Volume Threshold: 228

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	47		0		76	0		141		434	162		551		0

Major Street Volume: 1288
Minor Approach Volume: 123
Minor Approach Volume Threshold: 265

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Initial Vol:	552	0	208	0	0	0	70	94	0	0	268	57

Major Street Volume: 489
Minor Approach Volume: 760
Minor Approach Volume Threshold: 682

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Initial Vol:	424	0	222	0	0	0	73	115	0	0	296	65

Major Street Volume: 549
Minor Approach Volume: 646
Minor Approach Volume Threshold: 632

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Initial Vol:	246	141			0		0	107		73	129		0		178		0		0	0

Major Street Volume: 567
Minor Approach Volume: 307
Minor Approach Volume Threshold: 618

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Initial Vol:	259	124			0		0	106		75	92		0		240		0		0	0

Major Street Volume: 564
Minor Approach Volume: 332
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	225		183		108	147		0		0	0		0		165	0		97	

Major Street Volume: 663
Minor Approach Volume: 262
Minor Approach Volume Threshold: 329

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	196		282		166	147		0		0	0		0		223	0		131	

Major Street Volume: 791
Minor Approach Volume: 354
Minor Approach Volume Threshold: 282

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	379			16	2	365			0	0		0		0	27		0		3

Major Street Volume: 762
Minor Approach Volume: 30
Minor Approach Volume Threshold: 292

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Initial Vol:	0	449			2	1	424			0	0		0		0	0		0		3

Major Street Volume: 876
Minor Approach Volume: 3
Minor Approach Volume Threshold: 255

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	254	664		0	0	387		56	43		0	142	0		0	0

Major Street Volume: 1361
Minor Approach Volume: 185
Minor Approach Volume Threshold: 242

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	204	561		0	0	491		49	50		0	197	0		0	0

Major Street Volume: 1305
Minor Approach Volume: 247
Minor Approach Volume Threshold: 260

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	159		187	452		115	0	0		0	0	149		0	765

Major Street Volume: 913
Minor Approach Volume: 914
Minor Approach Volume Threshold: 413

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	122		175	542		127	0	0		0	0	125		0	661

Major Street Volume: 966
Minor Approach Volume: 786
Minor Approach Volume Threshold: 389

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	126		0		95	0	226		413		473	818			0

Major Street Volume: 1930
Minor Approach Volume: 221
Minor Approach Volume Threshold: 91 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	121		0		106	0	250		512		513	691			0

Major Street Volume: 1966
Minor Approach Volume: 227
Minor Approach Volume Threshold: 83 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	663		0		453	0		0		0	115		237		0	0		629		142

Major Street Volume: 1123
Minor Approach Volume: 1116
Minor Approach Volume Threshold: 324

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	540		6		545	0		0		0	129		236		0	0		670		138

Major Street Volume: 1173
Minor Approach Volume: 1091
Minor Approach Volume Threshold: 305

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	271	89	3	30	65	351	326	134	230	4	148	33

Major Street Volume: 809
Minor Approach Volume: 690
Minor Approach Volume Threshold: 276

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	265	75	3	30	68	404	413	134	230	4	148	33

Major Street Volume: 845
Minor Approach Volume: 777
Minor Approach Volume Threshold: 264

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	1	1 0	0	1	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	720		152	47	636		0	0		0	0	107		0	34

Major Street Volume: 1555
Minor Approach Volume: 141
Minor Approach Volume Threshold: 184

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	1	1 0	0	1	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	682		135	41	672		0	0		0	0	124		0	40

Major Street Volume: 1530
Minor Approach Volume: 164
Minor Approach Volume Threshold: 191

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	36		0		77	0		137		395	220		704		0

Major Street Volume: 1456
Minor Approach Volume: 113
Minor Approach Volume Threshold: 213

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	2	0	0
Initial Vol:	0		0		0	41		0		76	0		138		415	183		532		0

Major Street Volume: 1268
Minor Approach Volume: 117
Minor Approach Volume Threshold: 272

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Initial Vol:	552	0	205	0	0	0	70	93	0	0	331	71

Major Street Volume: 565
Minor Approach Volume: 757
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	2	0 0	0 0	1	1 0
Initial Vol:	424	0	202	0	0	0	73	108	0	0	297	65

Major Street Volume: 543
Minor Approach Volume: 626
Minor Approach Volume Threshold: 637

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Initial Vol:	325	141		0		0	107		73		129		0		174	0		0		0

Major Street Volume: 646
Minor Approach Volume: 303
Minor Approach Volume Threshold: 562

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Lanes:	1	0	1	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
Initial Vol:	261	124		0		0	106		75		92		0		213	0		0		0

Major Street Volume: 566
Minor Approach Volume: 305
Minor Approach Volume Threshold: 619

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	225		177	104	147		0	0	0		0	299	0		175

Major Street Volume: 653
Minor Approach Volume: 474
Minor Approach Volume Threshold: 333

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	196		236	138	147		0	0	0		0	226	0		132

Major Street Volume: 717
Minor Approach Volume: 358
Minor Approach Volume Threshold: 308

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	1!	0 0
Initial Vol:	0	373		16	2	499		0	0	0		0	27	0		3

Major Street Volume: 890
Minor Approach Volume: 30
Minor Approach Volume Threshold: 250

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	0	1	0	0 0	0	0	0	0 0	0	0	0	0 1
Initial Vol:	0	403		2	1	427		0	0	0		0	0	0		3

Major Street Volume: 833
Minor Approach Volume: 3
Minor Approach Volume Threshold: 268

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	247	662		0	0	384		56	43		0	135	0		0	0

Major Street Volume: 1349
Minor Approach Volume: 178
Minor Approach Volume Threshold: 245

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	1	0	0	1 0	1	0	1	0 1	0	1	0	0 1	0	0	0	0 0
Initial Vol:	194	558		0	0	488		49	50		0	188	0		0	0

Major Street Volume: 1289
Minor Approach Volume: 238
Minor Approach Volume Threshold: 265

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	159		187	443		115	0	0		0	0	149		0	755

Major Street Volume: 904
Minor Approach Volume: 904
Minor Approach Volume Threshold: 417

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Lanes:	0	0	0	1 0	1	0	1	0 0	0	0	0	0 0	1	0	0	0 1
Initial Vol:	0	122		175	529		127	0	0		0	0	125		0	648

Major Street Volume: 953
Minor Approach Volume: 773
Minor Approach Volume Threshold: 395

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	126		0		95	0	226		404		616	808			0

Major Street Volume: 2054
Minor Approach Volume: 221
Minor Approach Volume Threshold: 65 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Initial Vol:	0		0		0	121		0		106	0	250		499		528	678			0

Major Street Volume: 1955
Minor Approach Volume: 227
Minor Approach Volume Threshold: 86 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	663		0	446		0		0		0	115		237		0	0		762		142

Major Street Volume: 1256
Minor Approach Volume: 1109
Minor Approach Volume Threshold: 276

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Lanes:	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Initial Vol:	540		6	498		0		0		0	129		236		0	0		672		138

Major Street Volume: 1175
Minor Approach Volume: 1044
Minor Approach Volume Threshold: 305

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	271	89	3	30	65	485	319	134	230	4	148	33

Major Street Volume: 943
Minor Approach Volume: 683
Minor Approach Volume Threshold: 235

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0	0 0	1! 0	0
Initial Vol:	265	75	3	30	68	407	366	134	230	4	148	33

Major Street Volume: 848
Minor Approach Volume: 730
Minor Approach Volume Threshold: 263

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

APPENDIX B

Collision Analysis

Intersection Collision Rate Calculation
for the
Cloverdale Rancheria Casino EIS Traffic Analysis

Study Intersection # 1: Cloverdale Boulevard & 1st Street

Date of Count: Wednesday, May 15, 2005

Number of Collisions: 11
ADT: 11400
Start Date: October 31, 2002
End Date: October 31, 2007
Number of Years: 5

Intersection Type: FOUR-LEGGED
Control Type: SIGNALS
Area: URBAN

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1\text{ MILLION}}{\text{ADT} \times 365\text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{11 \times 1{,}000{,}000}{11{,}400 \times 365 \times 5}$$

collision rate = 0.53 c/mve

statewide average collision rate* = 0.43 c/mve

Study Intersection # 2: Cloverdale Boulevard & Lake Street

Date of Count: Wednesday, May 15, 2005

Number of Collisions: 6
ADT: 10900
Start Date: October 31, 2002
End Date: October 31, 2007
Number of Years: 5

Intersection Type: TEE
Control Type: STOP & YIELD SIGNS
Area: URBAN

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1\text{ MILLION}}{\text{ADT} \times 365\text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{6 \times 1{,}000{,}000}{10{,}900 \times 365 \times 5}$$

collision rate = 0.30 c/mve

statewide average collision rate* = 0.14 c/mve

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)
c/mve = collisions per million vehicles entering intersection
* *2006 Collision Data on California State Highways*, Caltrans

Intersection Collision Rate Calculation
for the
Cloverdale Rancheria Casino EIS Traffic Analysis

Study Intersection # 3: Cloverdale Boulevard & Citrus Fair Drive

Date of Count: Wednesday, May 15, 2005

Number of Collisions: 6
ADT: 12300
Start Date: October 31, 2002
End Date: October 31, 2007
Number of Years: 5

Intersection Type: FOUR-LEGGED
Control Type: SIGNALS
Area: URBAN

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{6 \times 1{,}000{,}000}{12{,}300 \times 365 \times 5}$$

collision rate = 0.27 c/mve

statewide average collision rate* = 0.43 c/mve

Study Intersection # 4: Citrus Fair Boulevard & US 101 SB RAMP

Date of Count: Wednesday, September 10, 2007

Number of Collisions: 0
ADT: 5200
Start Date: October 31, 2002
End Date: October 31, 2005
Number of Years: 5

Intersection Type: TEE
Control Type: STOP & YIELD SIGNS
Area: URBAN

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{0 \times 1{,}000{,}000}{5{,}200 \times 365 \times 5}$$

collision rate = 0.00 c/mve

statewide average collision rate* = 0.14 c/mve

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)
c/mve = collisions per million vehicles entering intersection
* *2006 Collision Data on California State Highways*, Caltrans

Intersection Collision Rate Calculation
for the
Cloverdale Rancheria Casino EIS Traffic Analysis

Study Intersection # 5: Citrus Fair Boulevard & US 101 NB Ramp

Date of Count: Wednesday, September 10, 2007

Number of Collisions: 1
ADT: 4100
Start Date: October 31, 2002
End Date: October 31, 2007
Number of Years: 5

Intersection Type: TEE
Control Type: STOP & YIELD SIGNS
Area: URBAN

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{1 \times 1{,}000{,}000}{4{,}100 \times 365 \times 5}$$

collision rate = 0.13 c/mve

statewide average collision rate* = 0.14 c/mve

Study Intersection # 6: Citrus Fair Drive & Asti Road

Date of Count: Wednesday, September 10, 2007

Number of Collisions: 1
ADT: 2000
Start Date: October 31, 2002
End Date: October 31, 2007
Number of Years: 5

Intersection Type: TEE
Control Type: STOP & YIELD SIGNS
Area: URBAN

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{1 \times 1{,}000{,}000}{2{,}000 \times 365 \times 5}$$

collision rate = 0.27 c/mve

statewide average collision rate* = 0.14 c/mve

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)
c/mve = collisions per million vehicles entering intersection
* *2006 Collision Data on California State Highways*, Caltrans

Intersection Collision Rate Calculation
for the
Cloverdale Rancheria Casino EIS Traffic Analysis

Study Intersection # 8: Asti Road & Santana Road

Date of Count: Wednesday, September 10, 2007

Number of Collisions: 1
ADT: 1300
Start Date: October 31, 2002
End Date: October 31, 2007
Number of Years: 5

Intersection Type: TEE
Control Type: STOP & YIELD SIGNS
Area: RURAL

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{1 \times 1{,}000{,}000}{1{,}300 \times 365 \times 5}$$

collision rate = 0.42 c/mve

statewide average collision rate* = 0.22 c/mve

Study Intersection # 9: Asti Road & South Interchange Connectio

Date of Count: Wednesday, May 15, 2005

Number of Collisions: 2
ADT: 1700
Start Date: October 31, 2002
End Date: October 31, 2005
Number of Years: 5

Intersection Type: TEE
Control Type: STOP & YIELD SIGNS
Area: RURAL

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{2 \times 1{,}000{,}000}{1{,}700 \times 365 \times 5}$$

collision rate = 0.64 c/mve

statewide average collision rate* = 0.22 c/mve

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)
c/mve = collisions per million vehicles entering intersection
* *2006 Collision Data on California State Highways*, Caltrans

Intersection Collision Rate Calculation
for the
Cloverdale Rancheria Casino EIS Traffic Analysis

Study Intersection # 10: US 101 NB Ramp & Interchange S. Connection

Date of Count: Wednesday, September 10, 2007

Number of Collisions: 3
ADT: 5200
Start Date: October 31, 2002
End Date: October 31, 2007
Number of Years: 5

Intersection Type: TEE
Control Type: STOP & YIELD SIGNS
Area: RURAL

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{3 \times 1{,}000{,}000}{5{,}200 \times 365 \times 5}$$

collision rate = 0.32 c/mve

statewide average collision rate* = 0.22 c/mve

Study Intersection # 11: US 101 SB Ramp & S.Interchange Connection

Date of Count: Wednesday, September 10, 2007

Number of Collisions: 4
ADT: 6900
Start Date: October 31, 2002
End Date: October 31, 2007
Number of Years: 5

Intersection Type: TEE
Control Type: STOP & YIELD SIGNS
Area: RURAL

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{4 \times 1{,}000{,}000}{6{,}900 \times 365 \times 5}$$

collision rate = 0.32 c/mve

statewide average collision rate* = 0.22 c/mve

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)
c/mve = collisions per million vehicles entering intersection
* *2006 Collision Data on California State Highways*, Caltrans

Intersection Collision Rate Calculation
for the
Cloverdale Rancheria Casino EIS Traffic Analysis

Study Intersection # 12: Cloverdale Boulevard & S.Interchange

Date of Count: Wednesday, September 10, 2007

Number of Collisions: 4
ADT: 8700
Start Date: October 31, 2002
End Date: October 31, 2007
Number of Years: 5

Intersection Type: TEE
Control Type: STOP & YIELD SIGNS
Area: RURAL

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{4 \times 1{,}000{,}000}{8{,}700 \times 365 \times 5}$$

collision rate = 0.25 c/mve

statewide average collision rate* = 0.22 c/mve

Study Intersection # 13: Cloverdale Boulevard & Treadway Drive

Date of Count: Wednesday, May 15, 2005

Number of Collisions: 4
ADT: 8200
Start Date: October 31, 2002
End Date: October 31, 2005
Number of Years: 5

Intersection Type: TEE
Control Type: STOP & YIELD SIGNS
Area: RURAL

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{4 \times 1{,}000{,}000}{8{,}200 \times 365 \times 5}$$

collision rate = 0.27 c/mve

statewide average collision rate* = 0.22 c/mve

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)
c/mve = collisions per million vehicles entering intersection
* *2006 Collision Data on California State Highways*, Caltrans

APPENDIX C

Freeway Segment Analysis

Table C-1
Summary of PM Peak Hour Segment Level of Service Calculations – Alternative A

Freeway Segment	Existing Conditions			Short-Term Conditions			Short-Term plus Project			Buildout Conditions			Buildout plus Project		
	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS
Sonoma-Mendocino County Line to JCT SR 128 W															
North	350	65.5	A	375	65.5	A	391	65.5	A	458	65.5	A	474	65.5	A
South	252	65.5	A	286	65.5	A	304	65.5	A	392	65.5	A	401	65.5	A
JCT SR 128 W to Citrus Fair Dr															
North	375	65.5	A	403	65.5	A	419	65.5	A	492	65.5	A	507	65.5	A
South	254	65.5	A	289	65.5	A	308	65.5	A	389	65.5	A	407	65.5	A
Citrus Fair Dr to S Cloverdale Interchange															
North	502	65.5	A	538	65.5	A	610	65.5	A	657	65.5	A	729	65.5	B
South	292	65.5	A	326	65.5	A	389	65.5	A	424	65.5	A	487	65.5	A
S Cloverdale Interchange to Dutcher Creek Rd Interchange															
North	642	65.5	A	688	65.5	A	919	65.5	B	840	65.5	B	1081	65.5	B
South	343	65.5	A	374	65.5	A	400	65.5	A	463	65.5	A	670	65.5	A
Dutcher Creek Rd Interchange to Asti Interchange															
North	628	65.5	A	674	65.5	A	915	65.5	B	822	65.5	B	1063	65.5	B
South	357	65.5	A	399	65.5	A	606	65.5	A	520	65.5	A	727	65.5	B
Asti Interchange to JCT SR 128 E															
North	632	65.5	A	678	65.5	A	919	65.5	B	828	65.5	B	1068	65.5	B
South	353	65.5	A	400	65.5	A	607		A	535	65.5	A	742	65.5	B
JCT SR 128 E to S Geyserville															
North	625	65.5	A	670	65.5	A	899	65.5	B	817	65.5	B	1046	65.5	B
South	361	65.5	A	406	65.5	A	603	65.5	A	537	65.5	A	733	65.5	B
S Geyserville to Independence Ln Interchange															
North	681	65.5	A	759	65.5	B	987	65.5	B	926	65.5	B	1154	65.5	C
South	442	65.5	A	485	65.5	A	681	65.5	A	609	65.5	A	805	65.5	B
Independence Ln Interchange to Lytton Spring Rd															
North	741	65.5	B	795	65.5	B	1024	65.5	B	970	65.5	B	1199	65.5	C
South	463	65.5	A	506	65.5	A	703	65.5	A	630	65.5	A	827	65.5	B
Lytton Spring Rd to Dry Creek Rd Interchange															
North	806	65.5	B	832	65.5	B	1094	65.5	B	1055	65.5	B	1284	65.5	C
South	506	65.5	A	552	65.5	A	748	65.5	B	679	65.5	A	876	65.5	B

Notes: V_p = Freeway flow rate measured in passenger cars per hour per mixed-flow lane (pc/h/ln); Speed is in miles per hour (mph); LOS = Level of Service

Table C-2
Summary of PM Peak Hour Segment Level of Service Calculations – Alternative B

Freeway Segment	Existing Conditions			Short-Term Conditions			Short-Term plus Project			Buildout Conditions			Buildout plus Project		
	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS
Sonoma-Mendocino County Line to JCT SR 128 W															
North	350	65.5	A	375	65.5	A	388	65.5	A	458	65.5	A	471	65.5	A
South	252	65.5	A	286	65.5	A	299	65.5	A	392	65.5	A	396	65.5	A
JCT SR 128 W to Citrus Fair Dr															
North	375	65.5	A	403	65.5	A	415	65.5	A	492	65.5	A	504	65.5	A
South	254	65.5	A	289	65.5	A	303	65.5	A	389	65.5	A	402	65.5	A
Citrus Fair Dr to S Cloverdale Interchange															
North	502	65.5	A	538	65.5	A	592	65.5	A	657	65.5	A	710	65.5	A
South	292	65.5	A	326	65.5	A	374	65.5	A	424	65.5	A	462	65.5	A
S Cloverdale Interchange to Dutcher Creek Rd Interchange															
North	642	65.5	A	688	65.5	A	864	65.5	B	840	65.5	B	1019	65.5	B
South	343	65.5	A	374	65.5	A	534	65.5	A	463	65.5	A	622	65.5	A
Dutcher Creek Rd Interchange to Asti Interchange															
North	628	65.5	A	674	65.5	A	853	65.5	B	822	65.5	B	1001	65.5	B
South	357	65.5	A	399	65.5	A	558	65.5	A	520	65.5	A	679	65.5	A
Asti Interchange to JCT SR 128 E															
North	632	65.5	A	678	65.5	A	857	65.5	B	828	65.5	B	1007	65.5	B
South	353	65.5	A	400	65.5	A	559	65.5	A	535	65.5	A	694	65.5	A
JCT SR 128 E to S Geyserville															
North	625	65.5	A	670	65.5	A	840	65.5	B	817	65.5	B	987	65.5	B
South	361	65.5	A	406	65.5	A	558	65.5	A	537	65.5	A	688	65.5	A
S Geyserville to Independence Ln Interchange															
North	681	65.5	A	759	65.5	B	929	65.5	B	926	65.5	B	1096	65.5	B
South	442	65.5	A	485	65.5	A	637	65.5	A	609	65.5	A	760	65.5	B
Independence Ln Interchange to Lytton Spring Rd															
North	741	65.5	B	795	65.5	B	965	65.5	B	970	65.5	B	1140	65.5	B
South	463	65.5	A	506	65.5	A	657	65.5	A	630	65.5	A	781	65.5	B
Lytton Spring Rd to Dry Creek Rd Interchange															
North	806	65.5	B	832	65.5	B	832	65.5	B	1055	65.5	B	1225	65.5	C
South	506	65.5	A	552	65.5	A	552	65.5	A	679	65.5	A	830	65.5	B

Notes: V_p = Freeway flow rate measured in passenger cars per hour per mixed-flow lane (pc/h/ln); Speed is in miles per hour (mph); LOS = Level of Service

Table C-3
Summary of PM Peak Hour Segment Level of Service Calculations – Alternative C

Freeway Segment	Existing Conditions			Short-Term Conditions			Short-Term plus Project			Buildout Conditions			Buildout plus Project		
	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS
Sonoma-Mendocino County Line to JCT SR 128 W															
North	350	65.5	A	375	65.5	A	388	65.5	A	458	65.5	A	471	65.5	A
South	252	65.5	A	286	65.5	A	299	65.5	A	392	65.5	A	395	65.5	A
JCT SR 128 W to Citrus Fair Dr															
North	375	65.5	A	403	65.5	A	415	65.5	A	492	65.5	A	504	65.5	A
South	254	65.5	A	289	65.5	A	302	65.5	A	389	65.5	A	402	65.5	A
Citrus Fair Dr to S Cloverdale Interchange															
North	502	65.5	A	538	65.5	A	589	65.5	A	657	65.5	A	708	65.5	A
South	292	65.5	A	326	65.5	A	371	65.5	A	424	65.5	A	469	65.5	A
S Cloverdale Interchange to Dutcher Creek Rd Interchange															
North	642	65.5	A	688	65.5	A	858	65.5	B	840	65.5	B	1009	65.5	B
South	343	65.5	A	374	65.5	A	524	65.5	A	463	65.5	A	613	65.5	A
Dutcher Creek Rd Interchange to Asti Interchange															
North	628	65.5	A	674	65.5	A	843	65.5	B	822	65.5	B	992	65.5	B
South	357	65.5	A	399	65.5	A	549	65.5	A	520	65.5	A	670	65.5	A
Asti Interchange to JCT SR 128 E															
North	632	65.5	A	678	65.5	A	848	65.5	B	828	65.5	B	997	65.5	B
South	353	65.5	A	400	65.5	A	550	65.5	A	535	65.5	A	685	65.5	A
JCT SR 128 E to S Geyserville															
North	625	65.5	A	670	65.5	A	831	65.5	B	817	65.5	B	987	65.5	B
South	361	65.5	A	406	65.5	A	549	65.5	A	537	65.5	A	679	65.5	A
S Geyserville to Independence Ln Interchange															
North	681	65.5	A	759	65.5	B	920	65.5	B	926	65.5	B	1086	65.5	B
South	442	65.5	A	485	65.5	A	628	65.5	A	609	65.5	A	752	65.5	B
Independence Ln Interchange to Lytton Spring Rd															
North	741	65.5	B	795	65.5	B	956	65.5	B	970	65.5	B	1131	65.5	B
South	463	65.5	A	506	65.5	A	649	65.5	A	630	65.5	A	772	65.5	B
Lytton Spring Rd to Dry Creek Rd Interchange															
North	806	65.5	B	832	65.5	B	1031	65.5	B	1055	65.5	B	1216	65.5	C
South	506	65.5	A	552	65.5	A	697	65.5	A	679	65.5	A	822	65.5	B

Notes: V_p = Freeway flow rate measured in passenger cars per hour per mixed-flow lane (pc/h/ln); Speed is in miles per hour (mph); LOS = Level of Service

Table C-4
Summary of PM Peak Hour Segment Level of Service Calculations – Alternative D

Freeway Segment	Existing Conditions			Short-Term Conditions			Short-Term plus Project			Buildout Conditions			Buildout plus Project		
	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS
Sonoma-Mendocino County Line to JCT SR 128 W															
North	350	65.5	A	375	65.5	A	385	65.5	A	458	65.5	A	468	65.5	A
South	252	65.5	A	286	65.5	A	297	65.5	A	392	65.5	A	393	65.5	A
JCT SR 128 W to Citrus Fair Dr															
North	375	65.5	A	403	65.5	A	413	65.5	A	492	65.5	A	501	65.5	A
South	254	65.5	A	289	65.5	A	300	65.5	A	389	65.5	A	400	65.5	A
Citrus Fair Dr to S Cloverdale Interchange															
North	502	65.5	A	538	65.5	A	581	65.5	A	657	65.5	A	700	65.5	A
South	292	65.5	A	326	65.5	A	365	65.5	A	424	65.5	A	463	65.5	A
S Cloverdale Interchange to Dutcher Creek Rd Interchange															
North	642	65.5	A	688	65.5	A	831	65.5	B	840	65.5	B	983	65.5	B
South	343	65.5	A	374	65.5	A	504	65.5	A	463	65.5	A	592	65.5	A
Dutcher Creek Rd Interchange to Asti Interchange															
North	628	65.5	A	674	65.5	A	817	65.5	B	822	65.5	B	966	65.5	B
South	357	65.5	A	399	65.5	A	528	65.5	A	520	65.5	A	649	65.5	A
Asti Interchange to JCT SR 128 E															
North	632	65.5	A	678	65.5	A	822	65.5	B	828	65.5	B	971	65.5	B
South	353	65.5	A	400	65.5	A	529	65.5	A	535	65.5	A	664	65.5	A
JCT SR 128 E to S Geyserville															
North	625	65.5	A	670	65.5	A	806	65.5	B	817	65.5	B	954	65.5	B
South	361	65.5	A	406	65.5	A	529	65.5	A	537	65.5	A	660	65.5	A
S Geyserville to Independence Ln Interchange															
North	681	65.5	A	759	65.5	B	895	65.5	B	926	65.5	B	1062	65.5	B
South	442	65.5	A	485	65.5	A	608	65.5	A	609	65.5	A	732	65.5	B
Independence Ln Interchange to Lytton Spring Rd															
North	741	65.5	B	795	65.5	B	931	65.5	B	970	65.5	B	1106	65.5	B
South	463	65.5	A	506	65.5	A	629	65.5	A	630	65.5	A	753	65.5	B
Lytton Spring Rd to Dry Creek Rd Interchange															
North	806	65.5	B	832	65.5	B	1001	65.5	B	1055	65.5	B	1191	65.5	C
South	506	65.5	A	552	65.5	A	674	65.5	A	679	65.5	A	802	65.5	B

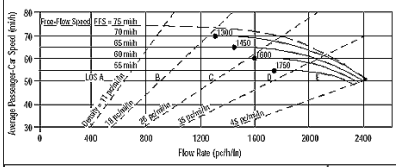
Notes: V_p = Freeway flow rate measured in passenger cars per hour per mixed-flow lane (pc/h/ln); Speed is in miles per hour (mph); LOS = Level of Service

Table C-5
Summary of PM Peak Hour Segment Level of Service Calculations – Alternative E

Freeway Segment	Existing Conditions			Short-Term Conditions			Short-Term plus Project			Buildout Conditions			Buildout plus Project		
	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS	V_p	Speed	LOS
Sonoma-Mendocino County Line to JCT SR 128 W															
North	350	65.5	A	375	65.5	A	427	65.5	A	458	65.5	A	510	65.5	A
South	252	65.5	A	286	65.5	A	316	65.5	A	392	65.5	A	413	65.5	A
JCT SR 128 W to Citrus Fair Dr															
North	375	65.5	A	403	65.5	A	455	65.5	A	492	65.5	A	544	65.5	A
South	254	65.5	A	289	65.5	A	320	65.5	A	389	65.5	A	419	65.5	A
Citrus Fair Dr to S Cloverdale Interchange															
North	502	65.5	A	538	65.5	A	538	65.5	A	657	65.5	A	657	65.5	A
South	292	65.5	A	326	65.5	A	326	65.5	A	424	65.5	A	424	65.5	A
S Cloverdale Interchange to Dutcher Creek Rd Interchange															
North	642	65.5	A	688	65.5	A	749	65.5	B	840	65.5	B	901	65.5	B
South	343	65.5	A	374	65.5	A	478	65.5	A	463	65.5	A	567	65.5	A
Dutcher Creek Rd Interchange to Asti Interchange															
North	628	65.5	A	674	65.5	A	735	65.5	B	822	65.5	B	883	65.5	B
South	357	65.5	A	399	65.5	A	503	65.5	A	520	65.5	A	624	65.5	A
Asti Interchange to JCT SR 128 E															
North	632	65.5	A	678	65.5	A	739	65.5	B	828	65.5	B	889	65.5	B
South	353	65.5	A	400	65.5	A	504	65.5	A	535	65.5	A	639	65.5	A
JCT SR 128 E to S Geyserville															
North	625	65.5	A	670	65.5	A	728	65.5	B	817	65.5	B	875	65.5	B
South	361	65.5	A	406	65.5	A	505	65.5	A	537	65.5	A	635	65.5	A
S Geyserville to Independence Ln Interchange															
North	681	65.5	A	759	65.5	A	817	65.5	B	926	65.5	B	984	65.5	B
South	442	65.5	A	485	65.5	A	584	65.5	A	609	65.5	A	708	65.5	A
Independence Ln Interchange to Lytton Spring Rd															
North	741	65.5	B	795	65.5	B	853	65.5	B	970	65.5	B	1033	65.5	B
South	463	65.5	A	506	65.5	A	584	65.5	A	630	65.5	A	729	65.5	B
Lytton Spring Rd to Dry Creek Rd Interchange															
North	806	65.5	B	832	65.5	B	923	65.5	B	1055	65.5	B	1113	65.5	B
South	506	65.5	A	552	65.5	A	650	65.5	A	679	65.5	A	802	65.5	B

Notes: V_p = Freeway flow rate measured in passenger cars per hour per mixed-flow lane (pc/h/ln); Speed is in miles per hour (mph); LOS = Level of Service

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	640	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

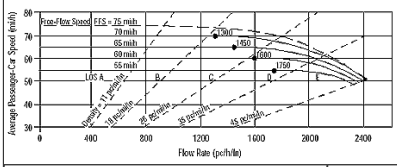
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	350	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:12 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	460	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

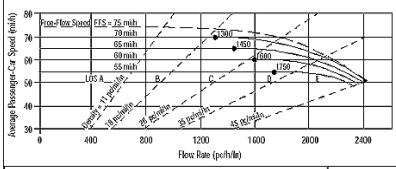
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	252	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	3.8	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:13 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1473	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

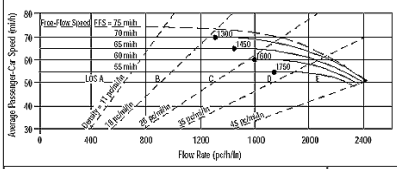
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	806	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:25 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	927	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

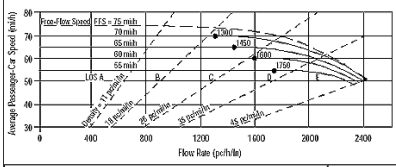
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	507	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:26 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	686	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

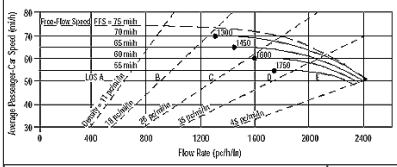
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	375	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:13 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	464	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

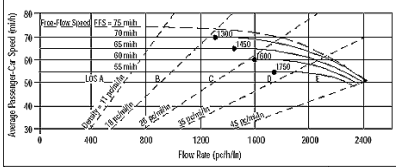
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	254	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	3.9	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:15 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Citrus Fair Dr/S.Clo Inter
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	917	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

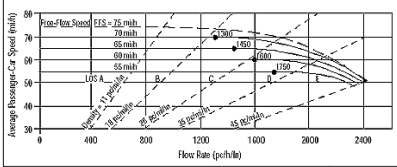
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	502	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:18 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Citrus Fair Dr/S.Clo Inter
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	533	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

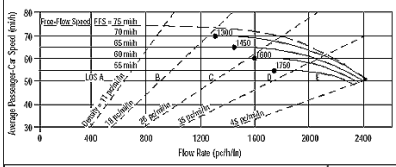
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	292	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	4.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:18 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs				
Volume, V	1173	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	8
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
Driver type adjustment	1.00		Up/Down %	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

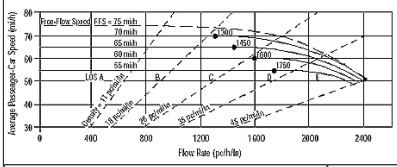
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	642	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.8	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:19 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs				
Volume, V	627	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	8
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
Driver type adjustment	1.00		Up/Down %	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

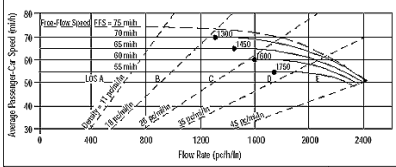
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	343	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:20 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs				
Volume, V	1148	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	8
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
Driver type adjustment	1.00		Up/Down %	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

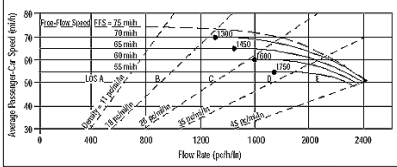
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	628	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:20 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs				
Volume, V	652	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	8
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
Driver type adjustment	1.00		Up/Down %	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

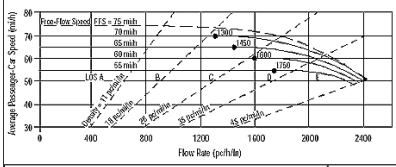
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	357	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:22 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1155	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

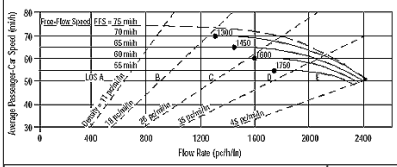
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	632	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:22 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	645	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

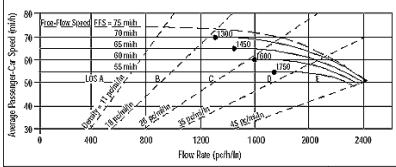
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	353	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:23 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Jct Rte 128 E/S.Geyserville
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1141	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

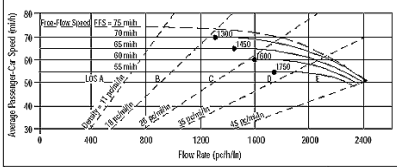
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	625	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:23 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Jct Rte 128 E/S.Geyserville
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	659	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

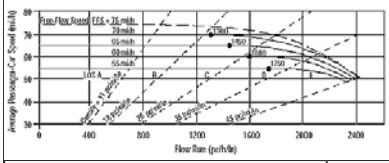
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	361	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:23 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Geyserville/Independance Lne
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1293	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T		
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	1.000

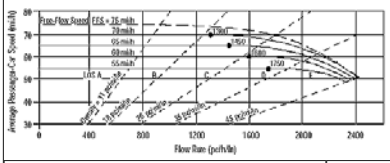
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	681	pc/h/ln	Design LOS		
S	65.5	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	10.4	pc/mi/ln	S		mi/h
LOS	A		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:24 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Geyserville/Independance Lne
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	807	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

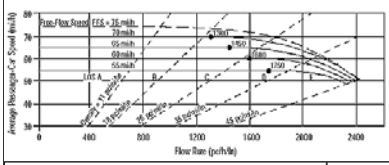
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	442	pc/h/ln	Design LOS		
S	65.5	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	6.7	pc/mi/ln	S		mi/h
LOS	A		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:24 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Independance Lne/Lytton Sp Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1354	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

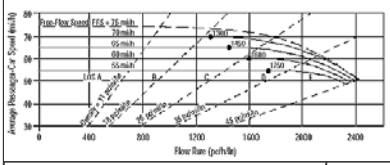
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	741	pc/h/ln	Design LOS		
S	65.5	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	11.3	pc/mi/ln	S		mi/h
LOS	B		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:25 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Independance Lne/Lytton Sp Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	846	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

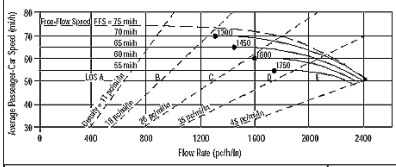
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	463	pc/h/ln	Design LOS		
S	65.5	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	7.1	pc/mi/ln	S		mi/h
LOS	A		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:25 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	686	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

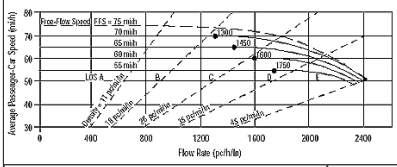
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	375	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:26 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	522	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

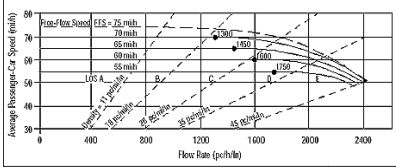
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	286	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	4.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:27 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1580	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T		
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	1.000	

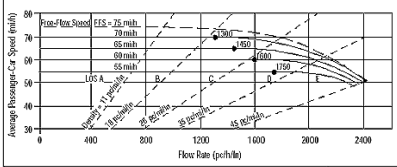
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	832	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 5:14 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1008	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

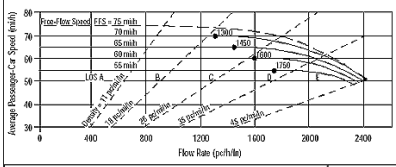
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	552	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 5:15 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Jct Rte 128 W/Citrus Fair Dr*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt B*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*759*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

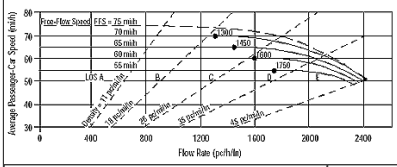
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*415*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*6.3*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 1:47 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Jct Rte 128 W/Citrus Fair Dr*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*528*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

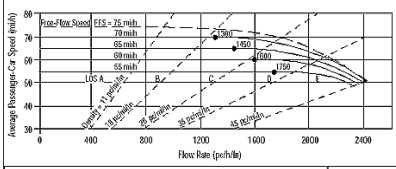
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*289*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*4.4*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/9/2009 3:28 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Citrus Fair Dr/S.Clo Inter*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*983*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

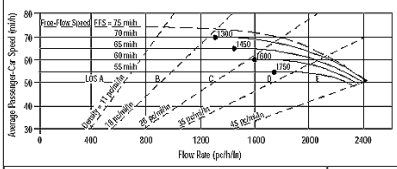
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*538*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*8.2*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/9/2009 3:28 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Citrus Fair Dr/S.Clo Inter*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*596*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

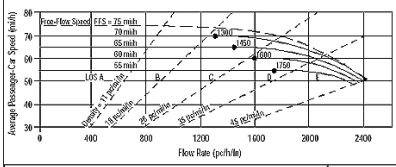
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*326*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*5.0*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/9/2009 3:29 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1257	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

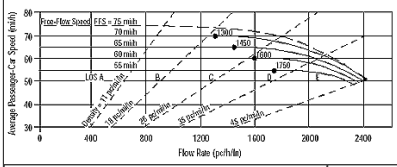
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	688	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:29 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	684	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

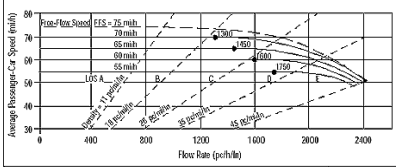
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	374	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:29 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1231	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

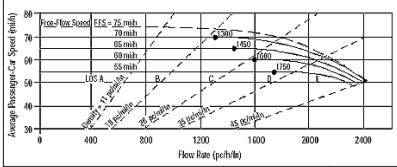
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	674	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:30 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	729	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

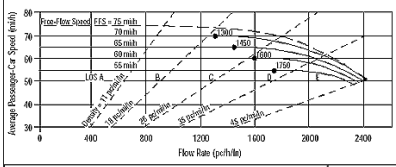
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	399	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 3:30 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1239	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

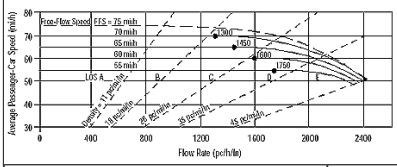
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	678	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:16 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	731	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

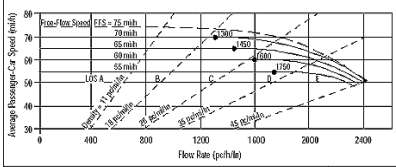
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	400	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:17 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1224	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

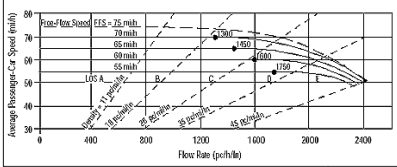
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	670	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 5:12 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	742	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

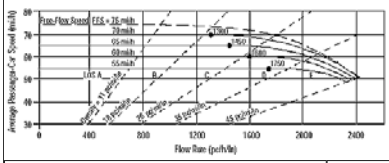
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	406	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 5:12 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1386*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments					
f_p	*1.00*		E_R	*1.2*	
E_T	*1.5*		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*	

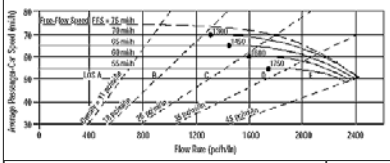
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*759*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*11.6*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/9/2009 5:13 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*886*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments					
f_p	*1.00*		E_R	*1.2*	
E_T	*1.5*		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*	

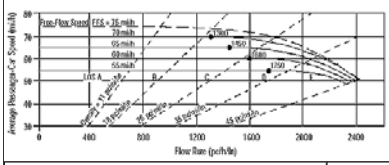
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*485*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*7.4*	pc/mi/ln	S		mi/h
LOS	*A*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/9/2009 5:13 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1452*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments					
f_p	*1.00*		E_R	*1.2*	
E_T	*1.5*		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*	

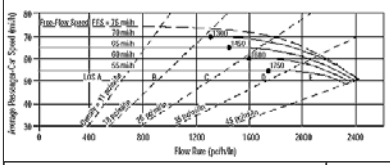
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*795*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*12.1*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/9/2009 5:14 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*925*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments					
f_p	*1.00*		E_R	*1.2*	
E_T	*1.5*		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*	

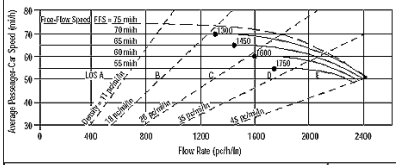
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*506*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*7.7*	pc/mi/ln	S		mi/h
LOS	*A*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/9/2009 5:14 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt A	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	715	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

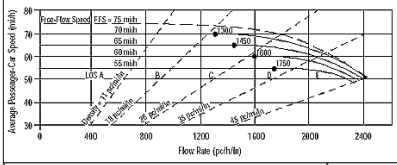
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	391	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.0	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:17 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+ Alt A	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	556	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

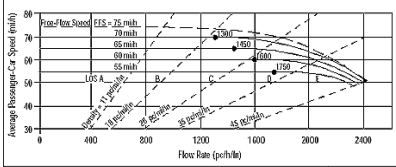
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	304	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	4.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:17 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt A	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1998	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

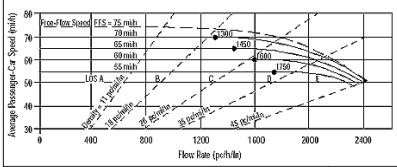
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1094	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	16.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:23 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt A	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1367	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

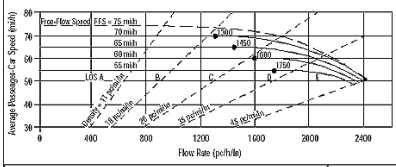
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	748	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	11.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:23 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Jct Rte 128 W/Citrus Fair Dr*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+ Alt A*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*765*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments				
f_p	*1.00*	E_R	*1.2*	
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*	

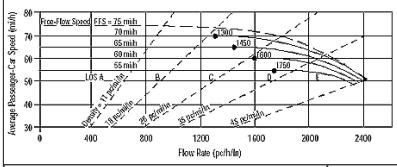
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*419*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*6.4*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:18 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Jct Rte 128 W/Citrus Fair Dr*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt A*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*562*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments				
f_p	*1.00*	E_R	*1.2*	
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*	

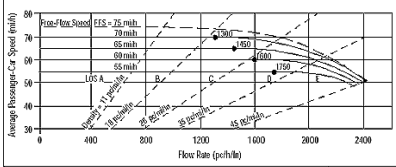
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*308*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*4.7*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:18 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Citrus Fair Dr/S.Clo Inter*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt A*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1115*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments				
f_p	*1.00*	E_R	*1.2*	
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*	

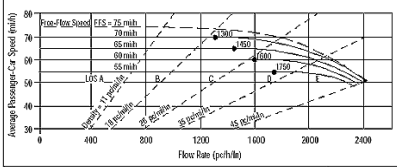
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*610*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*9.3*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:18 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Citrus Fair Dr/S.Clo Inter*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt A*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*710*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments				
f_p	*1.00*	E_R	*1.2*	
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*	

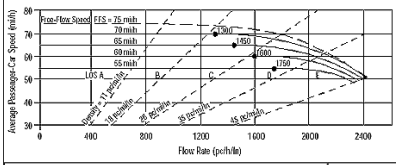
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*389*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*5.9*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:19 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt A	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1697	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

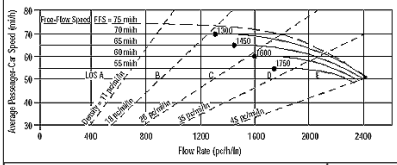
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	929	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	14.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:19 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt A	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1062	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

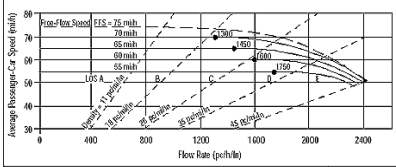
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	581	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.9	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:19 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period		Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1671	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

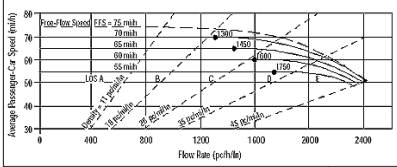
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	915	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	14.0	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:20 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt A	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1107	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

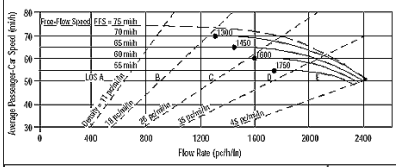
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	606	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:20 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt A	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1679	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

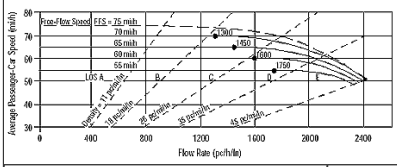
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	919	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	14.0	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:20 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt A	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1109	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

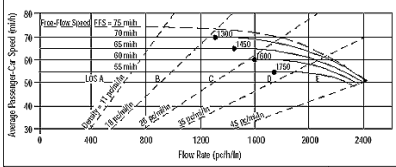
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	607	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 1:34 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt A	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1642	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

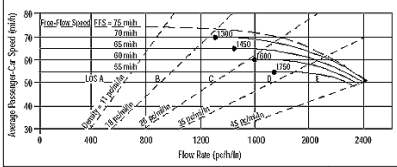
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	899	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	13.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:21 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt A	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1101	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

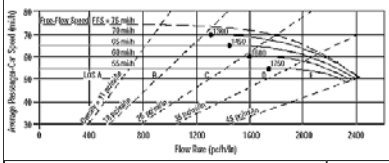
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	603	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:21 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt A*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1804*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

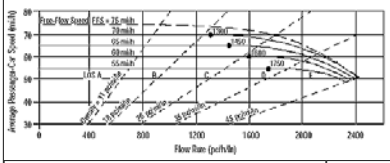
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)
Operational (LOS)			Design (N)
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*987*	pc/h/ln	Design LOS
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p) pc/h
D = v_p / S	*15.1*	pc/mi/ln	S mi/h
LOS	*B*		D = v_p / S pc/mi/ln
			Required Number of Lanes, N

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 1:40 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt A*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1245*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

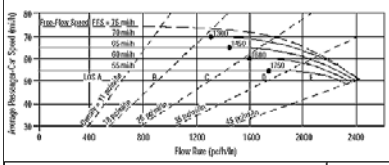
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)
Operational (LOS)			Design (N)
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*681*	pc/h/ln	Design LOS
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p) pc/h
D = v_p / S	*10.4*	pc/mi/ln	S mi/h
LOS	*A*		D = v_p / S pc/mi/ln
			Required Number of Lanes, N

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:22 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt A*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1870*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

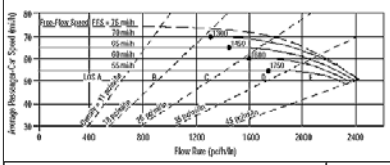
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)
Operational (LOS)			Design (N)
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1024*	pc/h/ln	Design LOS
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p) pc/h
D = v_p / S	*15.6*	pc/mi/ln	S mi/h
LOS	*B*		D = v_p / S pc/mi/ln
			Required Number of Lanes, N

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:22 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt A*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1284*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

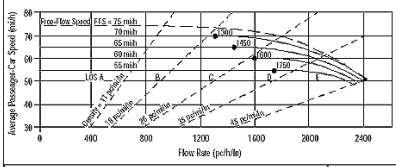
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)
Operational (LOS)			Design (N)
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*703*	pc/h/ln	Design LOS
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p) pc/h
D = v_p / S	*10.7*	pc/mi/ln	S mi/h
LOS	*A*		D = v_p / S pc/mi/ln
			Required Number of Lanes, N

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:22 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	709	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

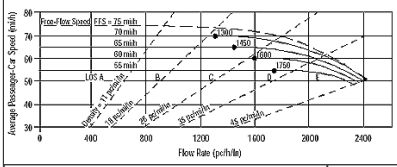
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	388	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.9	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:24 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+ Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	547	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

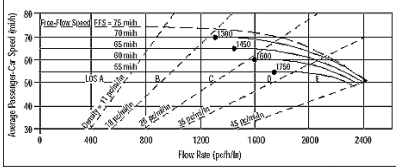
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	299	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	4.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:24 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1890	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

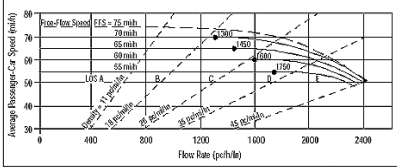
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1035	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	15.8	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:30 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1284	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

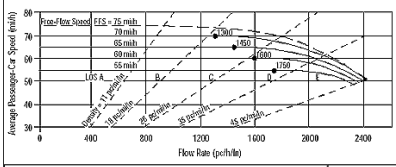
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	703	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:30 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	553	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

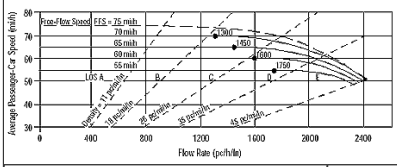
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	303	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	4.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:24 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	553	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

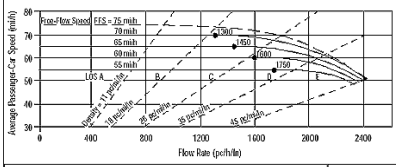
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	303	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	4.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:25 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt A	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1081	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

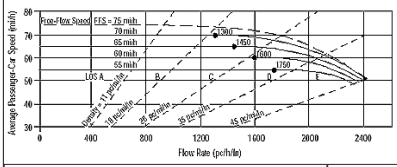
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	592	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.0	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:25 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	683	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

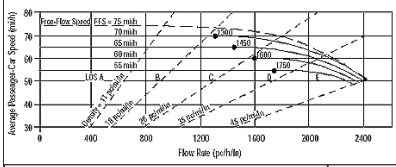
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	374	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:25 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1584	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

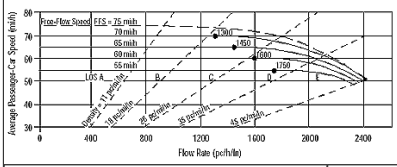
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	867	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	13.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:26 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	975	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

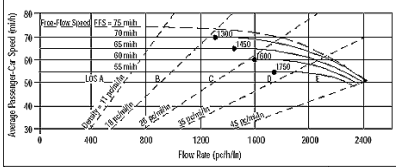
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	534	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:26 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1558	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

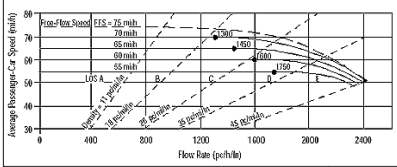
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	853	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	13.0	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:26 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1020	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

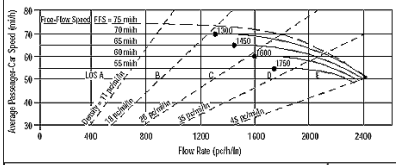
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	558	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:27 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1566	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

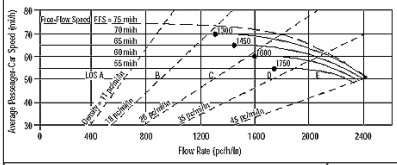
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	857	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	13.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:27 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1022	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

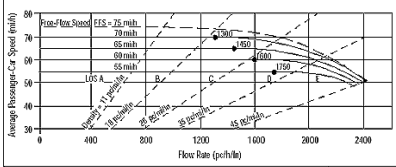
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	559	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:28 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1534	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

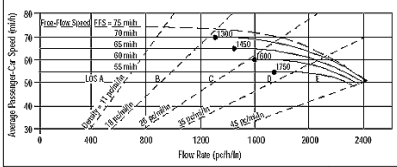
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	840	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.8	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:28 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt B	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1019	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

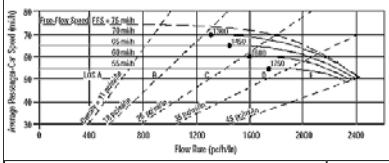
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	558	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:28 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt B*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1697*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

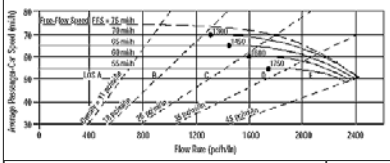
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*929*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*14.2*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:28 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt B*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1163*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

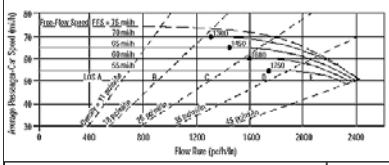
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*637*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*9.7*	pc/mi/ln	S		mi/h
LOS	*A*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:29 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt B*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1763*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

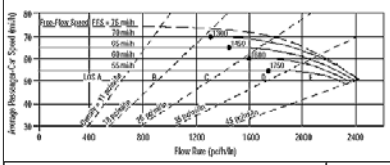
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*965*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*14.7*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 1:52 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt B*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1201*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

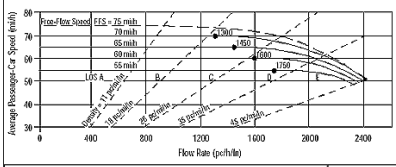
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*657*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*10.0*	pc/mi/ln	S		mi/h
LOS	*A*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 1:53 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt C	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs				
Volume, V	709	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	8
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
Driver type adjustment	1.00		Up/Down %	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

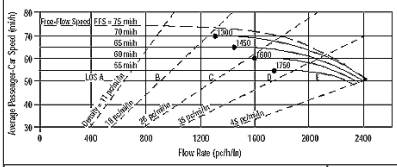
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	388	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.9	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:31 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+ Alt C	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs				
Volume, V	546	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	8
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
Driver type adjustment	1.00		Up/Down %	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

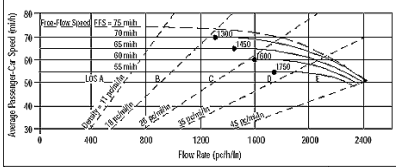
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	299	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	4.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:31 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt C	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs				
Volume, V	1874	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	9
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
Driver type adjustment	1.00		Up/Down %	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.957

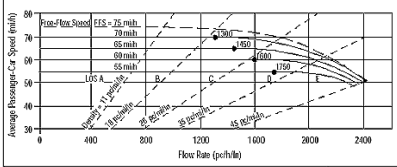
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1031	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	15.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:37 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt C	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs				
Volume, V	1274	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	8
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
Driver type adjustment	1.00		Up/Down %	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

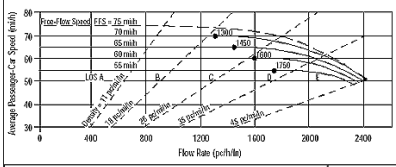
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	697	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:37 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+ Alt C	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	759	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

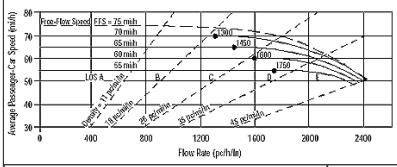
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	415	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:31 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt C	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	552	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

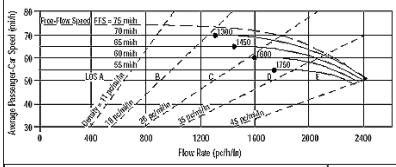
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	302	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	4.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:32 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Citrus Fair Dr/S.Clo Inter
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt C	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1076	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

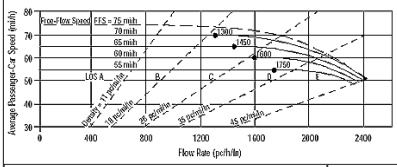
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	589	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.0	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:32 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Citrus Fair Dr/S.Clo Inter
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt C	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	678	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

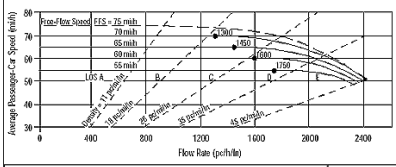
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	371	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:32 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt C	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1567	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

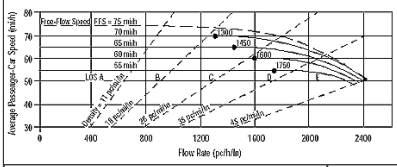
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	858	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	13.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:33 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt C	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	958	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

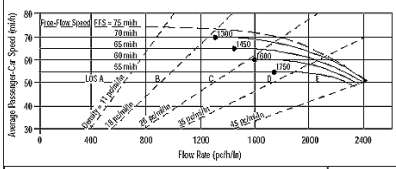
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	524	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.0	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:33 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt C	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1541	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

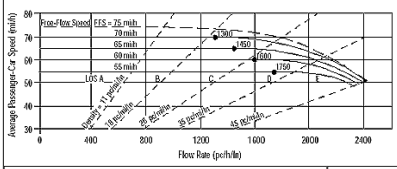
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	843	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.9	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:33 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt C	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1003	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

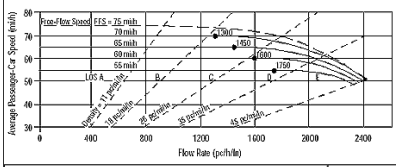
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	549	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:34 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information			Site Information		
Analyst	VCA		Highway/Direction of Travel	US 101/NB	
Agency or Company	W-TRANS		From/To	Asti Inter/Jct Rte 128 E	
Date Performed	11/12/2008		Jurisdiction	City of Cloverdale	
Analysis Time Period	PM Peak Hour+Alt C		Analysis Year	2015	
Project Description Cloverdale Rancheria Casino					
☑ Oper.(LOS)			☐ Des.(N)		☐ Planning Data
Flow Inputs					
Volume, V	1549	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		
Calculate Flow Adjustments					
f_p	1.00		E_R	1.2	
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	
Speed Inputs			**Calc Speed Adj and FFS**		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			
LOS and Performance Measures			**Design (N)**		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	848	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.9	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary

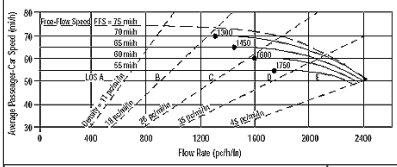
N - Number of lanes; S - Speed; V - Hourly volume; D - Density; v_p - Flow rate; FFS - Free-flow speed; LOS - Level of service; BFFS - Base free-flow speed; DDHV - Directional design hour volume

Factor Location

E_R - Exhibits23-8, 23-10; E_T - Exhibits 23-8, 23-10, 23-11; f_p - Page 23-12; LOS, S, FFS, v_p - Exhibits 23-2, 23-3; f_{LW} - Exhibit 23-4; f_{LC} - Exhibit 23-5; f_N - Exhibit 23-6; f_{ID} - Exhibit 23-7

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:34 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information			Site Information		
Analyst	VCA		Highway/Direction of Travel	US 101/SB	
Agency or Company	W-TRANS		From/To	Asti Inter/Jct Rte 128 E	
Date Performed	11/12/2008		Jurisdiction	City of Cloverdale	
Analysis Time Period	PM Peak Hour+Alt C		Analysis Year	2015	
Project Description Cloverdale Rancheria Casino					
☑ Oper.(LOS)			☐ Des.(N)		☐ Planning Data
Flow Inputs					
Volume, V	1005	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		
Calculate Flow Adjustments					
f_p	1.00		E_R	1.2	
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	
Speed Inputs			**Calc Speed Adj and FFS**		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			
LOS and Performance Measures			**Design (N)**		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	550	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary

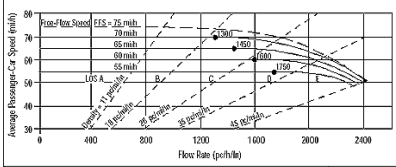
N - Number of lanes; S - Speed; V - Hourly volume; D - Density; v_p - Flow rate; FFS - Free-flow speed; LOS - Level of service; BFFS - Base free-flow speed; DDHV - Directional design hour volume

Factor Location

E_R - Exhibits23-8, 23-10; E_T - Exhibits 23-8, 23-10, 23-11; f_p - Page 23-12; LOS, S, FFS, v_p - Exhibits 23-2, 23-3; f_{LW} - Exhibit 23-4; f_{LC} - Exhibit 23-5; f_N - Exhibit 23-6; f_{ID} - Exhibit 23-7

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:34 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information			Site Information		
Analyst	VCA		Highway/Direction of Travel	US 101/NB	
Agency or Company	W-TRANS		From/To	Jct Rte 128 E/S.Geyserville	
Date Performed	11/12/2008		Jurisdiction	City of Cloverdale	
Analysis Time Period	PM Peak Hour+Alt C		Analysis Year	2015	
Project Description Cloverdale Rancheria Casino					
☑ Oper.(LOS)			☐ Des.(N)		☐ Planning Data
Flow Inputs					
Volume, V	1518	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		
Calculate Flow Adjustments					
f_p	1.00		E_R	1.2	
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	
Speed Inputs			**Calc Speed Adj and FFS**		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			
LOS and Performance Measures			**Design (N)**		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	831	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary

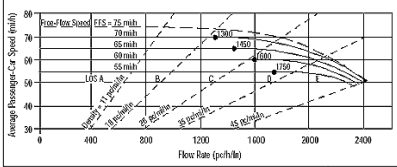
N - Number of lanes; S - Speed; V - Hourly volume; D - Density; v_p - Flow rate; FFS - Free-flow speed; LOS - Level of service; BFFS - Base free-flow speed; DDHV - Directional design hour volume

Factor Location

E_R - Exhibits23-8, 23-10; E_T - Exhibits 23-8, 23-10, 23-11; f_p - Page 23-12; LOS, S, FFS, v_p - Exhibits 23-2, 23-3; f_{LW} - Exhibit 23-4; f_{LC} - Exhibit 23-5; f_N - Exhibit 23-6; f_{ID} - Exhibit 23-7

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:35 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information			Site Information		
Analyst	VCA		Highway/Direction of Travel	US 101/SB	
Agency or Company	W-TRANS		From/To	Jct Rte 128 E/S.Geyserville	
Date Performed	11/12/2008		Jurisdiction	City of Cloverdale	
Analysis Time Period	PM Peak Hour+Alt C		Analysis Year	2015	
Project Description Cloverdale Rancheria Casino					
☑ Oper.(LOS)			☐ Des.(N)		☐ Planning Data
Flow Inputs					
Volume, V	1003	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		
Calculate Flow Adjustments					
f_p	1.00		E_R	1.2	
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	
Speed Inputs			**Calc Speed Adj and FFS**		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			
LOS and Performance Measures			**Design (N)**		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	549	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary

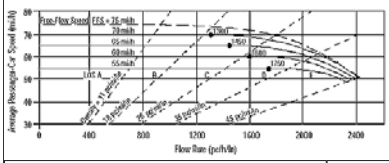
N - Number of lanes; S - Speed; V - Hourly volume; D - Density; v_p - Flow rate; FFS - Free-flow speed; LOS - Level of service; BFFS - Base free-flow speed; DDHV - Directional design hour volume

Factor Location

E_R - Exhibits23-8, 23-10; E_T - Exhibits 23-8, 23-10, 23-11; f_p - Page 23-12; LOS, S, FFS, v_p - Exhibits 23-2, 23-3; f_{LW} - Exhibit 23-4; f_{LC} - Exhibit 23-5; f_N - Exhibit 23-6; f_{ID} - Exhibit 23-7

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:35 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt C*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1680*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

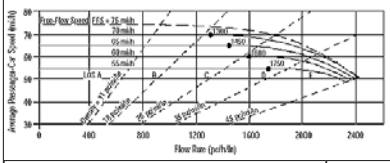
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*920*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*14.0*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:35 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt C*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1147*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

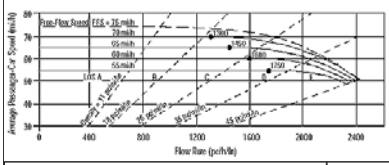
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*628*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*9.6*	pc/mi/ln	S		mi/h
LOS	*A*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:36 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt C*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1746*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

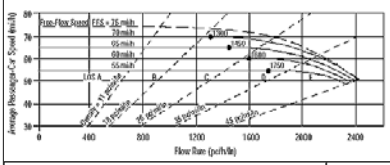
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*956*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*14.6*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:36 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt C*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1185*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

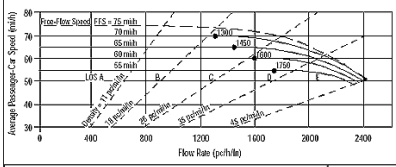
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*649*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*9.9*	pc/mi/ln	S		mi/h
LOS	*A*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:36 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	704	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

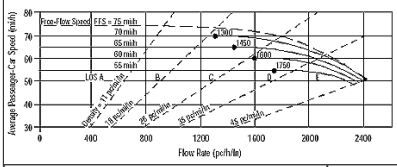
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	385	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.9	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:55 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+ Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	542	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

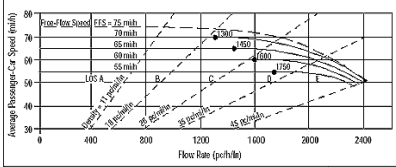
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	297	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	4.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 2:34 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1829	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

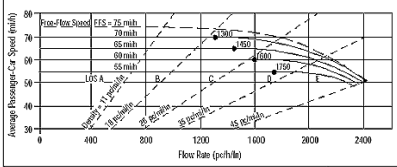
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1001	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	15.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:52 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1232	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

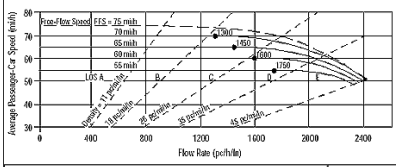
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	674	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:53 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+ Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	754	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

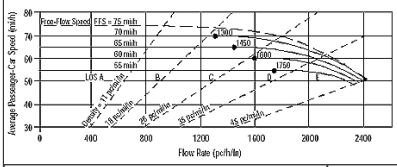
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	413	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 2:32 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	548	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

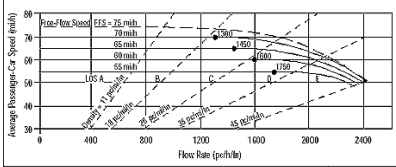
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	300	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	4.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:55 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1062	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

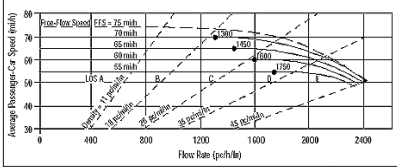
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	581	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.9	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:48 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	667	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

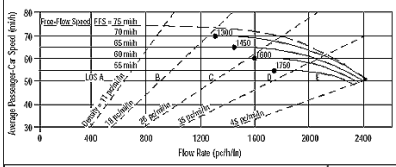
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	365	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:48 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1519	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

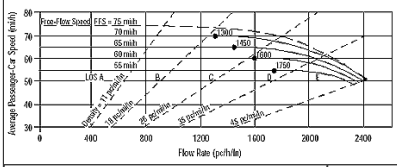
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	831	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:48 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	920	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

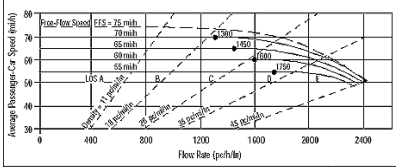
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}		mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}		mi/h
Interchange Density	0.50	I/mi	f_{ID}		mi/h
Number of Lanes, N	2		f_N		mi/h
FFS (measured)	70.0	mi/h	FFS	70.0	mi/h
Base free-flow Speed, BFFS		mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	504	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	70.0	mi/h	S		mi/h
D = v_p / S	7.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:49 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1493	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

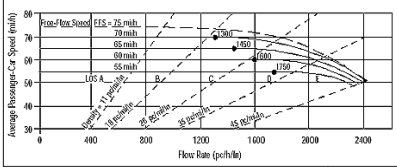
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	817	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:49 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	965	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

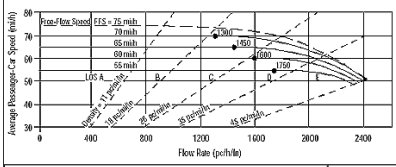
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	528	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:49 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1501	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

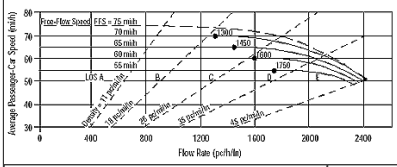
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	822	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:50 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	967	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

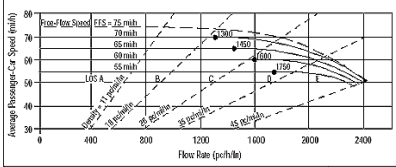
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	529	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:50 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1472	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

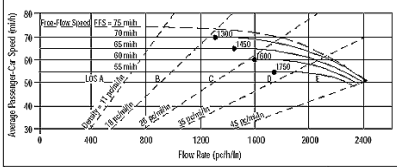
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	806	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:50 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt D	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	966	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

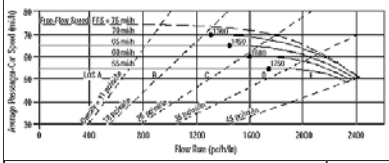
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	529	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:51 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt D*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1635*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

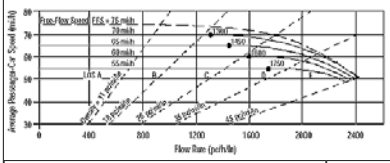
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*895*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*13.7*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 2:38 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt D*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1111*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

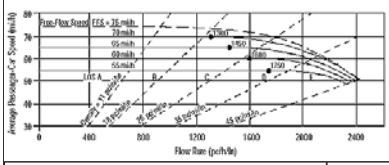
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*608*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*9.3*	pc/mi/ln	S		mi/h
LOS	*A*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 2:38 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt D*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1701*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

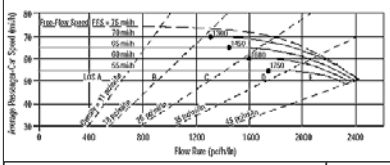
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*931*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*14.2*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:52 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt D*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1149*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

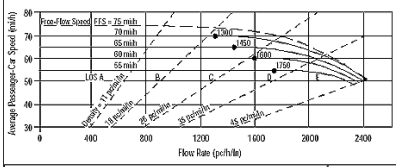
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*629*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*9.6*	pc/mi/ln	S		mi/h
LOS	*A*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:52 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs				
Volume, V	781	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	8
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
Driver type adjustment	1.00		Up/Down %	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

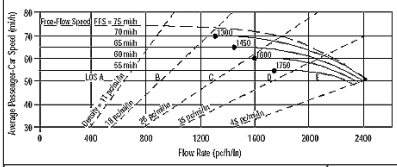
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	427	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:55 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+ Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs				
Volume, V	578	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	8
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
Driver type adjustment	1.00		Up/Down %	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

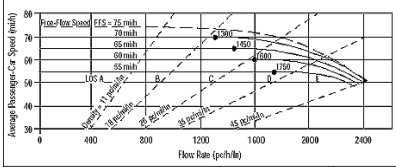
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	316	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	4.8	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:56 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs				
Volume, V	1686	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	8
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
Driver type adjustment	1.00		Up/Down %	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

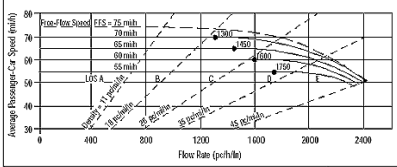
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	923	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	14.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 12:01 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs				
Volume, V	1188	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	8
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
Driver type adjustment	1.00		Up/Down %	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

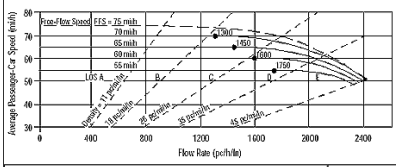
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	650	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.9	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 12:01 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+ Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	831	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

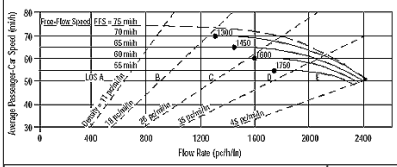
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	455	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.9	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:56 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	584	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

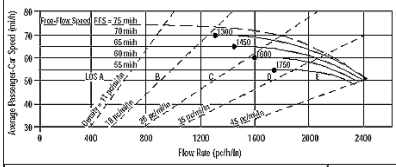
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	320	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	4.9	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:56 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	983	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

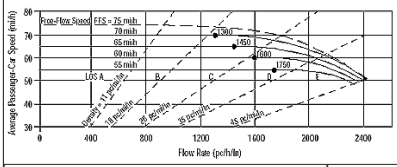
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	538	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:56 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	596	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

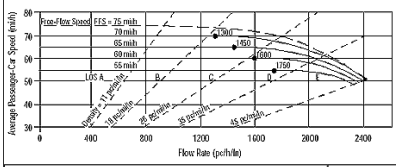
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	326	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	5.0	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:57 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1369	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

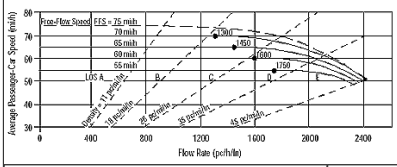
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	749	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	11.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:57 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	874	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

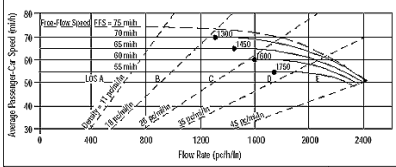
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	478	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:57 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1343	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

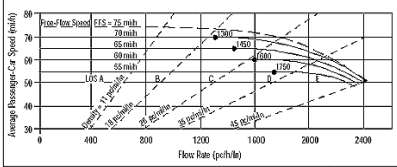
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	735	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	11.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:57 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	919	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

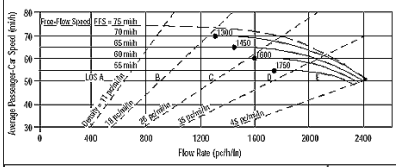
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	503	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:58 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1351	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

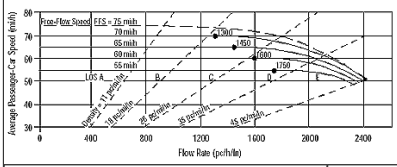
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	739	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	11.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:58 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	921	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

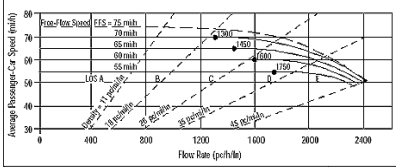
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	504	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:58 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Jct Rte 128 E/S.Geyserville
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1330	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

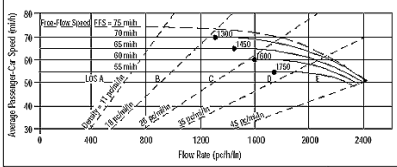
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	728	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	11.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:59 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Jct Rte 128 E/S.Geyserville
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour+Alt E	Analysis Year	2015

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	923	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

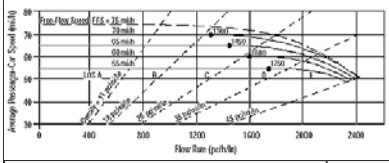
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	505	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:59 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt E*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1492*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

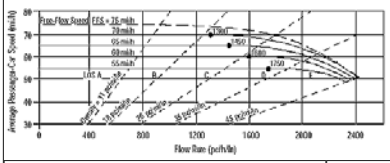
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*817*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*12.5*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:59 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt E*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1067*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

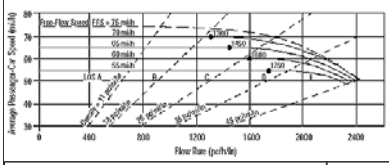
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*584*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*8.9*	pc/mi/ln	S		mi/h
LOS	*A*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 12:00 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt E*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1558*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

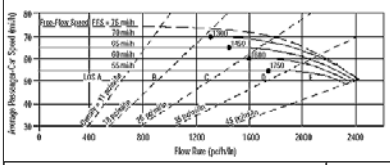
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*853*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*13.0*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 12:00 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour+Alt E*	Analysis Year	*2015*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1067*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

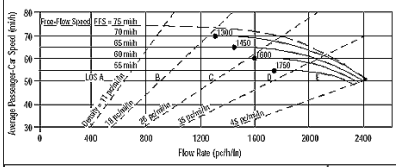
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*584*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*8.9*	pc/mi/ln	S		mi/h
LOS	*A*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 12:00 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*County Line/Jct Rte 128 W*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*837*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

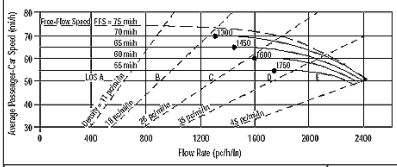
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*458*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*7.0*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/9/2009 5:18 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*County Line/Jct Rte 128 W*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*698*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

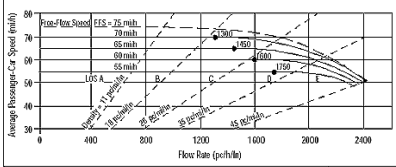
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*382*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*5.8*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/9/2009 5:18 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Lytton Spring Rd/Dry Crk Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1928*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

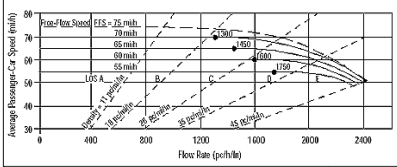
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1055*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*16.1*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*B*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:34 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Lytton Spring Rd/Dry Crk Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1241*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

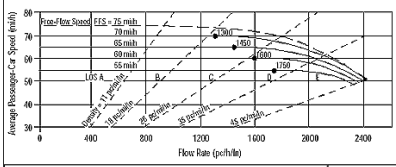
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*679*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*10.4*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:35 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	898	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

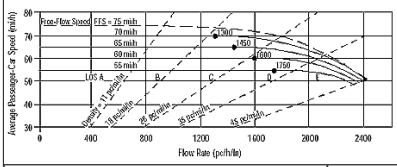
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	492	pc/h/ln	Design LOS		
S	65.5	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	7.5	pc/mi/ln	S		mi/h
LOS	A		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 5:19 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period		Analysis Year	2008

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	710	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

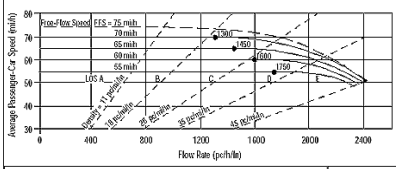
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	389	pc/h/ln	Design LOS		
S	65.5	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	5.9	pc/mi/ln	S		mi/h
LOS	A		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 1:58 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1200	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

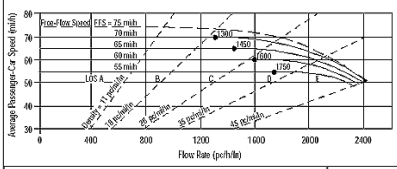
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	657	pc/h/ln	Design LOS		
S	65.5	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	10.0	pc/mi/ln	S		mi/h
LOS	A		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 5:20 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	775	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

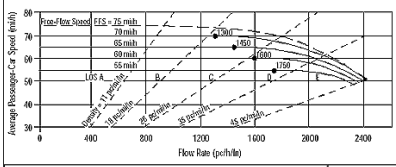
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	424	pc/h/ln	Design LOS		
S	65.5	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	6.5	pc/mi/ln	S		mi/h
LOS	A		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 5:20 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1534	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

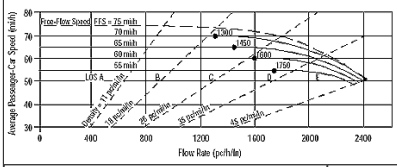
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	840	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.8	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 5:20 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	846	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

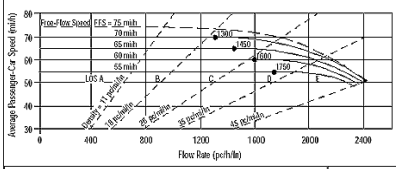
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	463	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 5:22 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1502	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

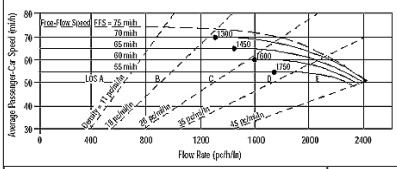
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	822	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 5:23 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	950	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

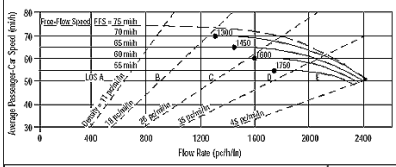
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	520	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.9	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/9/2009 5:23 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1512	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

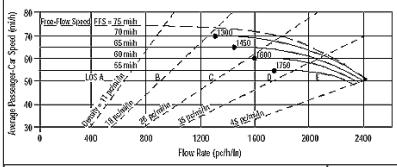
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	828	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 12:43 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	977	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

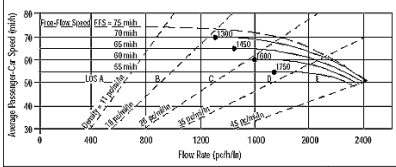
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	535	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:30 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1493	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

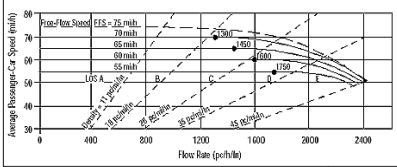
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	817	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 12:47 PM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	981	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

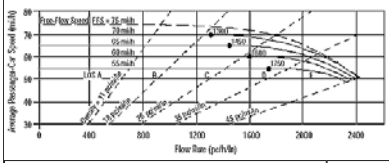
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	537	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:32 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Geyserville/Independance Lne
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1691	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

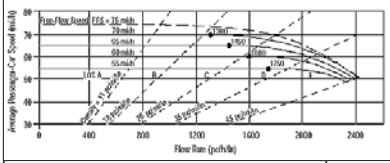
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	926	pc/h/ln	Design LOS		
S	65.5	mi/h	$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$		pc/h
$D = v_p / S$	14.1	pc/mi/ln	S		mi/h
LOS	B		$D = v_p / S$		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:32 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Geyserville/Independance Lne
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1112	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

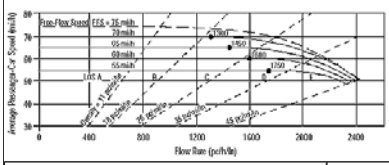
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	609	pc/h/ln	Design LOS		
S	65.5	mi/h	$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$		pc/h
$D = v_p / S$	9.3	pc/mi/ln	S		mi/h
LOS	A		$D = v_p / S$		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:32 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Independance Lne/Lytton Sp Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1772	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

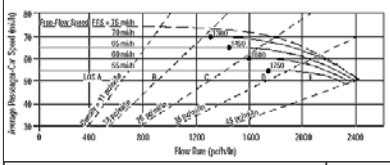
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	970	pc/h/ln	Design LOS		
S	65.5	mi/h	$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$		pc/h
$D = v_p / S$	14.8	pc/mi/ln	S		mi/h
LOS	B		$D = v_p / S$		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:33 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Independance Lne/Lytton Sp Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1151	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

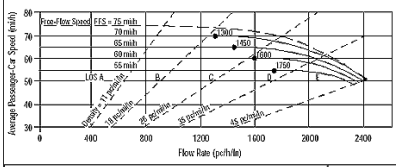
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	630	pc/h/ln	Design LOS		
S	65.5	mi/h	$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$		pc/h
$D = v_p / S$	9.6	pc/mi/ln	S		mi/h
LOS	A		$D = v_p / S$		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:34 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*County Line/Jct Rte 128 W*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt A*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*866*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments				
f_p	*1.00*	E_R	*1.2*	
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*	

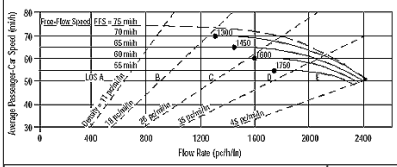
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*474*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*7.2*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:36 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*County Line/Jct Rte 128 W*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt A*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*732*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments				
f_p	*1.00*	E_R	*1.2*	
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*	

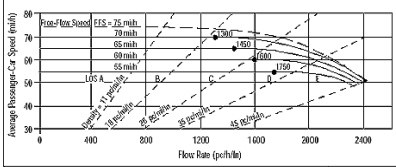
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*401*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*6.1*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:37 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Lytton Spring Rd/Dry Crk Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt A*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*2346*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments				
f_p	*1.00*	E_R	*1.2*	
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*	

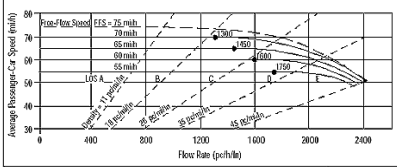
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1284*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*19.6*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*C*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:43 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Lytton Spring Rd/Dry Crk Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt A*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1600*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments				
f_p	*1.00*	E_R	*1.2*	
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*	

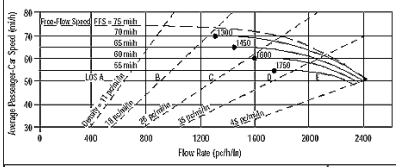
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*876*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*13.4*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*B*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:44 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt A	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	927	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

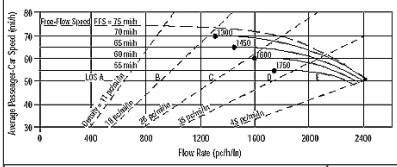
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	507	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:37 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt A	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	744	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

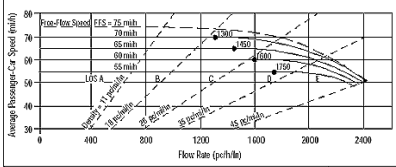
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	407	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:37 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Citrus Fair Dr/S.Clo Inter
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt A	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1332	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

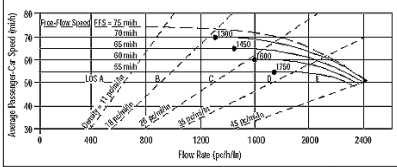
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	729	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	11.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:38 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Citrus Fair Dr/S.Clo Inter
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt A	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	889	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

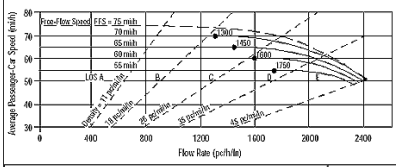
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	487	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:38 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt A	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1974	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

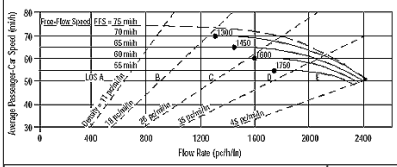
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1081	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	16.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:38 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt A	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1224	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

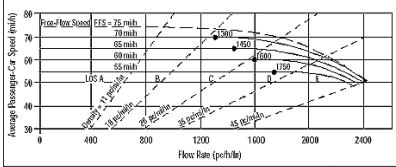
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	670	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:39 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt A	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1942	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

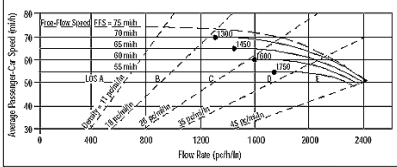
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1063	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	16.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:39 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt A	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1328	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

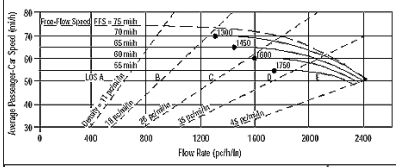
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	727	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	11.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:40 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt A	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1952	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

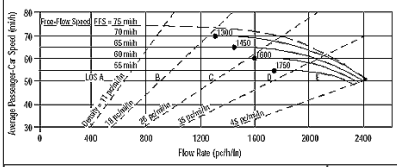
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1068	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	16.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:40 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt A	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1355	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

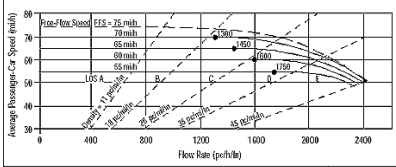
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	742	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	11.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:40 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt A	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1911	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

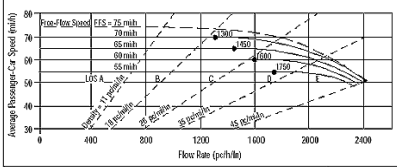
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1046	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	16.0	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:41 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt A	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1340	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

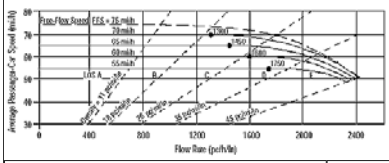
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	733	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	11.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:41 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt A*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*2109*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

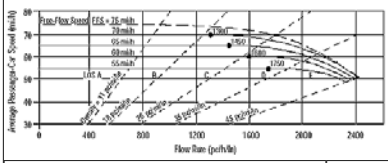
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)
Operational (LOS)			Design (N)
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1154*	pc/h/ln	Design LOS
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p) pc/h
D = v_p / S	*17.6*	pc/mi/ln	S mi/h
LOS	*B*		D = v_p / S pc/mi/ln
			Required Number of Lanes, N

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:42 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt A*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1471*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

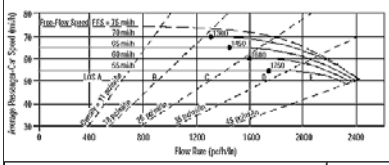
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)
Operational (LOS)			Design (N)
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*805*	pc/h/ln	Design LOS
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p) pc/h
D = v_p / S	*12.3*	pc/mi/ln	S mi/h
LOS	*B*		D = v_p / S pc/mi/ln
			Required Number of Lanes, N

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:42 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt A*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*2190*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

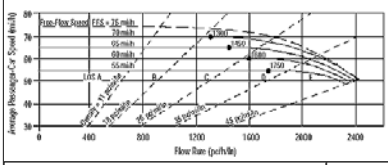
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)
Operational (LOS)			Design (N)
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1199*	pc/h/ln	Design LOS
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p) pc/h
D = v_p / S	*18.3*	pc/mi/ln	S mi/h
LOS	*C*		D = v_p / S pc/mi/ln
			Required Number of Lanes, N

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:42 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt A*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1510*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

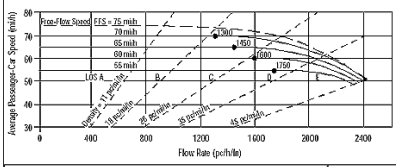
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)
Operational (LOS)			Design (N)
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*827*	pc/h/ln	Design LOS
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p) pc/h
D = v_p / S	*12.6*	pc/mi/ln	S mi/h
LOS	*B*		D = v_p / S pc/mi/ln
			Required Number of Lanes, N

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:43 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	860	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

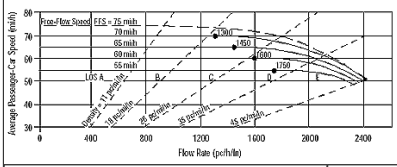
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	471	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:44 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	County Line/Jct Rte 128 W
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	723	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

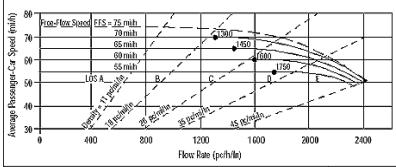
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	396	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.0	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:45 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	2238	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

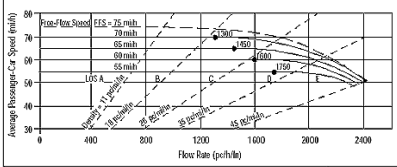
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1225	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	18.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	C		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:50 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Lytton Spring Rd/Dry Crk Rd
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1517	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

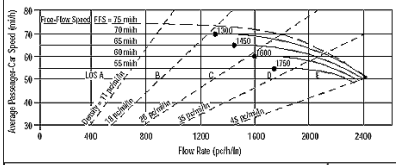
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	830	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	12.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:51 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	921	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

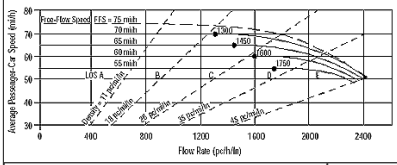
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	504	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:45 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	735	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

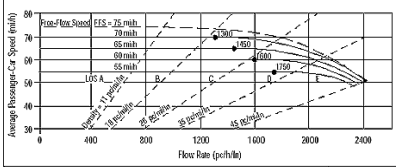
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	402	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:45 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Citrus Fair Dr/S.Clo Inter
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1298	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

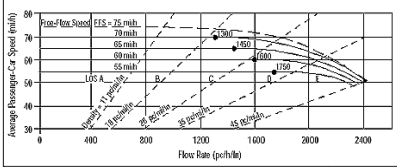
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	710	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.8	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:46 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Citrus Fair Dr/S.Clo Inter
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	862	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

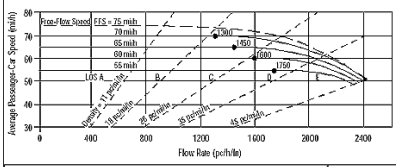
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	472	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:46 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1861	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

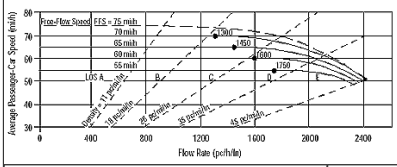
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1019	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	15.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:46 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1137	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

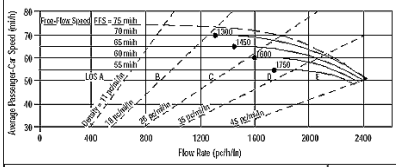
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	622	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:47 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1829	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

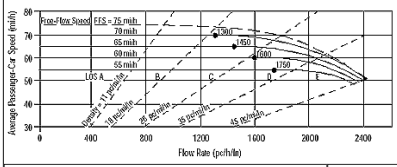
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1001	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	15.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:47 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1241	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00		E_R	1.2
E_T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

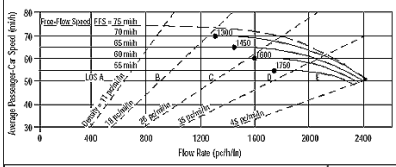
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	679	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:47 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1839	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

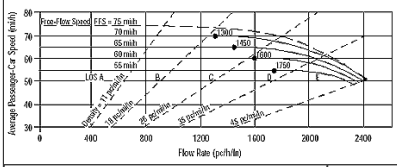
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1007	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	15.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:48 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1268	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

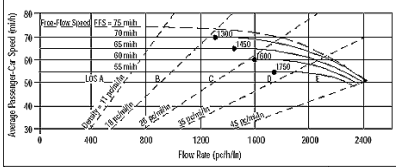
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	694	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:48 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1804	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

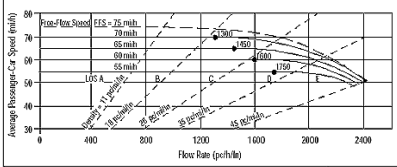
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	987	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	15.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:48 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt B	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1257	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

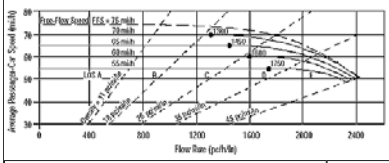
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	688	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:49 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt B*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*2002*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

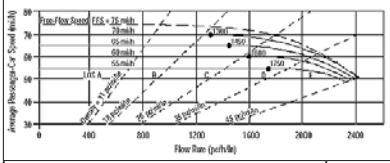
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1096*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*16.7*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 10:49 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt B*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1389*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

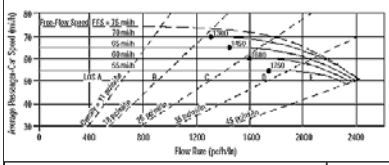
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*760*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*11.6*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 10:49 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt B*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*2082*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

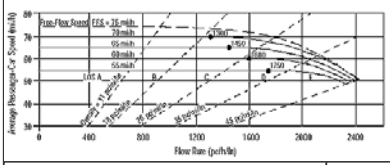
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1140*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*17.4*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 10:50 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt B*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1427*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

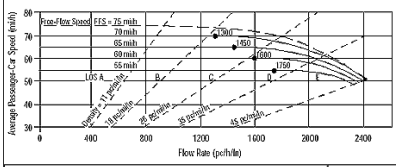
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*781*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*11.9*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 10:50 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*County Line/Jct Rte 128 W*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt C*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*860*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

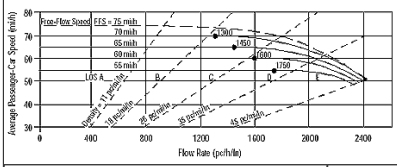
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*471*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*7.2*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:51 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*County Line/Jct Rte 128 W*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt C*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*722*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

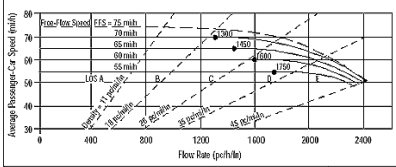
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*395*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*6.0*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:52 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Lytton Spring Rd/Dry Crk Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt C*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*2222*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

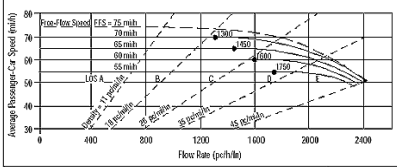
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1216*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*18.6*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*C*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:58 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Lytton Spring Rd/Dry Crk Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt C*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1501*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

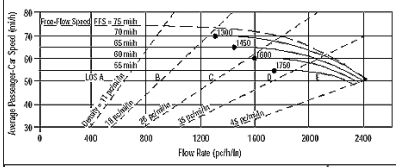
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*822*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*12.5*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*B*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:58 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt C	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	921	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

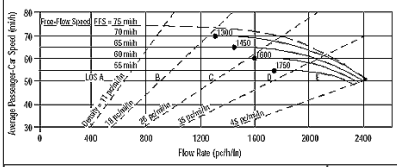
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	504	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:52 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt C	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	734	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

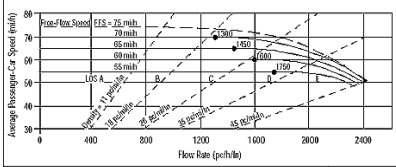
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	402	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:53 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Citrus Fair Dr/S.Clo Inter
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt C	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1293	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

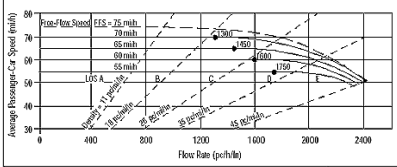
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	708	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.8	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:53 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	Citrus Fair Dr/S.Clo Inter
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt C	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	857	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

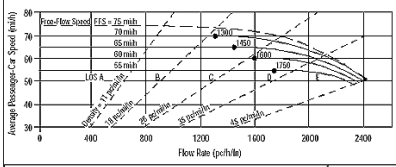
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	469	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:53 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt C	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1844	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

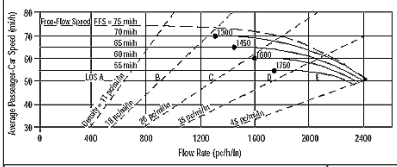
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1009	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	15.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:54 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt C	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1120	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

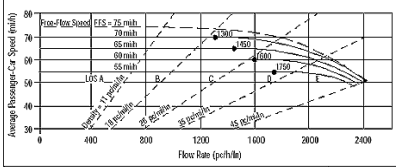
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	613	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:54 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt C	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1812	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

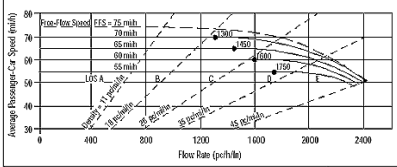
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	992	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	15.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:54 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt C	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1224	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

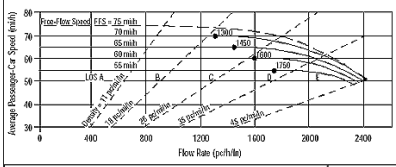
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	670	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:55 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt C	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1822	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

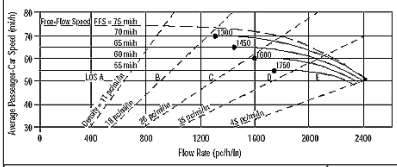
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	997	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	15.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:55 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt C	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1251	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

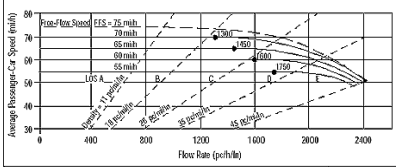
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	685	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:55 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt C	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1767	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

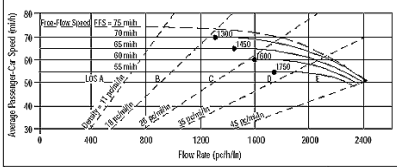
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	967	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	14.8	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:56 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt C	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1241	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

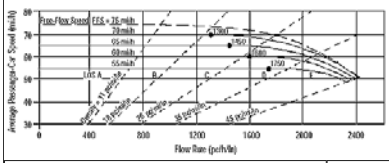
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	679	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 10:56 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt C*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1986*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

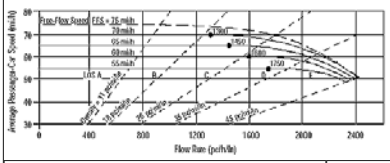
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1087*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*16.6*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 10:56 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt C*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1373*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

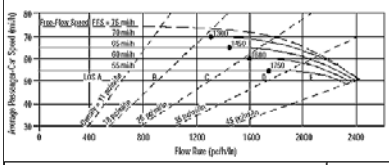
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*752*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*11.5*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 10:57 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt C*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*2066*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

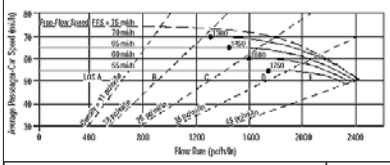
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1131*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*17.3*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 10:57 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt C*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1411*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

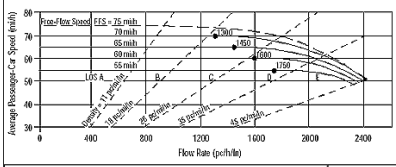
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*772*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*11.8*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 10:58 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*County Line/Jct Rte 128 W*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*855*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

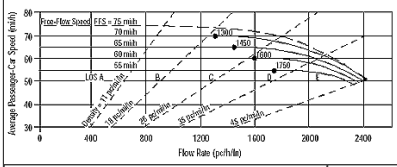
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*468*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*7.1*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:59 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*County Line/Jct Rte 128 W*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*718*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

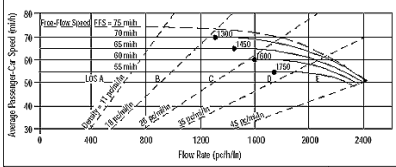
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*393*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*6.0*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 10:59 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Lytton Spring Rd/Dry Crk Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*2176*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

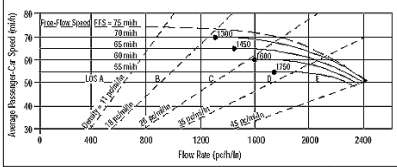
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1191*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*18.2*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*C*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:06 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Lytton Spring Rd/Dry Crk Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1465*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

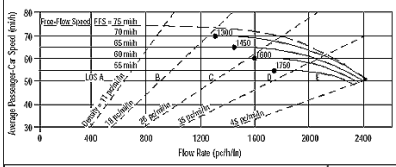
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*802*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*12.2*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*B*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:07 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt D	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	916	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

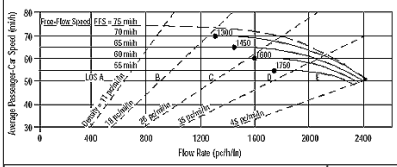
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	501	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:01 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt D	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	730	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

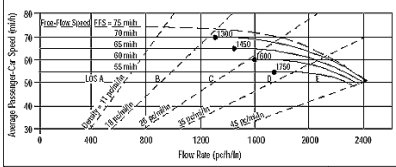
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	400	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:01 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1279	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

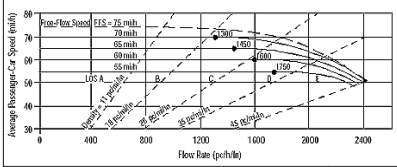
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	700	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:01 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt D	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	846	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

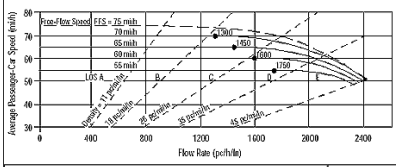
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	463	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	7.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:02 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*S.Clo Inter/Dutcher Crk Dr*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1796*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

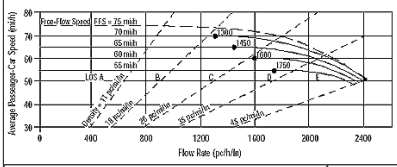
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*983*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*15.0*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*B*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:02 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*S.Clo Inter/Dutcher Crk Dr*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1082*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

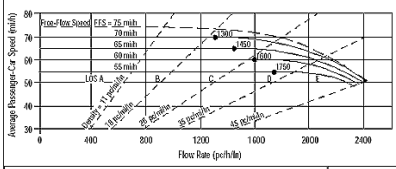
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*592*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*9.0*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:02 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Dutcher Crk Dr/Asti Inter*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1764*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

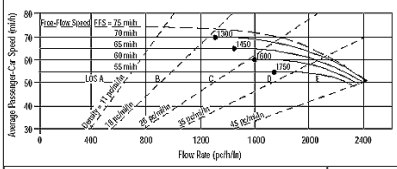
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}		mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}		mi/h
Interchange Density	*0.50*	I/mi	f_{ID}		mi/h
Number of Lanes, N	*2*		f_N		mi/h
FFS (measured)	*70.0*	mi/h	FFS	*70.0*	mi/h
Base free-flow Speed, BFFS		mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*966*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*70.0*	mi/h	S		mi/h
D = v_p / S	*13.8*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*B*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:03 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Dutcher Crk Dr/Asti Inter*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1186*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

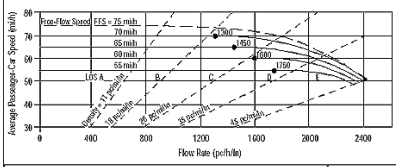
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*649*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*9.9*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:03 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt D	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1774	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

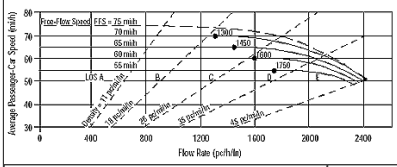
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	971	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	14.8	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:03 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt D	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1213	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

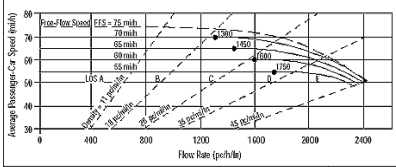
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	664	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:04 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt D	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1742	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

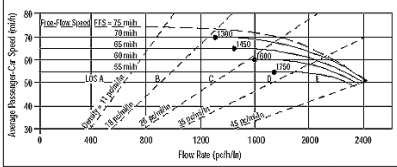
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	954	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	14.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:04 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt D	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1205	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

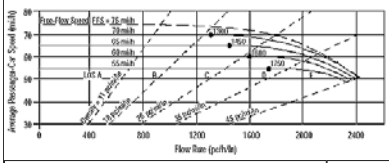
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	660	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.1	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:05 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1940*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

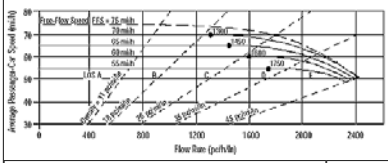
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1062*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*16.2*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 11:05 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1337*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

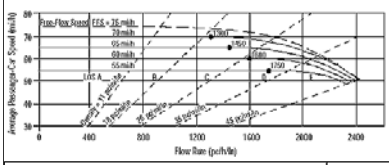
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*732*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*11.2*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 11:05 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*2021*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

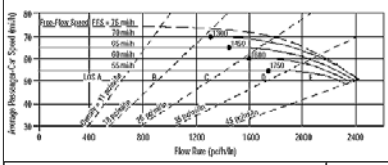
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1106*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*16.9*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 11:06 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1375*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

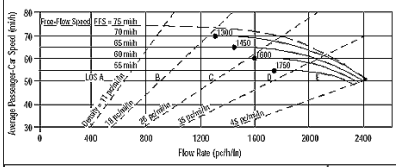
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*753*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*11.5*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 11:06 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*County Line/Jct Rte 128 W*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*932*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

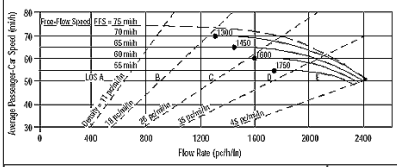
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*510*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*7.8*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:07 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*County Line/Jct Rte 128 W*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt E*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*754*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

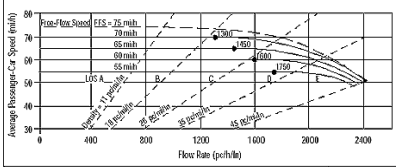
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*413*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*6.3*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*A*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:08 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Lytton Spring Rd/Dry Crk Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt E*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*2034*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

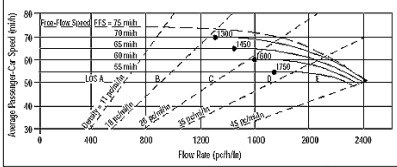
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1113*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*17.0*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*B*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:14 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Lytton Spring Rd/Dry Crk Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt D*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1465*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

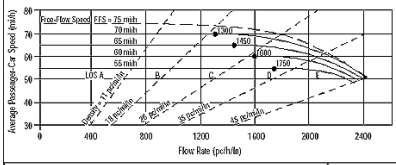
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*802*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	*65.5*	mi/h	S		mi/h
D = v_p / S	*12.2*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*B*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+™* Version 5.3 Generated: 1/10/2009 11:15 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt E	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	993	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

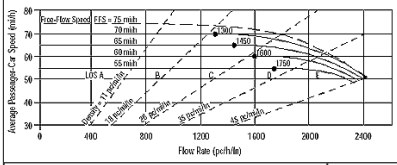
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	544	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:08 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 W/Citrus Fair Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt E	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	766	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

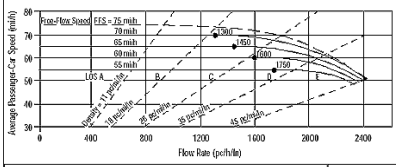
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	419	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:08 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt E	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1200	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

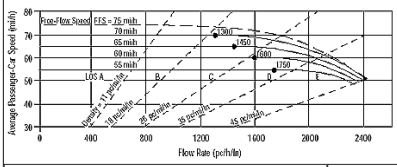
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	657	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	10.0	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:09 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Citrus Fair Dr/S.Clo Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt E	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	775	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

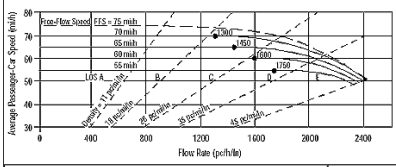
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	424	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	6.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:09 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt E	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1646	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

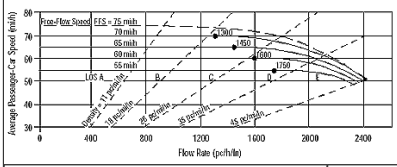
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	901	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	13.8	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:09 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	S.Clo Inter/Dutcher Crk Dr
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt E	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1036	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

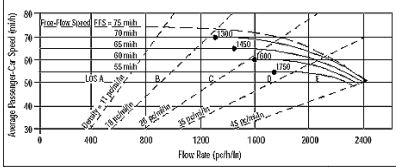
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	567	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	8.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:10 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt E	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1614	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

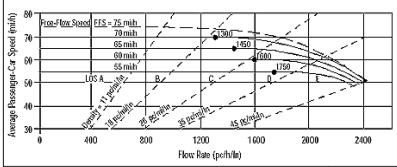
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	883	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	13.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:10 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Dutcher Crk Dr/Asti Inter
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt E	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1140	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments				
f_p	1.00	E_R	1.2	
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962	

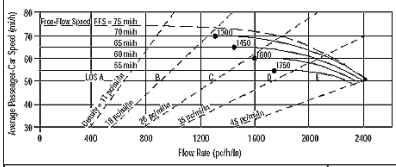
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	624	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.5	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:11 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt E	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1624	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

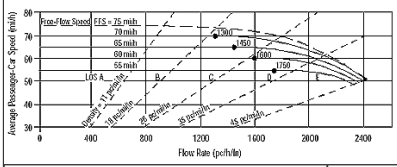
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	889	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	13.6	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:11 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Asti Inter/Jct Rte 128 E
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt E	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1167	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

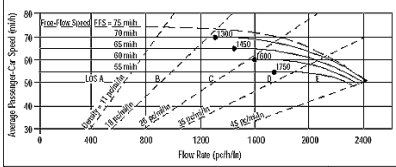
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	639	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.8	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:12 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/NB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt E	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1599	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

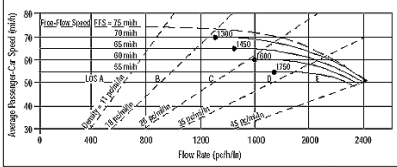
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	875	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	13.4	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:12 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	VCA	Highway/Direction of Travel	US 101/SB
Agency or Company	W-TRANS	From/To	Jct Rte 128 E/S.Geyserville
Date Performed	11/12/2008	Jurisdiction	City of Cloverdale
Analysis Time Period	PM Peak Hour + Alt E	Analysis Year	2035

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	1161	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	8	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
Driver type adjustment	1.00		Up/Down %		

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.962

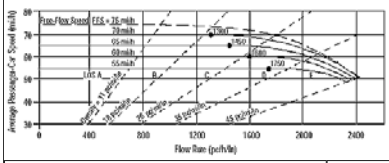
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft	f_{LW}	0.0	mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}	0.0	mi/h
Interchange Density	0.50	I/mi	f_{ID}	0.0	mi/h
Number of Lanes, N	2		f_N	4.5	mi/h
FFS (measured)		mi/h	FFS	65.5	mi/h
Base free-flow Speed, BFFS	70.0	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	635	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	65.5	mi/h	S		mi/h
D = v_p / S	9.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	A		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved HCS+™ Version 5.3 Generated: 1/10/2009 11:12 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt E*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1798*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

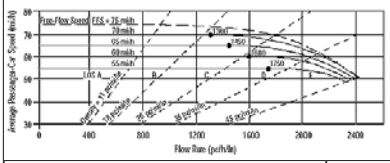
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*984*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*15.0*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 11:13 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*S.Geyserville/Independance Lne*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt E*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1293*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

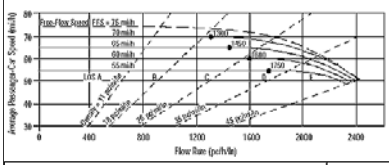
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*708*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*10.8*	pc/mi/ln	S		mi/h
LOS	*A*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 11:13 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/NB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt E*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1887*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

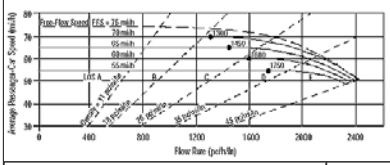
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1033*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*15.8*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 11:14 AM

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information		Site Information	
Analyst	*VCA*	Highway/Direction of Travel	*US 101/SB*
Agency or Company	*W-TRANS*	From/To	*Independance Lne/Lytton Sp Rd*
Date Performed	*11/12/2008*	Jurisdiction	*City of Cloverdale*
Analysis Time Period	*PM Peak Hour + Alt E*	Analysis Year	*2035*

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs					
Volume, V	*1331*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*8*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*	
Driver type adjustment	*1.00*		Up/Down %		

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft	f_{LW}	*0.0*	mi/h
Rt-Shoulder Lat. Clearance	*6.0*	ft	f_{LC}	*0.0*	mi/h
Interchange Density	*0.50*	I/mi	f_{ID}	*0.0*	mi/h
Number of Lanes, N	*2*		f_N	*4.5*	mi/h
FFS (measured)		mi/h	FFS	*65.5*	mi/h
Base free-flow Speed, BFFS	*70.0*	mi/h			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*729*	pc/h/ln	Design LOS		
S	*65.5*	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	*11.1*	pc/mi/ln	S		mi/h
LOS	*B*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

Copyright © 2007 University of Florida, All Rights Reserved *HCS+*™ Version 5.3 Generated: 1/10/2009 11:14 AM

Appendix H
Preliminary Utilities Study

ESA

PRELIMINARY UTILITIES STUDY

For

CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

January 2009

Prepared for:

ESA
8950 Cal Center Drive
Building 3, Suite 300
Sacramento, CA 95826

Prepared by:

Adobe Associates, Inc.
1220 North Dutton Avenue
Santa Rosa, California 95401
Phone: (707) 541-2300

TABLE OF CONTENTS

Preliminary Utilities Study

	Page Number
Sanitary Sewer	1
Domestic Water	2
Reclaimed Water Supply	2-3
Storm Drainage	3
Gas	4
Electric	4
Cable Television	4
Telephone	4

Exhibits

Preliminary Utility Plan – Alternatives A-D

Preliminary Utility Plan – Alternative E

Preliminary Utilities

Site utilities addressed in this section include the utilities within the 69.8-acre project boundary located between Highway 101 and the Russian River along the east boundary. Water supply facilities located east of the railroad track are addressed in the Water Supply section of this report. Wastewater facilities including reclaimed water facilities east of the railroad tracks are addressed in the Wastewater Treatment and Disposal section of this report.

Sanitary Sewer:
The City of Cloverdale owns and maintains an existing public sanitary sewer main which runs along the southern project boundary and bisects the 69.8 acre project site paralleling the railroad tracks north to the City's wastewater treatment plant. A Municipal Services Agreement (MSA), between the City and the Cloverdale Rancheria would be required for the project to access the public sanitary sewer system. The wastewater treatment plant and the sanitary sewer mains adjacent to the project both have the capacity to serve the project for Alternatives A-E.

Sanitary sewer service can be provided by the project without dependence on public sewer facilities. Sufficient area and site conditions exist on the project site to construct adequate private wastewater treatment and disposal facilities.

Proposed private sanitary improvements include the construction of approximately 2,500 lineal feet of an 8-inch pipe system along the southern and northeastern site boundaries parallel to the public system. The sanitary sewer collection system would convey flows to a point near the northwest end of the garage structure and turn northeasterly across the railroad tracks to the proposed wastewater treatment system east of the railroad tracks. Refer to the exhibit titled, "Preliminary Utility Plan Alternatives A-D" for onsite private sanitary facilities. Wastewater treatment and disposal is discussed in this report under the section titled, "Wastewater Treatment and Disposal."

Alternative E private sanitary sewer facilities are proposed originating in the circular driveway near the most west retail buildings. This centrally located network of 8-inch diameter sanitary sewer pipes has adequate capacity to serve the proposed commercial, retail, and warehouse uses. The sewer network combines to a single 8-inch pipe near the most easterly end of the circular drive and continues northeasterly to the project boundary then northwesterly to the location of the railroad crossing and continues to the proposed waste water treatment plant. Refer to the exhibit titled, "Preliminary Utility Plan Alternative E" for onsite sanitary facilities.

The private sanitary sewer crossing of the railroad tracks will require an encroachment permit from the railroad to install the pipe within the railroad right-of-way and under the tracks. Pipe construction under the tracks will utilize directional drilling or bore and jack as a method of installation.

Sanitary sewer pipe crossing of Porterfield Creek is proposed via a suspended pipe over the creek. Support structures for the overcrossing are proposed to be constructed outside of the creek banks.

Domestic Water:
A private water supply system is proposed by this project. Water will be pumped from a new well located near the most easterly point of the vineyard property located on the east side of the project. A discussion of the water supply, treatment, demands, and offsite facilities is found in this report in the section titled, "Water Supply."

Onsite water will be supplied directly from the proposed water tank located southwest of the proposed wastewater treatment plant. Refer to exhibit titled, "Preliminary Utility Plan Alternatives (A-E)" for the onsite distribution pipe layout. The distribution system will serve only domestic water demands of the project and excludes irrigation and fire protection uses. Onsite fire and irrigation supply is discussed in the reclaimed water supply subsection below.

A 6-inch distribution main is proposed to supply water to the outside perimeter of the building mass. Originating from the water tank, and through a railroad under-crossing near the midpoint of the north garage structure, the domestic main line will skirt the northeast project boundary under the proposed service road located between the proposed buildings and the railroad. At the southeast corner of the site, this domestic main will follow the southern project boundary westerly to a point near the west end of the building mass requiring domestic water supply. Proposed water distribution piping is approximately 2,500 lineal feet in length.

A suspended domestic water pipe crossing over Porterfield Creek is proposed. Support structures for the overcrossing are proposed to be constructed outside of the creek banks.

An existing 8-inch water line owned by the South Cloverdale Water District traverses the project site from west to east. Domestic water supply is not available to the project from the South Cloverdale Water District facilities. Relocation of approximately 1,750 feet of this existing waterline is necessary to improve the proposed building massing within the project and access to the project. The relocated waterline will be placed along the southern boundary and northeastern boundary as shown in the exhibit titled, "Preliminary Utility Plan Alternatives A-D."

Public water may be an option for this project site. While the project lies outside of the City boundary, the City does have adequate public facilities to serve the project. Public water service may be provided if two conditions are met. First, a Municipal Services Agreement (MSA) would be required between the City and the Cloverdale Rancheria. Second, a 12-inch or possible 16-inch public water main would need to be constructed along Asti Road from north of the City wastewater treatment plant to Santana Drive, a distance of approximately 3,400 lineal feet.

Reclaimed Water Supply:
Reclaimed water supply for the project would be provided using tertiary level treated wastewater from the private wastewater treatment facilities located on the northeastern portion of the site. Reclaimed water is proposed for fire protection and irrigation uses. Fire protection uses include fire sprinklers systems used within the buildings as well as the fire hydrants located outside of the buildings. Irrigation use of the reclaimed water includes the landscape plantings and water features, which may include ponds or fountains.

Reclaimed water would be supplied through a 12-inch pipe originating at the pump house on the offsite wastewater treatment storage pond. Onsite distribution is proposed through a 12-inch loop main constructed around the circumference of the building mass as shown on the exhibit titled, "Preliminary Utility Plan Alternatives (A-E)."

Landscape irrigation supply to localized planting areas or zones will be served directly from the looped reclaimed 4-inch irrigation water main. A 40,000 gallon reclaimed irrigation water storage tank is proposed and located near the domestic water supply tank adjacent to the private wastewater treatment plant.

Storm Drainage:
The proposed use of porous concrete surfaces aids in the reduction of storm drain infrastructure improvements including inlet structures, outlet structures, manholes and piping. Overall site drainage is discussed in the section titled, "Preliminary Drainage Plan – Alternative (A-E)." Existing outfall locations and new upland drainage release systems are proposed for project alternatives A-E, eliminating the impact of constructing drainage outfall structures, pipes, and energy dissipaters within the creek banks.

Onsite storm drain improvements include subterranean storm water detention facilities which are provided by constructing a network of parallel large diameter pipes with a small diameter pipe and outlet structure designed to restrict outflows to pre-development conditions.

Storm drain system improvements are the same for alternatives A-D. Offsite storm water runs onto the project site from an existing 30-diameter pipe located along the Asti Road frontage. This offsite storm water gravity flows to the east, through the existing wetland mitigation area. Near the east end of this wetland area, a 30-inch storm drain pipe is proposed to collect flows through the wetland preserve and storm water collected within the porous road surface.

The 30-inch storm drain is proposed to connect to the subterranean detention facility to meter flows at the proposed detention facility outlet location. An upland drainage release system is proposed at the northerly most end of the detention facility. This upland release system converts storm water discharges from a concentrated flow to sheet flow prior to being discharged over natural ground to Porterfield Creek.

Onsite subdrain systems are necessary to convey storm water collected within the porous surfaces to the detention facility and will be developed in the design phase of the project.

Sump pumps will be required within the bottom floors of the garage structures to provide drainage for seepage and garage floor cleaning. Sump pump discharges will be treated with a sand/oil separator and discharged to the sanitary sewer system.

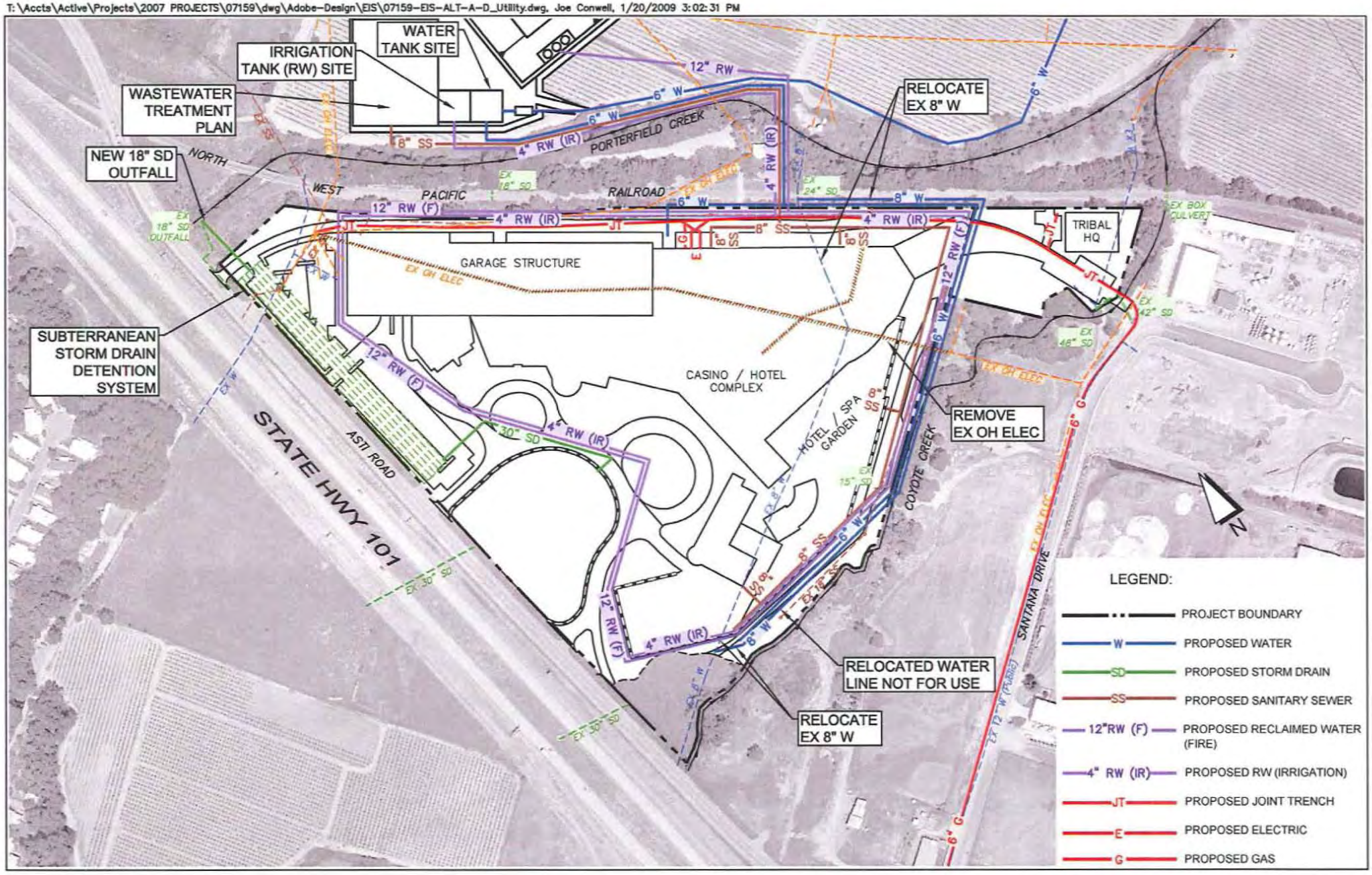
Gas:
Gas is currently not available near the site. A 6-inch gas main is proposed to extend gas service to the project site from an existing gas main located on the east side of Asti Road approximately 2,500 lineal feet south of Santana Drive. The new gas main would be installed along the east side of Asti Road to Santana Drive and along the north side of Santana Drive to the overhead utility easement near the road knuckle in Santana Drive, a total distance of approximately 3,980 lineal feet. The gas main would reduce from 6-inches to 4-inches and extend north into the site, 1,160 lineal feet along the service road parallel to the railroad track, to the north boundary of the project. Alternative E proposes the use of 2-inch gas service piping to serve the individual buildings, approximately 2,060 lineal feet. Refer to the exhibits titled, "Preliminary Utilities Alternatives (A-E)" for gas and joint utility trench concept layouts.

Electric:
The site currently has an overhead 3-phase distribution pole line running through the proposed casino portion of the site. This existing pole line will be removed and placed underground in a joint utility trench with gas, telephone and cable tv. The proposed concept plan is to intercept the existing overhead wires along Santana Drive and extend underground northerly along the rear easement to the north boundary. Refer to the exhibits titled, "Preliminary Utilities Alternatives (A-E)" for electric and joint utility trench concept layouts. It is anticipated that more equipment and materials will be necessary to provide electric service to Alternative E over the quantities needed to provide service to Alternative A.

Cable Television:
Cable television is not available near the project site. Overhead cable facilities exist an undetermined distance south of Santana Drive and will require extension to the project site. Two 2-inch conduits will be added to the proposed 6-inch gas main trench, along the east side of Asti Road and Santana Drive, for cable television service to the site. Ducts will also be added to the onsite joint utility trench to provide service to onsite buildings. Alternative E would utilize more substructures and materials than Alternative A. Approximately 5,680 lineal feet of 2-inch conduit and various sized splice boxes are necessary to provide cable television services to the project alternatives.

Telephone:
AT&T telephone is currently overhead with power on joint poles. The poles will be removed and wires placed underground in a joint trench. Alternative E would utilize more substructures and materials than Alternative A. Approximately 5,680 lineal feet of 4-inch conduit and various sized splice boxes are necessary to provide telephone service to the project alternatives.

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-A-D_Utility.dwg, Joe Conwell, 1/20/2009 3:02:31 PM



CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

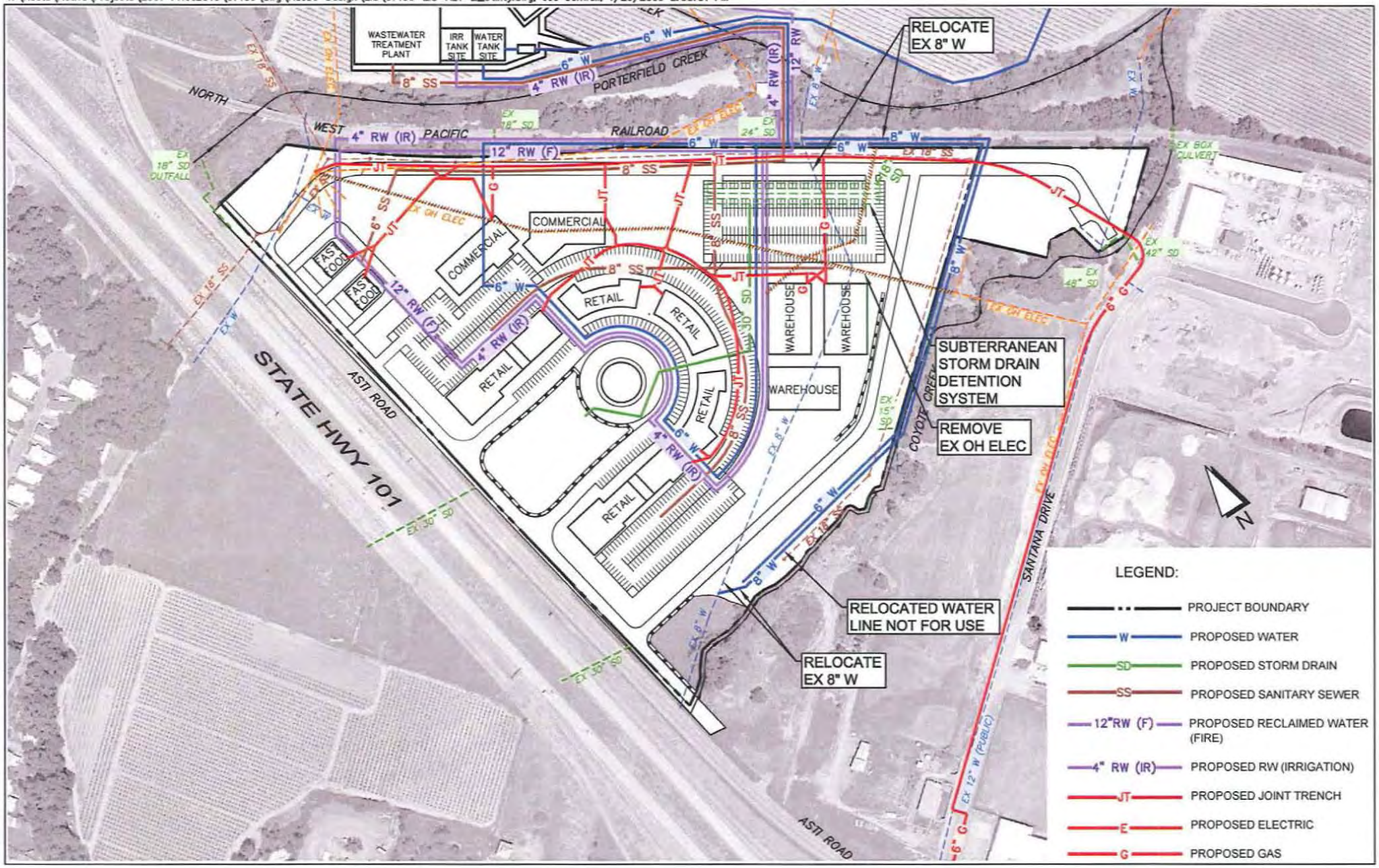
PRELIMINARY UTILITY PLAN - ALTERNATIVES A-D

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-E_Utility.dwg, Joe Conwell, 1/20/2009 2:53:51 PM



CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY UTILITY PLAN - ALTERNATIVE E

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

Appendix I
Water Supply Report

ESA

WATER SUPPLY REPORT

For

CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

April 2009

Prepared for:

ESA
8950 Cal Center Drive
Building 3, Suite 300
Sacramento, CA 95826

Prepared by:

Adobe Associates, Inc.
1220 North Dutton Avenue
Santa Rosa, California 95401
Phone: (707) 541-2300

TABLE OF CONTENTS

Water Supply Report

	Page Number
General Comments	1-2
Water Demand	2-4
Water Supply Facilities	4

Exhibits

Preliminary Private Water Supply Plan – Alternatives A-E

Attachments

Attachment 1 Water Supply Calculations

General Comments:
The Cloverdale Rancheria intends to supply its proposed development with a potable water supply to be developed on lands to be placed into federal trust for the tribe. The water supply would come from one or more groundwater wells located in the easterly portion of the project area.

A potable water supply serving federally recognized tribal lands must comply with the requirements of the 1974 Safe Drinking Water Act. The Safe Drinking Water Act is administered by the Environmental Protection Agency.

The area proposed for water supply development is located to the east of the area where project structures would be located, south of the City of Cloverdale Wastewater Treatment Plant and east of Porterfield Creek. (Refer to the exhibit titled, "Preliminary Private Water Supply Plan- Alternatives A-E"). The area is within the flood plain of the Russian River and is designated Zone A on the Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map panels 060375 0120 and 0140. The Russian River, a water body under the jurisdiction of the United States Army Corp. of Engineers, lies 100 to 300 feet east of the proposed tribal lands. A levee with an approximate height of eight feet above adjacent lands to the west contains the channel and floodway of the Russian River.

The area proposed for water supply development is currently planted in vineyards and contains, within its boundaries, approximately eight drilled and hand dug water supply wells. Wells supplying the South Cloverdale Water Company and the Six Acre Water Company operate in this area by easement and water right agreements.

Wells located in this area are generally shallow, less than 80 feet deep, reflecting the depth of highly permeable surface alluvial soils overlying the soil and rock of the Franciscan formation. A total of seven exploratory and monitoring wells have been drilled in the area for the purpose of assessing groundwater availability, depth of permeable soil strata, and as a means of monitoring variations in seasonal depth to groundwater and the variations in direction of subsurface groundwater movement.

The anticipated location of a future water supply well is near the southerly boundary of proposed tribal lands in the area where Porterfield Creek approaches the Russian River. An existing well, the Tyrus Company Well, located in the area of the proposed project water supply well, was subjected to an 8 hour dry weather pump test on December 8, 2008. This well was pumped at the rate of 100 gallons per minute and showed total and constant draw down of 1.7 feet during the test. 100 % drawdown recovery occurred in the test well several minutes after cessation of pumping. The specific capacity of the well is calculated to be 59 gallons per minute per foot of draw down.

The purpose of this well test was to make a preliminary assessment of groundwater availability. The result of the test, while not considered to be a definitive determination of water supply, indicates that the water volume required for any of the development options under consideration may be supplied by a well located in this area.

Although water quality evaluations have not been completed at this date, it is anticipated that the water quality will be similar to the other potable supplies developed on this property. Bacteriological treatment, as well as reduction of mineral content is likely to be required.

Water Demand:
Water demand for project alternatives is a function of the water uses of the various project elements. Specific water use in project alternatives is a function of the numbers and types of plumbing fixtures used and the use of water conservation measures and recycling options. It is the intention of Cloverdale Rancheria, in the exercise of any of the project alternatives, to use proven water conservation measures and recycling of treated wastewater where feasible. Water demand calculations for the project alternatives exclude landscape irrigation, assuming that landscape irrigation would use recycled water. In addition, a redundant plumbing system would be constructed to allow recycled water use in toilet flushing.

Calculations for water demand may be found in Attachment 1 titled, "Water Supply Calculations", at the end of this report. Project elements contributing to potable water demand in Alternative A are the casino, hotel, convention center, entertainment center, food and beverage service, spa, and the project employees. These elements are changed in size or eliminated in alternatives B, C, and D. Project elements contributing to water demand for Alternative E are commercial/industrial warehouse, offices, retail and restaurant and employees associated with the various elements. For the commercial/ industrial element, an assumption regarding future potential potable water demand was made. Specifically, a 200,000 case winery was assumed to occupy a portion of the warehouse complex. If alternative E was chosen for construction, a more specific and detailed plan for water demand would be required. Maximum anticipated water demand occurs in Alternative A. Table 1 below shows a tabulation of total annual water demand for development. Table 1A reflects total water demand from on-site water wells with reductions taken for use of recyled water for toilet flushing. Water supply calculations specifically exclude landscape irrigation demands.

Table 1. Annual Water Demand for Development

		Alternatives				
		A	B	C	D	E
Total Yearly Flow	Gallons	33588528	24930416	22335953	13493231	11690085
	Acre-Feet	103.1	76.5	68.6	41.4	35.9

Table 1A. Annual Water Demand for Development (Reduced by Recycling)

		Alternatives				
		A	B	C	D	E
Total Yearly Flow	Gallons	24323060	17774359	16004970	9259516	9281085
	Acre-Feet	74.6	54.6	49.1	28.4	28.5

Alternatives A through E. Table 2 below shows the corresponding peak daily water demand for each alternative.

Table 2. Peak Daily Water Demand

Alternatives	Peak Daily Flows
A	171490
B	126700
C	114460
D	63920
E	42426

Table 2A. Peak Daily Water Demand (Reduced by Recycling)

Alternatives	Peak Daily Flows
A	126147
B	92101
C	82691
D	44495
E	33313

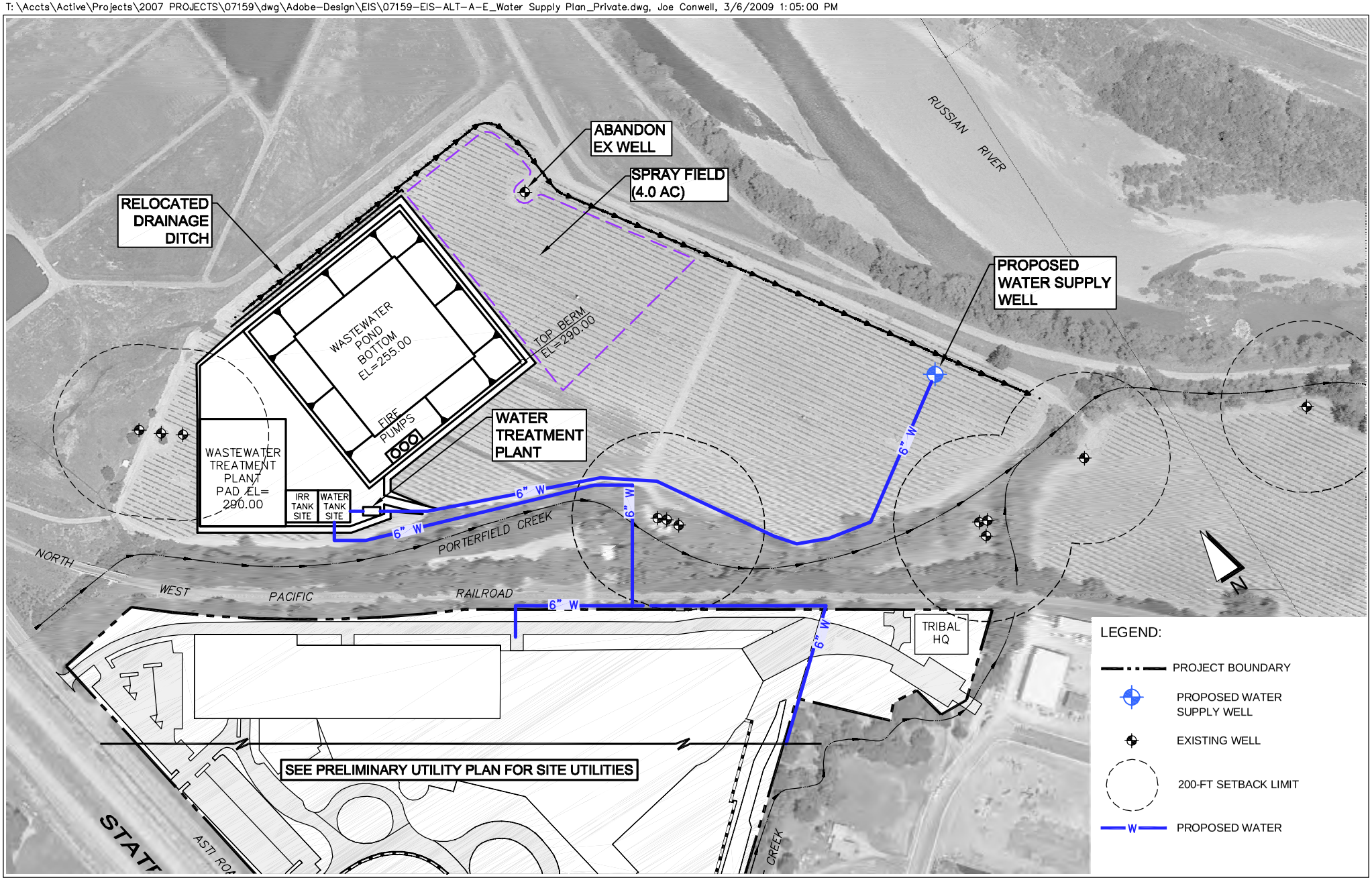
To determine water supply requirements from on-site wells we assume maximum use of recycled water to minimize the effects of the local aquifer. Peak daily water demand dictates the required well production at any selected pump duty cycle. For the peak daily demand listed in Alternative A, Table 2A, of 126,147 gallons and a pump duty cycle of 24 hours, a pumping rate of 88 gallons per minute is required. This pumping rate is 88% of the rate at which the pump test was conducted on the Tyrus well.

The peak yearly water demand (Alternative A, Table 1A) was calculated to be 74.6 Acre-ft/year. This demand coincides with an average daily demand of 66,639 gallons and a constant withdrawal rate of 46 gallons per minute from the alluvial soils.

Water Supply Facilities:
Providing potable water to proposed project Alternatives will require various facilities including a well, a water treatment plant, water storage tanks, a pumping system (including pressurized storage) and a piped delivery system. A separate and redundant pump and piping system will be required for operation of the fire sprinkler system and for the provision of fire suppression water.

Any facilities proposed for location within Zone A of the F.E.M.A. flood insurance rate maps would be constructed above anticipated flood elevations. Although flood elevations have not been determined in Zone A, the 100 year storm frequency water elevations in the Russian River adjacent to proposed tribal lands and east of the levee vary from approximately 283 feet to 287 feet. Corresponding ground elevations on property proposed to be placed into federal trust for Cloverdale Rancheria are 282 feet and 288 feet. We anticipate that pad elevations for water supply facilities located in the northerly portion of the property would be approximately 290 feet. Similarly, control panel and power supply for a well located in the southerly area of proposed tribal lands would need to be located at an approximate elevation of 285 feet.

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-A-E_Water Supply Plan_Private.dwg, Joe Conwell, 3/6/2009 1:05:00 PM



CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY PRIVATE WATER SUPPLY PLAN - ALTERNATIVES A-E

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

Attachment 1

Water Supply Calculations

CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

March 2009

Water Supply Calculations
Alternative A

Alternative A:

Water supply demands are based upon the wastewater flow calculations associates with this report. Water supply requirements from on-site well(s) will be reduced from the wastewater flow estimates by the volume of wastewater recycled for irrigation and toilet use. With the wastewater flow calculations it is important to compile monthly flows for water balance equations whereas with the water supply demand it is important to determine the peak daily flow and total annual flow. Below are the equations, variables and calculations used to estimate the annual water supply and peak daily water supply for the Cloverdale Rancheria Gaming and Hotel project - Alternative A. Since irrigation water is to be recycled, it is not necessary to add it into our water supply demand.

Design Parameters – Alternative A:

Percentage of hotel flow used for toilets = 23%
(Value Found in Table 3-3 of the EPA's Onsite Wastewater Treatment Systems Manual)

Percentage of gamer, event center and employee flow used for toilets = 50%
(Assumed)

Table I – A – Estimated Total Monthly Wastewater Flow
(Note: This table was taken from the Wastewater Flow Calculations – Alternative A, (Table IX – A) section of this report)

Estimated Total Monthly Flow							
Months	Hotel Flow	Gamer Flow	Food and Beverage Flow	Event Center Flow	Spa Flow	Employee Flow	Total Monthly Flow
	(Gal/Month)						
January	538935	566862	834481	52180	16450	598920	2607828
February	563640	531100	769097	47131	19047	540960	2470975
March	666010	584542	859896	52180	20328	598920	2781877
April	676368	573253	838526	50497	21333	579600	2739577
May	772663	599381	881227	52180	23584	598920	2927954
June	801540	591249	863560	50497	25280	579600	2911727
July	837335	608379	894161	52180	25557	598920	3016533
August	869104	612799	900515	52180	26527	598920	3060045
September	768600	586513	856972	50497	24242	579600	2866424
October	806701	604117	888034	52180	24622	598920	2974575
November	633546	567097	829962	50497	19982	579600	2680683
December	496955	561021	826085	52180	15168	598920	2550330

Table II – A – Estimated Total Monthly Water Supply Demand

(Note: This table takes the values calculated in the monthly wastewater flow calculations and subtracts out the water that is estimated to be recycled – 23% of hotel flow and 50% of gamer, event center and employee flow)

Estimated Total Monthly Water Supply							
Months	Hotel Flow	Gamer Flow	Food and Beverage Flow	Event Center Flow	Spa Flow	Employee Flow	Total Monthly Flow
	(Gal/Month)						
January	414980	283431	834481	26090	16450	299460	1874892
February	434003	265550	769097	23565	19047	270480	1781742
March	512828	292271	859896	26090	20328	299460	2010874
April	520803	286627	838526	25249	21333	289800	1982337
May	594950	299691	881227	26090	23584	299460	2125001
June	617186	295625	863560	25249	25280	289800	2116700
July	644748	304190	894161	26090	25557	299460	2194206
August	669210	306400	900515	26090	26527	299460	2228202
September	591822	293257	856972	25249	24242	289800	2081341
October	621159	302058	888034	26090	24622	299460	2161425
November	487830	283548	829962	25249	19982	289800	1936371
December	382655	280511	826085	26090	15168	299460	1829970

Table III – A – Yearly Water Supply Demand

(Sum of months in the previous Table)

Yearly Water Supply Demand	
24323060	Gallons
74.65	Acre - Feet

Peak Daily Flow – A:

The peak daily flow calculations assume the hotel is at full capacity, the casino receives two times the average daily gamers, 100% of employees eat a meal, all spa visits occur on the weekend and the entertainment center and convention center are at full capacity.

The following calculations assume:

-Hotel at full capacity
-2 times the average daily amount of gamers
- All spa visits occur on the weekend
-Entertainment center and convention center at full capacity

Hotel Peak Daily Flow:

Equation:

$$28182\left(\frac{gal}{day}\right) = (\#\,Rooms)\left(150\frac{gal}{room}\right)(100\% - 23\%)$$

Note: Assumed 23% recycled water

Gamer Peak Daily Flow:

Given:
Equation:

$$19140\left(\frac{gal}{day}\right) = (\#\,AverageGamer)\left(5\frac{gal}{day}\right)(2(\,factor\,))(100\% - 50\%)$$

Spa Peak Daily Flow:

Given:

Average spa visits per week = annual visits/52 weeks = # visits per week
Assume all visits occur on the weekend which yields

Peak Daily Spa Flow = # visits per week/2 days = # visits X 40 Gal/visit = **2520 gallons**

Event Centers Peak Daily Flows:

Equation:

$$5710\left(\frac{gal}{day}\right) = (\#\,EntertVis + \#\,ConvenCenVis)(100\% - 50\%)\left(5\frac{gal}{Visitors}\right)$$

Employee Peak Daily Flows:

Equation:

$$12075\left(\frac{gal}{day}\right) = (\#\,MaxEmployees)\left(15\frac{gal}{Employee}\right)(100\% - 50\%)$$

Note: Assumed 50% recycled water

Food and Beverage Peak Daily Flow:

- Hotel Guests at 3 Meals a Day
- Gamers at 1 Meal a Day (factor of 2)
- Employees at 1 Meal a Day
- Entertainment Center Visitors at 1 Meal a Day
- Convention Center Visitors at 1 Meal a Day
- 5 gallons/meal

Equation:

$$58520\left(\frac{gal}{day}\right) = \left(hotelGuest * 3 + gamers + employees + entertainment + convention\right)\left(5\frac{gal}{meal}\right)$$

Table IV – A - Total Peak Daily Flow:

Hotel	Gamers	Event Center	Spa Visits	Employees	Food and Beverage	Total Peak Daily Flow
28182	19140	5710	2520	12075	58520	126147

Water Supply Calculations
Alternative B

Alternative B:

Water supply demands are based upon the wastewater flow calculations associates with this report. Water supply requirements from on-site well(s) will be reduced from the wastewater flow estimates by the volume of wastewater recycled for irrigation and toilet use. With the wastewater flow calculations it is important to compile monthly flows for water balance equations whereas with the water supply demand it is important to determine the peak daily flow and total annual flow. Below are the equations, variables and calculations used to estimate the annual water supply and peak daily water supply for the Cloverdale Rancheria Gaming and Hotel project - Alternative B. Since irrigation water is to be recycled, it is not necessary to add it into our water supply demand.

Design Parameters – Alternative B:

Percentage of hotel flow used for toilets = 23%
(Value Found in Table 3-3 of the EPA's Onsite Wastewater Treatment Systems Manual)

Percentage of gamer, event center and employee flow used for toilets = 50%
(Assumed)

Table I – B – Estimated Total Monthly Wastewater Flow
(Note: This table was taken from the Wastewater Flow Calculations – Alternative B, (Table IX – B) section of this report)

Estimated Total Monthly Flow							
Months	Hotel Flow	Gamer Flow	Food and Beverage Flow	Event Center Flow	Spa Flow	Employee Flow	Total Monthly Flow
	(Gal/Month)						
January	311434	484455	645033	15899	9506	502200	1968527
February	325710	453892	591494	14361	11007	453600	1850063
March	384867	499565	659720	15899	11747	502200	2073998
April	390852	489917	642119	15386	12327	486000	2036601
May	446498	512246	672046	15899	13628	502200	2162518
June	463185	505297	656585	15386	14609	486000	2141062
July	483870	519936	679521	15899	14769	502200	2216195
August	502228	523714	683192	15899	15329	502200	2242562
September	444150	501249	652778	15386	14008	486000	2113572
October	466167	516294	675980	15899	14229	502200	2190769
November	366107	484655	637170	15386	11547	486000	2000865
December	287175	479463	640182	15899	8765	502200	1933684

Table II – B – Estimated Total Monthly Water Supply Demand

(Note: This table takes the values calculated in the monthly wastewater flow calculations and subtracts out the water that is estimated to be recycled – 23% of hotel flow and 50% of gamer, event center and employee flow)

Estimated Total Monthly Water Supply							
Months	Hotel Flow	Gamer Flow	Food and Beverage Flow	Event Center Flow	Spa Flow	Employee Flow	Total Monthly Flow
	(Gal/Month)						
January	239804	242227	645033	7950	9506	251100	1395620
February	250797	226946	591494	7180	11007	226800	1314223
March	296347	249782	659720	7950	11747	251100	1476646
April	300956	244958	642119	7693	12327	243000	1451054
May	343803	256123	672046	7950	13628	251100	1544650
June	356652	252648	656585	7693	14609	243000	1531188
July	372580	259968	679521	7950	14769	251100	1585887
August	386715	261857	683192	7950	15329	251100	1606143
September	341996	250625	652778	7693	14008	243000	1510100
October	358949	258147	675980	7950	14229	251100	1566354
November	281902	242328	637170	7693	11547	243000	1423639
December	221125	239732	640182	7950	8765	251100	1368853

Table III – B – Yearly Water Supply Demand

(Sum of months in the previous Table)

Yearly Water Supply Demand	
17774359	Gallons
54.55	Acre - Feet

Peak Daily Flow – B:

The peak daily flow calculations assume the hotel is at full capacity, the casino receives two times the average daily gamers, 100% of employees eat a meal, all spa visits occur on the weekend and the entertainment center and convention center are at full capacity.

The following calculations assume:

-Hotel at full capacity
-2 times the average daily amount of gamers
- All spa visits occur on the weekend
-Entertainment center at full capacity

Hotel Peak Daily Flow:

Equation:

$$16286\left(\frac{gal}{day}\right) = (\#\,Rooms)\left(150\frac{gal}{room}\right)(100\% - 23\%)$$

Note: Assumed 23% recycled water

Gamer Peak Daily Flow:

Equation:

$$16360\left(\frac{gal}{day}\right) = (\#\,AverageGamer)\left(5\frac{gal}{day}\right)(2(factor))(100\% - 50\%)$$

Spa Peak Daily Flow:

Given:

Average spa visits per week = annual visits/52 weeks = # visits per week
Assume all visits occur on the weekend which yields

Peak Daily Spa Flow = # visits per week/2 days = # visits X 40 Gal/visit = **1480 gallons**

Event Centers Peak Daily Flows:

Equation:

$$3250\left(\frac{gal}{day}\right) = (\#\,EntertainmentVisitors)\left(5\frac{gal}{Visitors}\right)(50\%)$$

Employee Peak Daily Flows:

Equation:

$$10125\left(\frac{gal}{day}\right) = (\#\,MaxEmployees)\left(15\frac{gal}{Employee}\right)(100\% - 50\%)$$

Note: Assumed 50% recycled water

Food and Beverage Peak Daily Flow:

- Hotel Guests at 3 Meals a Day
- Gamers at 1 Meal a Day (factor of 2)
- Employees at 1 Meal a Day
- Entertainment Center Visitors at 1 Meal a Day
- 5 gallons/meal

Equation:

$$44600\left(\frac{gal}{day}\right) = \left(hotelGuest * 3 + gamers + employees + entertainment\right)\left(5\frac{gal}{meal}\right)$$

Table IV – B - Total Peak Daily Flow:

Hotel	Gamers	Event Center	Spa Visits	Employees	Food and Beverage	Total Peak Daily Flow
16286	16360	3250	1480	10125	44600	92101

Water Supply Calculations
Alternative C

Alternative C:

Water supply demands are based upon the wastewater flow calculations associates with this report. Water supply requirements from on-site well(s) will be reduced from the wastewater flow estimates by the volume of wastewater recycled for irrigation and toilet use. With the wastewater flow calculations it is important to compile monthly flows for water balance equations whereas with the water supply demand it is important to determine the peak daily flow and total annual flow. Below are the equations, variables and calculations used to estimate the annual water supply and peak daily water supply for the Cloverdale Rancheria Gaming and Hotel project - Alternative C. Since irrigation water is to be recycled, it is not necessary to add it into our water supply demand.

Design Parameters – Alternative C:

Percentage of hotel flow used for toilets = 23%
(Value Found in Table 3-3 of the EPA's Onsite Wastewater Treatment Systems Manual)

Percentage of gamer, event center and employee flow used for toilets = 50%
(Assumed)

Table I – C – Estimated Total Monthly Wastewater Flow
(Note: This table was taken from the Wastewater Flow Calculations – Alternative C, (Table IX – C) section of this report)

Estimated Total Monthly Flow							
Months	Hotel Flow	Gamer Flow	Food and Beverage Flow	Event Center Flow	Spa Flow	Employee Flow	Total Monthly Flow
	(Gal/Month)						
January	311434	414534	564831	15899	9506	435240	1751444
February	325710	388382	519053	14361	11007	393120	1651632
March	384867	427463	579518	15899	11747	435240	1854733
April	390852	419207	564504	15386	12328	421200	1823477
May	446498	438314	591844	15899	13628	435240	1941423
June	463185	432367	578970	15386	14609	421200	1925718
July	483870	444894	599318	15899	14769	435240	1993990
August	502228	448126	602990	15899	15330	435240	2019813
September	444150	428904	575163	15386	14009	421200	1898812
October	466167	441777	595778	15899	14229	435240	1969090
November	366107	414705	559555	15386	11547	421200	1788500
December	287175	410262	559979	15899	8765	435240	1717321

Table II – C – Estimated Total Monthly Water Supply Demand

(Note: This table takes the values calculated in the monthly wastewater flow calculations and subtracts out the water that is estimated to be recycled – 23% of hotel flow and 50% of gamer, event center and employee flow)

Estimated Total Monthly Water Supply							
Months	Hotel Flow	Gamer Flow	Food and Beverage Flow	Event Center Flow	Spa Flow	Employee Flow	Total Monthly Flow
	(Gal/Month)						
January	239804	207267	564831	7950	9506	217620	1246977
February	250797	194191	519053	7180	11007	196560	1178788
March	296347	213731	579518	7950	11747	217620	1326913
April	300956	209604	564504	7693	12328	210600	1305684
May	343803	219157	591844	7950	13628	217620	1394002
June	356652	216184	578970	7693	14609	210600	1384709
July	372580	222447	599318	7950	14769	217620	1434684
August	386715	224063	602990	7950	15330	217620	1454668
September	341996	214452	575163	7693	14009	210600	1363913
October	358949	220889	595778	7950	14229	217620	1415414
November	281902	207353	559555	7693	11547	210600	1278649
December	221125	205131	559979	7950	8765	217620	1220570

Table III – C – Yearly Water Supply Demand

(Sum of months in the previous Table)

Yearly Water Supply Demand	
16004970	Gallons
49.12	Acre - Feet

Peak Daily Flow – C:

The peak daily flow calculations assume the hotel is at full capacity, the casino receives two times the average daily gamers, 100% of employees eat a meal, all spa visits occur on the weekend and the entertainment center are at full capacity.

The following calculations assume:

-Hotel at full capacity
-2 times the average daily amount of gamers
- All spa visits occur on the weekend
-Entertainment center at full capacity

Hotel Peak Daily Flow:

Equation:

$$16286\left(\frac{gal}{day}\right) = (\#\,Rooms)\left(150\frac{gal}{room}\right)(100\% - 23\%)$$

Note: Assumed 23% recycled water

Gamer Peak Daily Flow:

Equation:

$$13995\left(\frac{gal}{day}\right) = (\#\,AverageGamer)\left(5\frac{gal}{day}\right)(2(factor))(100\% - 50\%)$$

Spa Peak Daily Flow:

Given:

Average spa visits per week = annual visits/52 weeks = # visits per week
Assume all visits occur on the weekend which yields

Peak Daily Spa Flow = # visits per week/2 days = # visits X 40 Gal/visit = **1480 gallons**

Event Centers Peak Daily Flows:

Equation:

$$3250\left(\frac{gal}{day}\right) = (\#\,EntertainmentVisitors)\left(5\frac{gal}{Visitors}\right)(50\%)$$

Employee Peak Daily Flows:

Equation:

$$8775\left(\frac{gal}{day}\right) = (\#\,MaxEmployees)\left(15\frac{gal}{Employee}\right)(100\% - 50\%)$$

Note: Assumed 50% recycled water

Food and Beverage Peak Daily Flow:

- Hotel Guests at 3 Meals a Day
- Gamers at 1 Meal a Day (factor of 2)
- Employees at 1 Meal a Day
- Entertainment Center Visitors at 1 Meal a Day
- 5 gallons/meal

Equation:

$$39790\left(\frac{gal}{day}\right) = \left(hotelGuest * 3 + gamers + employees + entertainment\right)\left(5\frac{gal}{meal}\right)$$

Table IV – C - Total Peak Daily Flow:

Hotel	Gamers	Event Center	Spa Visits	Employees	Food and Beverage	Total Peak Daily Flow
16286	13995	3250	595	8775	39790	82691

Water Supply Calculations
Alternative D

Alternative D:

Water supply demands are based upon the wastewater flow calculations associates with this report. Water supply requirements from on-site well(s) will be reduced from the wastewater flow estimates by the volume of wastewater recycled for irrigation and toilet use. With the wastewater flow calculations it is important to compile monthly flows for water balance equations whereas with the water supply demand it is important to determine the peak daily flow and total annual flow. Below are the equations, variables and calculations used to estimate the annual water supply and peak daily water supply for the Cloverdale Rancheria Gaming and Hotel project - Alternative D. Since irrigation water is to be recycled, it is not necessary to add it into our water supply demand.

Design Parameters – Alternative D:

Percentage of gamer and employee flow used for toilets = 50%
(Assumed)

Table I – D – Estimated Total Monthly Wastewater Flow
(Note: This table was taken from the Wastewater Flow Calculations – Alternative D, (Table VII – D) section of this report)

Estimated Total Monthly Flow				
Months	Gamer Flow	Food and Beverage Flow	Employees Flow	Total Monthly Flow
	(Gal/Month)			
January	362093	418356	357120	780449
February	339249	377870	322560	717119
March	373386	418356	357120	791742
April	366175	404861	345600	771036
May	382865	418356	357120	801221
June	377670	404861	345600	782531
July	388612	418356	357120	806968
August	391436	418356	357120	809792
September	374645	404861	345600	779506
October	385890	418356	357120	804246
November	362242	404861	345600	767103
December	358362	418356	357120	776718

Table II – D – Estimated Total Monthly Water Supply Demand
(Note: This table takes the values calculated in the monthly wastewater flow calculations and subtracts out the water that is estimated to be recycled – 50% of gamer and employee flow)

Estimated Total Monthly Water Supply				
Months	Gamer Flow	Food and Beverage Flow	Employee Flow	Total Monthly Flow
	(Gal/Month)			
January	181046	418356	178560	777962
February	169625	377870	161280	708774
March	186693	418356	178560	783609
April	183087	404861	172800	760748
May	191432	418356	178560	788348
June	188835	404861	172800	766496
July	194306	418356	178560	791222
August	195718	418356	178560	792634
September	187323	404861	172800	764983
October	192945	418356	178560	789861
November	181121	404861	172800	758782
December	179181	418356	178560	776097

Table III – D – Yearly Water Supply Demand
(Sum of months in the previous Table)

Yearly Water Supply Demand	
9259516	Gallons
28.42	Acre - Feet

Peak Daily Flow – D:

The peak daily flow calculations assume the casino receives two times the average daily gamers and 100% of employees eat a meal.

Gamer Peak Daily Flow:

Equation:

$$12225\left(\frac{gal}{day}\right) = (\#\,AverageGamer)\left(5\frac{gal}{day}\right)(2(factor))(100\% - 50\%)$$

Employee Peak Daily Flows:

Equation:

$$7200\left(\frac{gal}{day}\right) = (\#\,MaxEmployees)\left(15\frac{gal}{Employee}\right)(100\% - 50\%)$$

Note: Assumed 50% recycled water

Food and Beverage Peak Daily Flow:

- Gamers at 1 Meal a Day (factor of 2)
- Employees at 1 Meal a Day
- 5 gallons/meal

Equation:

$$25070\left(\frac{gal}{day}\right) = (gamers + employees)\left(5\frac{gal}{meal}\right)$$

Table IV – D - Total Peak Daily Flow:

Gamers	Employees	Food and Beverage	Total Peak Daily Flow
12225	7200	25070	44495

Water Supply Calculations
Alternative E

Alternative E:

Water supply demands are based upon the wastewater flow calculations associates with this report. Water supply requirements from on-site well(s) will be reduced from the wastewater flow estimates by the volume of wastewater recycled for irrigation and toilet use. With the wastewater flow calculations it is important to compile monthly flows for water balance equations whereas with the water supply demand it is important to determine the peak daily flow and total annual flow. Below are the equations, variables and calculations used to estimate the annual water supply and peak daily water supply for the Cloverdale Rancheria Gaming and Hotel project - Alternative E. Since irrigation water is to be recycled, it is not necessary to add it into our water supply demand.

Design Parameters – Alternative E:

Percentage of gamer and employee flow used for toilets = 50%
(Assumed)

Table I – E – Estimated Total Monthly Wastewater Flow
(Note: This table was taken from the Wastewater Flow Calculations – Alternative E, (Table V – E) section of this report)

Estimated Total Monthly Flow				
Months	Warehouse Flow	Office and Retail Space Flow	Restaurant Flow	Total Monthly Flow
	(Gallons/Month)			
January	326640	325500	228315	880455
February	315840	294000	206220	816060
March	326640	325500	228315	880455
April	323040	315000	220950	858990
May	326640	325500	228315	880455
June	323040	315000	220950	858990
July	326640	325500	228315	880455
August	591600	325500	228315	1145415
September	1068000	315000	220950	1603950
October	591600	325500	228315	1145415
November	323040	315000	220950	858990
December	326640	325500	228315	880455

Table II – E – Estimated Total Monthly Water Supply Demand

(Note: This table takes the values calculated in the monthly wastewater flow calculations and subtracts out the water that is estimated to be recycled – 50% of employee flow)

Estimated Total Monthly Water Supply				
Month	Warehouse Flow	Office and Retail Space Flow	Restaurant Flow	Total Monthly Flow
	(Gal/Month)			
January	284790	162750	228315	675855
February	278040	147000	206220	631260
March	284790	162750	228315	675855
April	282540	157500	220950	660990
May	284790	162750	228315	675855
June	282540	157500	220950	660990
July	284790	162750	228315	675855
August	549750	162750	228315	940815
September	1027500	157500	220950	1405950
October	549750	162750	228315	940815
November	282540	157500	220950	660990
December	284790	162750	228315	675855

Table III – E – Yearly Water Supply Demand

(Sum of months in the previous Table)

Yearly Water Supply Demand	
9281085	Gallons
28.48	Acre - Feet

Peak Daily Flow – E:

Industrial Warehouse:

Given:

- 15 gallons/employee
- 50% Recycled Water for Employees (Toilet Use)
- 200,000 Cases of Wine
- 2.4 gallons of water per case
- 1.5 safety factor
- 60 day harvest period

$$DailyPeakWineryWaste\left(\frac{gal}{day}\right) = \frac{(200000Cases)\left(2.4\frac{gal}{Case}\right)(1.5)}{60} = 12000\left(\frac{gal}{day}\right)$$

$$DailyPeakWarehouseEmployeeFlow\left(\frac{gal}{day}\right) = 300Employees\left(15\frac{gal}{day}\right)(0.5\,\mathrm{Re}\,cycledToilet) = 2250\left(\frac{gal}{day}\right)$$

$$TotalDailyPeakWarehouseFlow\left(\frac{gal}{day}\right) = 12000\left(\frac{gal}{day}\right) + 2250\left(\frac{gal}{day}\right) = 14250\left(\frac{gal}{day}\right)$$

Commercial Office:

Given:

- 15 gallons/employee
- 50% Recycled Water for Employees (Toilet Use)

$$DailyPeakOfficeFlow\left(\frac{gal}{day}\right) = \#\,Employees\left(15\frac{gal}{day}\right)(0.5\,\mathrm{Re}\,cyledToilet) = 3750\left(\frac{gal}{day}\right)$$

Retail Use:

Given:

- 15 gallons/employee
- 50% Recycled Water for Employees (Toilet Use)

$$DailyPeak\,\mathrm{Re}\,tailFlow\left(\frac{gal}{day}\right) = \#\,Employees\left(15\frac{gal}{day}\right)(0.5\,\mathrm{Re}\,cyledToilet) = 2813\left(\frac{gal}{day}\right)$$

Restaurant Flow:

Given:

- 4000 gal/day = Fast Food Meals
- 2075 gal/day = Sit Down Restaurant Meals
- 15 gallons/employee
- 50% Recycled Water for Employees (Toilet Use)
- Peak Factor of 2

$$DailyPeakEmployeeFlow\left(\frac{gal}{day}\right) = \#\,Employees\left(15\frac{gal}{day}\right)\left(0.5\,\mathrm{Re}\,cyledToilet\right) = 150\left(\frac{gal}{day}\right)$$

$$DailyPeak\,\mathrm{Re}\,staurantFlow\left(\frac{gal}{day}\right) = \left(150\left(\frac{gal}{day}\right) + 2075\left(\frac{gal}{day}\right) + 4000\left(\frac{gal}{day}\right)\right) * 2 = 12500\left(\frac{gal}{day}\right)$$

Table IV – E - Total Peak Daily Flow:

Warehouse Flow	Office and Retail Space Flow	Restaurant Flow	Peak Daily Flow
14250	6563	12500	33313

Water Supply Summary of the Alternatives A – E:

Table I: Total Annual Water Supply

		Alternatives				
		A	B	C	D	E
Total Yearly Flow	Gallons	24323060	17774359	16004970	9259516	9281085
	Acre-Feet	74.6	54.6	49.1	28.4	28.5

Table II: Peak Daily Flow

Alternatives	Peak Daily Flows
A	126147
B	92101
C	82691
D	44495
E	33313

Appendix J

Wastewater Treatment and Disposal Report

ESA

WASTEWATER TREATMENT
AND
DISPOSAL REPORT

For

CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

March 2009
Rev June, 2009

Prepared for:

ESA
8950 Cal Center Drive
Building 3, Suite 300
Sacramento, CA 95826

Prepared by:

Adobe Associates, Inc.
1220 North Dutton Avenue
Santa Rosa, California 95401
Phone: (707) 541-2300

TABLE OF CONTENTS

Wastewater Treatment and Disposal Report

	Page Number
General Comments	1
Wastewater Volume	1-2
Wastewater Treatment	2-3
Wastewater Recycling	3
Wastewater Storage	3-4
Wastewater Discharge	4-5

Exhibit

Preliminary Private Wastewater Plan

Attachments:

Attachment 1 Wastewater Flow Calculations

Attachment 2 Water Balance Calculations

CLOVERDALE RANCHERIA

General Comments

The Cloverdale Rancheria intends to treat, recycle and dispose of wastewater generated by its proposed development within the boundary of lands to be placed into federal trust for the tribe.

The discharge of wastewater to federally recognized tribal lands is regulated by the Environmental Protection Agency (EPA) through the application of the 1972 Federal Water Pollution Control Act, commonly referred to as the "Clean Water Act". The EPA is the regulatory agency for wastewater treatment and discharge to federally recognized tribal lands in California. The proposed Cloverdale Rancheria development lies within EPA Region 9.

The Cloverdale Rancheria intends to operate its wastewater treatment and disposal system in conformance with the requirements of the Clean Water Act and in full compliance with water quality, testing and reporting requirements of the Environmental Protection Agency, Region 9 and the California Code of Regulations, Title 22.

Wastewater Volume

Wastewater flow from the project alternatives is a function of the water use of the various project elements. Calculations of wastewater volume may be found in Attachment 1 titled, "Wastewater Flow Calculations", at the end of this report section. Project elements contributing to wastewater volume in Alternative A are the casino, hotel, convention center, entertainment center, food and beverage service, spa, and the project employees. In Alternatives B, C, and D these elements are either reduced in size or eliminated. Project elements contributing wastewater volume to Alternative E are the commercial/industrial warehouse, offices, retail sales, restaurant, and employees associated with the various elements. For the commercial/industrial element, an assumption regarding a potential wastewater generating use was made. A 200,000 case winery was assumed to occupy a portion of the warehouse complex. If alternative E were chosen for construction, a more specific and detailed plan for wastewater generation would be required.

An explanation of how wastewater volumes were estimated may be found in Attachment 1, titled, "Wastewater Flow Calculations", at the end of this report. The highest levels of wastewater generation were found to occur in development Alternative A. Table 1 below shows a monthly tabulation of anticipated wastewater volumes from each of the uses in Alternative A. Peak and average wastewater flow estimates for Alternative A are 171,500 gallons per day and 92,000 gallons per day, respectively.

Table 1. Anticipated Wastewater Volume

Estimated Total Monthly Flow							
Months	Hotel Flow	Gamer Flow	Food and Beverage Flow	Event Center Flow	Spa Flow	Employee Flow	Total Monthly Flow
	(Gal/Month)						
January	538935	566862	834481	52180	16450	598920	2607828
February	563640	531100	769097	47131	19047	540960	2470975
March	666010	584542	859896	52180	20328	598920	2781877
April	676368	573253	838526	50497	21333	579600	2739577
May	772663	599381	881227	52180	23584	598920	2927954
June	801540	591249	863560	50497	25280	579600	2911727
July	837335	608379	894161	52180	25557	598920	3016533
August	869104	612799	900515	52180	26527	598920	3060045
September	768600	586513	856972	50497	24242	579600	2866424
October	806701	604117	888034	52180	24622	598920	2974575
November	633546	567097	829962	50497	19982	579600	2680683
December	496955	561021	826085	52180	15168	598920	2550330

Table 2 below shows a comparison of total annual wastewater volume and wastewater pond volumes for each of the development Alternatives. Water balance calculations for storage requirements are located in Attachment 2. Maximum wastewater storage volumes are listed below. Recycling of treated wastewater for toilet use will reduce pond storage volumes. Comparative calculations are provided in Attachment 2.

Table 2. Wastewater Volume and Wastewater Pond Volume

	Wastewater Annual Flow Volumes				
	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Total Annual Wastewater Flow (gallons)	33588530	24930416	22335953	9388428	11690085
Total Wastewater Pond Volume (acre-ft)	73.0	57.9	52.3	30.4	33.5

Wastewater Treatment

Wastewater will be treated to the level mandated by the EPA and further described as "Tertiary Disinfected" in the California Code of Regulations, Title 22, Section 60301.230.

Wastewater from the various project elements will be collected in a private piped collection system and conveyed to a wastewater treatment plant located east of area where project structures would be located, south of the City of Cloverdale Wastewater Treatment Plant and east of Porterfield Creek. See exhibit titled, "Preliminary Private Wastewater Plan-Alternatives A-E").

Wastewater treatment will consist of initial screening and transfer to an equalization tank, treatment in a constant flow membrane bioreactor, chlorination and transfer to an effluent pump station. Treated effluent will be transferred to an aerated storage pond or to recycling storage for landscape irrigation or project recycling in a redundantly plumbed toilet recycling system. Sludge collected in the bioreactor will be periodically removed and stored for final transfer to an approved disposal site.

Wastewater Recycling
Treated wastewater will be transferred to storage to meet fire suppression water storage, landscape irrigation, and project recycling requirements.

Fire Suppression Water Storage
An estimated volume of 500,000 gallons of fire suppression water storage will be retained in an above ground storage pond. The pond will be located in the area south of the City of Cloverdale Wastewater plant and east of Porterfield Creek. A separate fire suppression pump system will be constructed to supply the stored water to the project sprinkler and fire hydrant system.

Landscape Irrigation
Project alternatives have varying landscape areas and will have varying landscape irrigation demand. Project Alternative A will have the lowest irrigation water demand. Project landscape irrigation will use project treated wastewater. The treated water will be stored in an above ground storage tank with a volume of approximately 80,000 gallons. A separate landscape irrigation pump and piping system will be required to facilitate this use. The storage tank will be located in the area of the wastewater treatment plant. Rainfall exceeds anticipated evapotranspiration for landscape vegetation from November through March. With approximately 7.6 acres of landscape area, anticipated peak landscape irrigation demand for Alternative A will be 36,000 gallons per day in July, minimum requirements in May and September of approximately 18,000 gpd. Landscape irrigation demands increase for Alternatives B through E.

Project Recycling
Project treated wastewater will be used in toilet flushing. A separate and redundant pumping and plumbing system will be required to allow the use of recycled wastewater in this manner. Treated wastewater will be stored in an above ground storage tank with landscape irrigation water. A separate pressurized water storage tank and piped distribution system will be required for this use.

Wastewater Storage
Treated wastewater will be stored in an above ground storage pond located immediately south of the City of Cloverdale wastewater treatment plant and infiltration ponds and near the proposed wastewater treatment plant. The pond will be sized to accommodate peak project wastewater storage requirements above the fire suppression water storage requirements. Development Alternative A requires approximately 73.0 acre-ft of wastewater storage (56 acre-ft with recycle reduction). The pond required to contain

Alternative A wastewater is shown on the Preliminary Private Wastewater Plan. Proportionately smaller ponds would be required for development Alternatives B through E.

The wastewater storage pond is sized to account for project wastewater generation, average annual rainfall, evaporation, and the discharge of treated wastewater to the east parcel and landscape on the west parcel. Freeboard above maximum project pond surface is maintained for flood events. A water balance table for development Alternative A may be found in Attachment 2 titled "Water Balance Calculations" at the end of this report section.

The pond will be constructed in a cut and fill configuration with the pond bottom located at a tentative elevation of 255 feet, approximately 26 feet below existing grade. The storage pond will be enclosed by an earthen embankment, the top of which will be at least 2 feet above anticipated flood levels. The pond embankment will provide five feet of freeboard at anticipated peak wastewater storage. The pond will be lined to prevent infiltration of the treated wastewater into natural ground. The pond liner may be either a natural soil liner or artificial welded seam plastic liner. Pond shape, elevations, and grading quantities are subject to final design considerations.

The pond will be fitted with an aeration system designed to maintain an aerobic condition in the water. A wet well and fire pump system will be installed at the pond to provide fire suppression water supply. A floating intake system will be installed to permit withdrawal of stored water to be filtered and discharged to the wastewater disposal field.

Wastewater Discharge

Stored recycled wastewater will be filtered and discharged to a spray irrigation disposal field located approximately as shown on the Preliminary Private Wastewater Plan. The disposal field will be designed using soil absorption rates associated with the soil in the disposal field area and the irrigation absorption capacity of the selected non food crop vegetation.

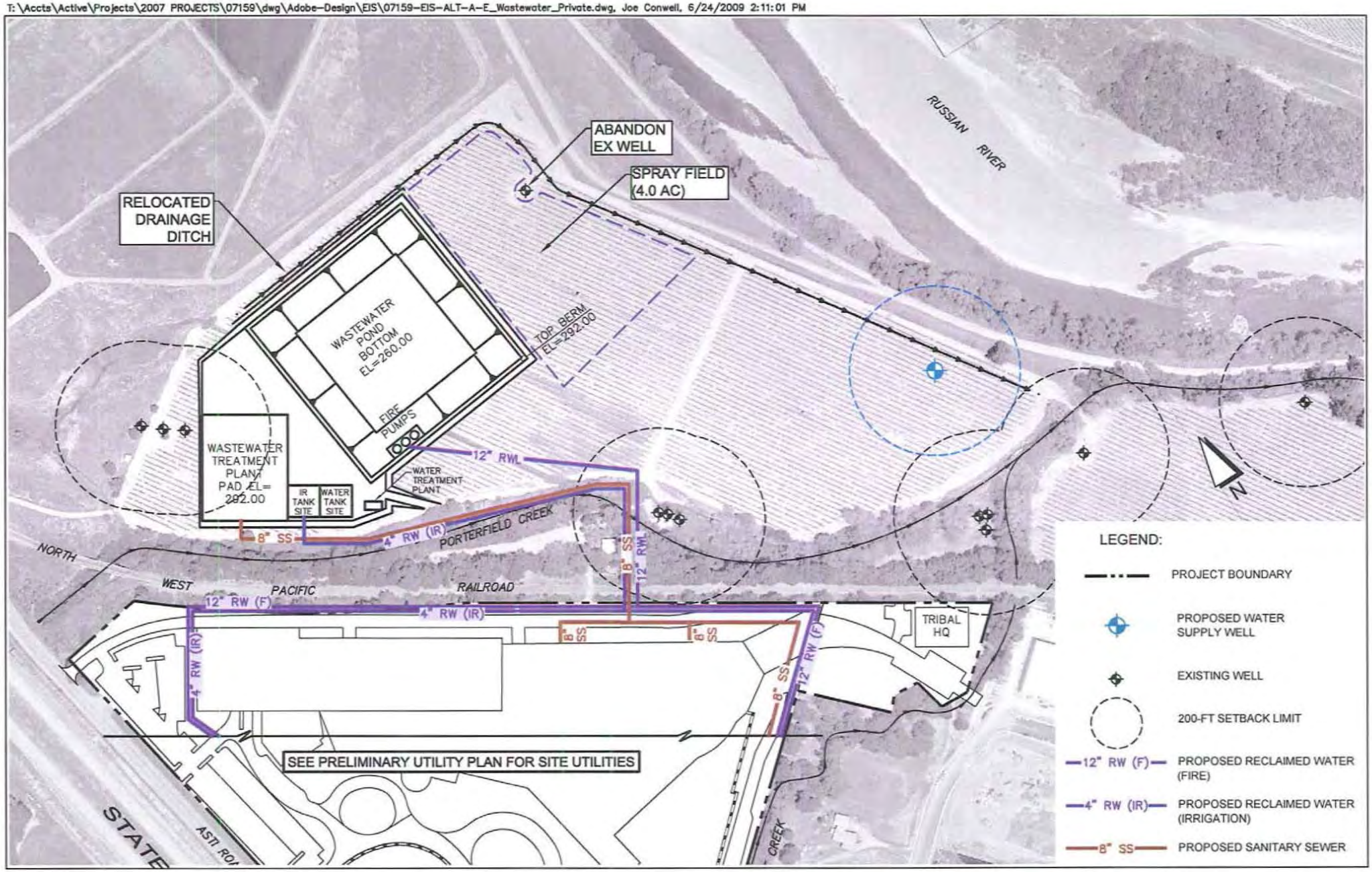
A study of seasonal groundwater depth is currently under way. The purpose of the study is to generate information pertinent to the issue of recycled wastewater irrigation and seasonal groundwater. For the purpose of preliminary wastewater pond and disposal field design, no discharge of treated wastewater is proposed to occur from October 1 to May 14.

A system of permanent groundwater level monitoring wells will be installed in the area of the wastewater disposal field for the purpose of providing information relative to seasonal use of the spray fields.

Water balance calculations for the purpose of the disposal field sizing are located in Attachment 2. Project Alternative A generates the maximum effective soil application rate in the spray field of 1.3 gallons per square foot per day, based upon the proposed 4.0 acre spray field. Discharge for irrigation demand on the west parcel is limited to evapotranspiration rate of the landscape plants.

Alternate water balance calculations are included in Attachment 2 that reduce the discharge volume by the recycle amount that may be returned to the project for toilet flushing. With reductions for recycle water the effective soil application rate on the spray field is 0.9 gallons per square foot per day. Discharge to the spray field will occur at a rate that will lower stored water volume to minimum fire suppression water storage volume by the anticipated end of the allowed period of discharge to project land.

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-A-E_Wastewater_Private.dwg, Joe Conwell, 6/24/2009 2:11:01 PM



CLOVERDALE RANCHERIA

Cloverdale, CA - Sonoma County

PRELIMINARY PRIVATE WASTEWATER PLAN - ALTERNATIVES A-E

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

Attachment 1

Wastewater Flow Calculations

CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

March 2009

Wastewater Flow Calculations
Summary

Wastewater design flow estimates for the following project alternatives are based upon the expected visitors and employees of the facilities. The wastewater flows are associated with occupancy of the hotel, gaming visitors, convention center visitors, entertainment center visitors, employees, and food and beverage service to the visitors and employees. The unit flows assigned to each category is derived from US EPA Onsite Wastewater Treatment Systems Manual. Annual number of visitors to the casino is derived from the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. Gamer projections from the market assessment correlate to the casino described in Alternative C with 1660 gaming positions. Projection of gaming visitors for Alternatives A, B, and D are adjusted according to number of gaming positions in the casino. Annual design flows from the hotel are distributed through the year on the basis of the market assessment to arrive at average hotel flows. Design flows for the spa are distributed through the year on the basis of the hotel occupancy identified in the market assessment. Total number of annual spa visitors from the market assessment was adjusted in direct proportion to the number of hotel rooms. The attendance for the entertainment center was also derived from the market assessment relative to number of events and projected attendance. The events were considered to be distributed evenly throughout the year. Wastewater flows from food and beverage services are calculated by assignment of meals to visitors and employees. Flows associated with the Resort Support Facilities and Tribal Government Building are based on numbers of employees. Total project employee count for each alternative was provided by ESA Associates.

Wastewater Flow Calculations
Alternative A

Hotel Wastewater Flow Volume – Alternative A:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the hotel visitors. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to hotel visitors. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative A:

Number of Rooms = 244
(Value Found in Table 2-1 of the September 2008 Preliminary ESA Report)
Estimated Flow Volume from Each Room = 150 gallons per day
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Table I - A – Hotel Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Months	Occupancy Factor
(NA)	(Unit less)
January	47.5%
February	55.0%
March	58.7%
April	61.6%
May	68.1%
June	73.0%
July	73.8%
August	76.6%
September	70.0%
October	71.1%
November	57.7%
December	43.8%

Equations – Alternative A:

Volume of Wastewater Due Hotel Visitors

$$V_H = OF \cdot \left(150 \frac{Gallons}{\frac{Room}{Day}} \right) \cdot \left(X \frac{Days}{Month} \right) \cdot (244 Rooms)$$

Where:

V_H = Estimated monthly volume of wastewater flow from the hotel $\left({gal}/{month} \right)$

OF = Occupancy factors (Unit Less)

$\left(X \frac{Days}{Month} \right)$ = Number of given days in a month

Table II - A.

Estimated Wastewater Flow due to the Hotel Visitors					
Months	Occupancy Factor	Number of Rooms	Estimated Flow per Room	Days in a Month	Estimated Monthly Flow Rate
(NA)	(Unit less)	(Rooms)	(Gal/Room/Day)	(Days)	(Gal)
January	47.5%	244	150	31	538935
February	55.0%	244	150	28	563640
March	58.7%	244	150	31	666010
April	61.6%	244	150	30	676368
May	68.1%	244	150	31	772663
June	73.0%	244	150	30	801540
July	73.8%	244	150	31	837335
August	76.6%	244	150	31	869104
September	70.0%	244	150	30	768600
October	71.1%	244	150	31	806701
November	57.7%	244	150	30	633546
December	43.8%	244	150	31	496955
Estimated Peak Daily =		36600 gallons			
Note: Peak daily based upon full capacity					

Gamer Wastewater Flow Volume – Alternative A:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the gamers of the casino. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to gamers. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative A:

Total local gamers expected in a year: 1,158,296
(Value was extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value was extrapolated based upon number of positions)

Total non local gamers expected in a year: 238,967
(Value was extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value was extrapolated based upon number of positions)

Estimated gamer flow per day = 5 gal/day
(Assumed)

Table III - A. Occupancy Factors and Weighted Average of Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Months	Occupancy Factor	Weighted Average of Occupancy Factor
(NA)	(Unit less)	(Unit less)
January	47.5%	6.3%
February	55.0%	7.3%
March	58.7%	7.8%
April	61.6%	8.1%
May	68.1%	9.0%
June	73.0%	9.6%
July	73.8%	9.8%
August	76.6%	10.1%
September	70.0%	9.2%
October	71.1%	9.4%
November	57.7%	7.6%
December	43.8%	5.8%

Equations – Alternative A:

Number of Local Gamers per Month

$$\left(\frac{LocalGamers}{Month}\right) = \left(\frac{Days/Month}{Days/year}\right)\left(\frac{TotalLocalGamers}{Year}\right)$$

Number of Non Local Gamers per Month

$$\left(\frac{NonLocalGamers}{Month}\right) = \left(WeightedAverageOccupancyFactor\right)\left(\frac{TotalNonLocalGamers}{Year}\right)$$

Total Monthly Wastewater flow expected due to the gamers

$$V_G = \left[\left(\frac{LocalGamers}{Month}\right) + \left(\frac{NonLocalGamers}{Month}\right)\right]\left(\frac{GallonsOfWastewater}{Gamer}\right)$$

Where:

V_G = Total Monthly Wastewater flow expected due to the gamers (not including meals)

Table IV - A.

Estimated Wastewater Flow due to the Gamers			
Months	Estimated Gamer Flow	Days in a Month	Estimated Monthly Flow Rate
(NA)	(Gal/Gamer/Day)	(Days)	(Gal)
January	5	31	566862
February	5	28	531100
March	5	31	584542
April	5	30	573253
May	5	31	599381
June	5	30	591249
July	5	31	608379
August	5	31	612799
September	5	30	586513
October	5	31	604117
November	5	30	567097
December	5	31	561021
Estimated Peak Daily Gamer =			38281 gallons
Note: The peak is based upon 2 times the max daily average			

Food and Beverage Wastewater Flow Volume – Alternative A:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the restaurants and bars within the casino and hotel.

Design Parameters – Alternative A:

Gallons of wastewater produced from a meal = 5 gal/meal
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)
Note: Value is a combination of meal and bar flow

Seat capacity in the entertainment center = 1,300 seats
(Value Found in Table 2-1 of the September 2008 Preliminary ESA Report)

Seat capacity in the convention center = 984 seats
(Value Found in Table 2-1 of the September 2008 Preliminary ESA Report)

Number of events per year in the entertainment center = 36 events
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the entertainment center = 80%
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the convention center = 29%
(Assumed, 20% weekday, 50% weekend)

Estimated Employees = 1610
(Based upon revenues, provided by ESA)

Equations – Alternative A:

Volume of Wastewater from
The Hotel Visitor Meals

$$V_{HM} = (OF)\left(X\,\frac{Days}{Month}\right)(244Rooms)\left(2\,\frac{Guests}{Room}\right)\left(3\,\frac{Meals}{Guest/Day}\right)\left(5\,\frac{Gallons}{Meal}\right)$$

Where:

V_{HM}=Volume of wastewater from the hotel visitor meals
OF = Occupancy Factor (found in Table I above)
$\left(X\,\frac{Days}{Month}\right)$ = Number of days in a given month

Volume of Wastewater from
The Gamer Visitor Meals

$$V_{GM} = \left(X\,\frac{LocalGamers}{Month}\right)\left(1\,\frac{Meal}{Gamer}\right)\left(5\,\frac{Gallons}{Meal}\right)$$

Where:

V_{GM}=Volume of wastewater from the gamer visitor meals

Volume of Wastewater from
The Employee Meals

$$V_{EM} = (XEmployees)\left(X\,\frac{Days}{Month}\right)\left(1\,\frac{Meal}{Employee}\right)\left(5\,\frac{Gallons}{Meal}\right)$$

Where:

V_{EM}=Volume of wastewater from employee meals
$\left(X\,\frac{Days}{Month}\right)$ = Number of days in a given month

Volume of Wastewater from
The Entertainment Center Meals

$$V_{ECM} = \left(1300\frac{Visitors}{Event}\right)\left(\frac{X\frac{Days}{Month}}{365\frac{Days}{Year}}\right)\left(36\frac{Events}{Year}\right)\left(1\frac{Meal}{Visitor/Event}\right)\left(5\frac{Gallons}{Meal}\right)(80\%)$$

Where:

V_{ECM}=Volume of wastewater from entertainment center event visitor meals

$\left(X\frac{Days}{Month}\right)$ = Number of days in a given month

Volume of Wastewater from
The Convention Center Meals

$$V_{CCM} = (984Seats)\left(X\frac{Days}{Month}\right)(29\%Capacity)\left(1\frac{Meal}{Visitor/Convention}\right)\left(5\frac{Gallons}{Meal}\right)$$

Where:

V_{CCM}=Volume of wastewater from convention center event visitor meals

$\left(X\frac{Days}{Month}\right)$ = Number of days in a given month

Total Monthly Wastewater Volume from
Food and Beverage Service

$$V_{FB} = V_{HM} + V_{GM} + V_{EM} + V_{ECM} + V_{CCM}$$

Where:

V_{FB} = Total monthly wastewater volume from the food and beverage
V_{HM}=Volume of wastewater from the hotel visitor meals
V_{GM}=Volume of wastewater from the gamer visitor meals
V_{EM}=Volume of wastewater from employee meals
V_{ECM}=Volume of wastewater from entertainment center event visitor meals
V_{CCM}=Volume of wastewater from convention center event visitor meals

Table V - A.

Estimated Wastewater Flow due to the Food and Beverage Service	
Months	Total Monthly Flow from Meals
NA	(Gal)
January	834481
February	769097
March	859896
April	838526
May	881227
June	863560
July	894161
August	900515
September	856972
October	888034
November	829962
December	826085
Note: All visitors are estimated to have one meal a day with the exception of the hotel visitors. They are estimated to have 3 meals per day	

Table VI – A.

Peak Daily Flow due to Food and Beverage (gallons)	
Hotel	7320
Gamers	31734
Employees	8050
Entertainment Visitors	6500
Convention Visitors	4920
Sum =	58524

Note: The hotel peak daily is based upon full capacity, the gamers peak daily is based upon the maximum daily average times 2, the employees peak daily is based upon each employee having a meal (average based upon 80%), the peak entertainment center and convention center is based upon every seat generating a meal

Entertainment Center and Convention Center Wastewater Flow Volume Alternative A:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the entertainment center and convention center visitors. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to visitors. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative A:

Seat capacity in the entertainment center = 1,300 seats
(Value Found in Table 2-1 of the September 2008 Preliminary ESA Report)

Seat capacity in the convention center = 984 seats
(Value Found in Table 2-1 of the September 2008 Preliminary ESA Report)

Number of events per year in the entertainment center = 36 events
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the entertainment center = 80%
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Daily occupancy of the convention center = 29%
(Assumed, 20% weekday, 50% weekend)

Equations – Alternative A:

Number of Entertainment Center Visitors per Month

$$E.C.\frac{Visitors}{Month} = \left(1300\frac{Visitors}{Event}\right)\left(\frac{X\ \frac{Days}{Month}}{365\frac{Days}{Year}}\right)\left(36\frac{Events}{Year}\right)(80\%Capacity)$$

Where:

$E.C.\frac{Visitors}{Month}$ = Entertainment center visitors per month

$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

Number of Convention Center Visitors per Month

$$C.C.\frac{Visitors}{Month} = (984 Seats)\left(X \frac{Days}{Month} \right)(29\% Capacity)$$

Where:

$C.C.\frac{Visitors}{Month}$ = Convention center visitors per month

$\left(X \frac{Days}{Month} \right)$ = Number of days in a given month

Total Monthly Volume of Wastewater Flow Due to Entertainment Center and Convention Center Visitors

$$V_{Events} = \left(E.C.\frac{Visitors}{Month} + C.C.\frac{Visitors}{Month} \right)\left(5\frac{Gallons}{Visitor} \right)$$

Where:

V_{Events} = Total Monthly Volume of Wastewater Flow Due to Entertainment Center and Convention Center Visitors

$E.C.\frac{Visitors}{Month}$ = Entertainment center visitors per month

$C.C.\frac{Visitors}{Month}$ = Convention center visitors per month

Table VII - A.

Estimated Wastewater Flow due to Entertainment Center Visitors and Convention Center Visitors	
Months	Total Monthly Flow from Events Centers
January	52180
February	47131
March	52180
April	50497
May	52180
June	50497
July	52180
August	52180
September	50497
October	52180
November	50497
December	52180
Note: It is estimated that events center visitors will use 5 gallons per day, not including meals	

Estimated Peak Daily		
Entertainment Center Visitors	6500	gallons
Convention Center Visitors	4920	gallons

Note: Peak Daily flows are based upon full capacity

Spa Wastewater Flow Volume – Alternative A:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the spa within the hotel.

Design Parameters – Alternative A:

Total spa visitor expected in a year
(Value extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Gallons per spa visit = 40 gallons
(Assumed)

Occupancy factors and the weighted average of occupancy factors (See Table III)

Equations – Alternative A:

Spa Visits per Month

$$\frac{SpaVisits}{Month} = \left(\frac{SpaVisits}{Year}\right)\left(\begin{matrix} WeightedMonthly \\ OccupancyFactor \end{matrix}\right)$$

Total Monthly Wastewater Flow Expected from the Spa

$$V_{Spa} = \left(\frac{SpaVisits}{Month}\right)\left(40\frac{Gallons}{Visit}\right)$$

Where:

V_{Spa} = Total monthly volume of wastewater flow due to the spa visitors

Table VIII - A.

Estimated Wastewater Flow from Spa				
Months	Occupancy Factor	Weighted Average of Occupancy Factor	Gallons per Spa Visit	Estimated Monthly Flow Rate
January	47.5%	6.3%	40	16450
February	55.0%	7.3%	40	19047
March	58.7%	7.8%	40	20328
April	61.6%	8.1%	40	21333
May	68.1%	9.0%	40	23584
June	73.0%	9.6%	40	25280
July	73.8%	9.8%	40	25557
August	76.6%	10.1%	40	26527
September	70.0%	9.2%	40	24242
October	71.1%	9.4%	40	24622
November	57.7%	7.6%	40	19982
December	43.8%	5.8%	40	15168
Estimated Peak Daily		2520 gallons		
Based upon 100% of weekly flow happening on weekend				

Employee Wastewater Flow Volume – Alternative A:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the employees of the casino, hotel, entertainment center and convention center. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to employees. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative A:

Gallons per employee = 12 gallons
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Estimated Employees = 1610
(Based upon revenue values)

Equations – Alternative A:

Volume of Wastewater from The Employees

$$V_E = (XEmployees)\left(X\,\frac{Days}{Month}\right)\left(12\,\frac{Gallons}{day}\right)$$

Where:

V_E=Volume of wastewater from an employee per month

$\left(X\,\frac{Days}{Month}\right)$ = Number of days in a given month

Table IX - A.

Estimated Monthly Wastewater Flow from Employees			
Month	Days in a Month	Gallons per Employee	Estimated Monthly Flow
January	31	12	598920
February	28	12	540960
March	31	12	598920
April	30	12	579600
May	31	12	598920
June	30	12	579600
July	31	12	598920
August	31	12	598920
September	30	12	579600
October	31	12	598920
November	30	12	579600
December	31	12	598920
Estimated Peak Daily		24150	gallons
Based upon a use of 15 gpd			

Total Monthly Wastewater Flow – Alternative A:

Equation – Alternative A:

$$V_T = V_H + V_G + V_{FB} + V_{Events} + V_{Spa} + V_E$$

Where:

V_T = Total monthly wastewater flow $\left({gal}/{month} \right)$

V_H = Estimated monthly volume of wastewater flow from the hotel $\left({gal}/{month} \right)$

V_G = Total monthly wastewater flow expected due to the gamers $\left({gal}/{month} \right)$

V_{FB} = Total monthly wastewater volume from the food and beverage $\left({gal}/{month} \right)$

V_{Events} = Total monthly volume of wastewater flow due to entertainment $\left({gal}/{month} \right)$

V_{Spa} = Total monthly volume of wastewater flow due to the spa visitors $\left({gal}/{month} \right)$

V_E = Total monthly volume of wastewater flow due to the employees $\left({gal}/{month} \right)$

Table X - A.

Estimated Total Monthly Flow							
Months	Hotel Flow	Gamer Flow	Food and Beverage Flow	Event Center Flow	Spa Flow	Employee Flow	Total Monthly Flow
	(Gal/Month)						
January	538935	566862	834481	52180	16450	598920	2607828
February	563640	531100	769097	47131	19047	540960	2470975
March	666010	584542	859896	52180	20328	598920	2781877
April	676368	573253	838526	50497	21333	579600	2739577
May	772663	599381	881227	52180	23584	598920	2927954
June	801540	591249	863560	50497	25280	579600	2911727
July	837335	608379	894161	52180	25557	598920	3016533
August	869104	612799	900515	52180	26527	598920	3060045
September	768600	586513	856972	50497	24242	579600	2866424
October	806701	604117	888034	52180	24622	598920	2974575
November	633546	567097	829962	50497	19982	579600	2680683
December	496955	561021	826085	52180	15168	598920	2550330

Table XI – A.

Total Estimated Peak Daily Flow (Gallons)	
Hotel	36600
Gamers	38281
Food and Beverage	58524
Event Centers	11420
Spa	2520
Employees	24150
Total	171496

Annual Daily Average Wastewater Flow
92023

Wastewater Flow Calculations
Alternative B

Hotel Wastewater Flow Volume – Alternative B:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the hotel visitors. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed hotel visitors. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative B:

Number of Rooms = 141
(Value Found in Table 2-2 of the September 2008 Preliminary ESA Report)
Estimated Flow Volume from Each Room = 150 gallons per day
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Table I - B– Hotel Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Months	Occupancy Factor
(NA)	(Unit less)
January	47.5%
February	55.0%
March	58.7%
April	61.6%
May	68.1%
June	73.0%
July	73.8%
August	76.6%
September	70.0%
October	71.1%
November	57.7%
December	43.8%

Equations – Alternative B:

Volume of Wastewater Due Hotel Visitors

$$V_H = OF \cdot \left(150 \frac{Gallons}{\frac{Room}{Day}} \right) \cdot \left(X \frac{Days}{Month} \right) \cdot (141 Rooms)$$

Where:

V_H = Estimated monthly volume of wastewater flow from the hotel $\left({gal}/{month} \right)$

OF = Occupancy factors (Unit Less)

$\left(X \frac{Days}{Month} \right)$ = Number of given days in a month

Table II - B.

Estimated Wastewater Flow due to the Hotel Visitors					
Months	Occupancy Factor	Number of Rooms	Estimated Flow per Room	Days in a Month	Estimated Monthly Flow Rate
(NA)	(Unit less)	(Rooms)	(Gal/Room/Day)	(Days)	(Gal)
January	47.5%	141	150	31	311434
February	55.0%	141	150	28	325710
March	58.7%	141	150	31	384867
April	61.6%	141	150	30	390852
May	68.1%	141	150	31	446498
June	73.0%	141	150	30	463185
July	73.8%	141	150	31	483870
August	76.6%	141	150	31	502228
September	70.0%	141	150	30	444150
October	71.1%	141	150	31	466167
November	57.7%	141	150	30	366107
December	43.8%	141	150	31	287175
Estimated Peak Daily		21150 gallons			
Note: Peak daily based upon full capacity					

Gamer Wastewater Flow Volume – Alternative B:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the gamers of the casino. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to gamers. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative B:

Total local gamers expected in a year: 989,910
(Value was extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value was extrapolated based upon number of positions)

Total non local gamers expected in a year: 204,227
(Value was extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value was extrapolated based upon number of positions)

Estimated gamer flow per day = 5 gal/day
(Assumed)

Table III - B. Occupancy Factors and Weighted Average of Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Months	Occupancy Factor	Weighted Average of Occupancy Factor
(NA)	(Unit less)	(Unit less)
January	47.5%	6.3%
February	55.0%	7.3%
March	58.7%	7.8%
April	61.6%	8.1%
May	68.1%	9.0%
June	73.0%	9.6%
July	73.8%	9.8%
August	76.6%	10.1%
September	70.0%	9.2%
October	71.1%	9.4%
November	57.7%	7.6%
December	43.8%	5.8%

Equations – Alternative B:

Number of Local Gamers per Month

$$\left(\frac{LocalGamers}{Month}\right) = \left(\frac{Days/Month}{Days/year}\right)\left(\frac{TotalLocalGamers}{Year}\right)$$

Number of Non Local Gamers per Month

$$\left(\frac{NonLocalGamers}{Month}\right) = \left(WeightedAverageOccupancyFactor\right)\left(\frac{TotalNonLocalGamers}{Year}\right)$$

Total Monthly Wastewater flow expected due to the gamers

$$V_G = \left[\left(\frac{LocalGamers}{Month}\right) + \left(\frac{NonLocalGamers}{Month}\right)\right]\left(\frac{GallonsOfWastewater}{Gamer}\right)$$

Where:

V_G = Total Monthly Wastewater flow expected due to the gamers (not including meals)

Table IV - B.

Estimated Wastewater Flow due to the Gamers			
Months	Estimated Gamer Flow	Days in a Month	Estimated Monthly Flow Rate
(NA)	(Gal/Gamer/Day)	(Days)	(Gal)
January	5	31	484455
February	5	28	453892
March	5	31	499565
April	5	30	489917
May	5	31	512246
June	5	30	505297
July	5	31	519936
August	5	31	523714
September	5	30	501249
October	5	31	516294
November	5	30	484655
December	5	31	479463
		Estimated Peak Daily	32716 Gallons
Note: The peak is based upon 2 times the max daily average			

Food and Beverage Wastewater Flow Volume – Alternative B:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the restaurants and bars within the casino and hotel.

Design Parameters – Alternative B:

Gallons of wastewater produced from a meal = 5 gal/meal
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)
Note: Value is a combination of meal and bar flow

Seat capacity in the entertainment center = 1,300 seats
(Value Found in Table 2-2 of the September 2008 Preliminary ESA Report)

Number of events per year in the entertainment center = 36 events
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the entertainment center = 80%
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Estimated Employees = 1350
(Based upon revenues, provided by ESA)

Equations – Alternative B:

Volume of Wastewater from
The Hotel Visitor Meals

$$V_{HM} = (OF)\left(X\,\frac{Days}{Month}\right)(141 Rooms)\left(2\,\frac{Guests}{Room}\right)\left(3\,\frac{Meals}{Guest/Day}\right)\left(5\,\frac{Gallons}{Meal}\right)$$

Where:

V_{HM}=Volume of wastewater from the hotel visitor meals
OF = Occupancy Factor (found in Table I above)
$\left(X\,\frac{Days}{Month}\right)$ = Number of days in a given month

Volume of Wastewater from
The Gamer Visitor Meals

$$V_{GM} = \left(X\,\frac{LocalGamers}{Month}\right)\left(1\,\frac{Meal}{Gamer}\right)\left(5\,\frac{Gallons}{Meal}\right)$$

Where:

V_{GM}=Volume of wastewater from the gamer visitor meals

Volume of Wastewater from
The Employee Meals

$$V_{EM} = (XEmployees)\left(X\frac{Days}{Month}\right)\left(1\frac{Meal}{Employee}\right)\left(5\frac{Gallons}{Meal}\right)$$

Where:

V_{EM}=Volume of wastewater from employee meals

$\left(X\frac{Days}{Month}\right)$ = Number of days in a given month

Volume of Wastewater from
The Entertainment Center Meals

$$V_{ECM} = \left(1300\frac{Visitors}{Event}\right)\left(\frac{X\frac{Days}{Month}}{365\frac{Days}{Year}}\right)\left(36\frac{Events}{Year}\right)\left(1\frac{Meal}{Visitor/Event}\right)\left(5\frac{Gallons}{Meal}\right)(80\%)$$

Where:

V_{ECM}=Volume of wastewater from entertainment center event visitor meals

$\left(X\frac{Days}{Month}\right)$ = Number of days in a given month

Total Monthly Wastewater Volume from
Food and Beverage Service

$$V_{FB} = V_{HM} + V_{GM} + V_{EM} + V_{ECM}$$

Where:

V_{FB} = Total monthly wastewater volume from food and beverage
V_{HM}=Volume of wastewater from the hotel visitor meals
V_{GM}=Volume of wastewater from the gamer visitor meals
V_{EM}=Volume of wastewater from employee meals
V_{ECM}=Volume of wastewater from entertainment center event visitor meals

Table V - B.

Estimated Wastewater Flow due to the Food and Beverage Service	
Months	Total Monthly Flow from Meals
NA	(gal)
January	645033
February	591494
March	659720
April	642119
May	672046
June	656585
July	679521
August	683192
September	652778
October	675980
November	637170
December	640182
Note: All visitors are estimated to have one meal a day with the exception of the hotel visitors. They are estimated to have 3 meals per day	

Table VI - B

Peak Daily Flow due to Food and Beverage (gallons)	
Hotel	4230
Gamers	27121
Employees	6750
Entertainment Visitors	6500
Sum =	44601

Note: The hotel peak daily is based upon full capacity, the gamers peak daily is based upon the maximum daily average times 2, the employees peak daily is based upon each employee having a meal (average based upon 80%), the peak entertainment center is based upon every seat generating a meal

Entertainment Center Wastewater Flow Volume - Alternative B:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the entertainment center. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to visitors. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative B:

Seat capacity in the entertainment center = 1,300 seats
(Value Found in Table 2-2 of the September 2008 Preliminary ESA Report)

Number of events per year in the entertainment center = 36 events
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the entertainment center = 80%
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Equations – Alternative B:

Number of Entertainment Center Visitors per Month

$$E.C.\frac{Visitors}{Month} = \left(1300\frac{Visitors}{Event}\right)\left(\frac{X\ \frac{Days}{Month}}{365\frac{Days}{Year}}\right)\left(36\frac{Events}{Year}\right)(80\%)$$

Where:

$E.C.\frac{Visitors}{Month}$ = Entertainment center visitors per month

$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

Total Monthly Volume of Wastewater Flow Due to The Entertainment Center Visitors

$$V_{Events} = \left(E.C.\frac{Visitors}{Month}\right)\left(5\frac{Gallons}{Visitor}\right)$$

Where:

V_{Events} = Total Monthly Volume of Wastewater Flow Due to Entertainment Center Visitors

$E.C.\frac{Visitors}{Month}$ = Entertainment center visitors per month

Table VII - B.

Estimated Wastewater Flow due to Entertainment Center Visitors	
Months	Total Monthly Flow from Events Centers
January	15899
February	14361
March	15899
April	15386
May	15899
June	15386
July	15899
August	15899
September	15386
October	15899
November	15386
December	15899
Note: It is estimated that events center visitors will use 5 gallons per day, not including meals	
Estimated Peak Daily =	6500

Note: Peak Daily flows are based upon full capacity

Spa Wastewater Flow Volume – Alternative B:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the spa within the hotel.

Design Parameters – Alternative B:

Total spa visitor expected in a year
(Value extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Gallons per spa visit = 40 gallons
(Assumed)

Occupancy factors and the weighted average of occupancy factors (See Table II)

Equations – Alternative B:

Spa Visits per Month

$$\frac{SpaVisits}{Month} = \left(\frac{SpaVisits}{Year}\right)\left(\begin{matrix} WeightedMonthly \\ OccupancyFactor \end{matrix}\right)$$

Total Monthly Wastewater Flow Expected from the Spa

$$V_{Spa} = \left(\frac{SpaVisits}{Month}\right)\left(40\frac{Gallons}{Visit}\right)$$

Where:

V_{Spa} = Total monthly volume of wastewater flow due to the spa visitors

Table VIII - B.

Estimated Wastewater Flow from Spa				
Months	Occupancy Factor	Weighted Average of Occupancy Factor	Gallons per Spa Visit	Estimated Monthly Flow Rate
January	47.5%	6.3%	40	9506
February	55.0%	7.3%	40	11007
March	58.7%	7.8%	40	11747
April	61.6%	8.1%	40	12327
May	68.1%	9.0%	40	13628
June	73.0%	9.6%	40	14609
July	73.8%	9.8%	40	14769
August	76.6%	10.1%	40	15329
September	70.0%	9.2%	40	14008
October	71.1%	9.4%	40	14229
November	57.7%	7.6%	40	11547
December	43.8%	5.8%	40	8765
Estimated Peak Daily		1456	gallons	
Based upon 100% of weekly flow happening on weekend				

Employee Wastewater Flow Volume – Alternative B:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the employees of the casino, hotel, entertainment center and convention center. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to employees. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative B:

Gallons per employee = 12 gallons
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Estimated Employees = 1,350
(Based upon revenue values)

Equations – Alternative B:

Volume of Wastewater from The Employees

$$V_E = (XEmployees)\left(X\,\frac{Days}{Month}\right)\left(12\,\frac{Gallons}{day}\right)$$

Where:

V_E=Volume of wastewater from an employee per month

$\left(X\,\frac{Days}{Month}\right)$ = Number of days in a given month

Table IX - B.

Estimated Monthly Wastewater Flow from Employees		
Month	Gallons per Employee	Estimated Monthly Flow
January	12	502200
February	12	453600
March	12	502200
April	12	486000
May	12	502200
June	12	486000
July	12	502200
August	12	502200
September	12	486000
October	12	502200
November	12	486000
December	12	502200
Estimated Peak Daily =		20250 gallons
Based upon a use of 15 gpd		

Total Monthly Wastewater Flow – Alternative B:

Equation – Alternative B:

$$V_T = V_H + V_G + V_{FB} + V_{Events} + V_{Spa} + V_E$$

Where:

V_T = Total monthly wastewater flow $\left({gal}/{month} \right)$

V_H = Estimated monthly volume of wastewater flow from the hotel $\left({gal}/{month} \right)$

V_G = Total monthly wastewater flow expected due to the gamers $\left({gal}/{month} \right)$

V_{FB} = Total monthly wastewater volume from the food and beverage $\left({gal}/{month} \right)$

V_{Events} = Total monthly volume of wastewater flow due to entertainment $\left({gal}/{month} \right)$

V_{Spa} = Total monthly volume of wastewater flow due to the spa visitors $\left({gal}/{month} \right)$

V_E = Total monthly volume of wastewater flow due to the employees $\left({gal}/{month} \right)$

Table X - B.

Estimated Total Monthly Flow							
Months	Hotel Flow	Gamer Flow	Food and Beverage Flow	Event Center Flow	Spa Flow	Employee Flow	Total Monthly Flow
	(Gal/Month)						
January	311434	484455	645033	15899	9506	502200	1968527
February	325710	453892	591494	14361	11007	453600	1850063
March	384867	499565	659720	15899	11747	502200	2073998
April	390852	489917	642119	15386	12327	486000	2036601
May	446498	512246	672046	15899	13628	502200	2162518
June	463185	505297	656585	15386	14609	486000	2141062
July	483870	519936	679521	15899	14769	502200	2216195
August	502228	523714	683192	15899	15329	502200	2242562
September	444150	501249	652778	15386	14008	486000	2113572
October	466167	516294	675980	15899	14229	502200	2190769
November	366107	484655	637170	15386	11547	486000	2000865
December	287175	479463	640182	15899	8765	502200	1933684

Table XI - B

Total Estimated Peak Daily Flow (Gallons)	
Hotel	21150
Gamers	32716
Food and Beverage	44601
Event Centers	6500
Spa	1456
Employees	20250
Total	126673

Annual Daily Average Wastewater Flow
68303

Wastewater Flow Calculations
Alternative C

Hotel Wastewater Flow Volume – Alternative C:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the hotel visitors. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to hotel visitors. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative C:

Number of Rooms = 141
(Value Found in Table 2-3 of the September 2008 Preliminary ESA Report)
Estimated Flow Volume from Each Room = 150 gallons per day
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Table I - C– Hotel Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Months	Occupancy Factor
(NA)	(Unit less)
January	47.5%
February	55.0%
March	58.7%
April	61.6%
May	68.1%
June	73.0%
July	73.8%
August	76.6%
September	70.0%
October	71.1%
November	57.7%
December	43.8%

Equations – Alternative C:

Volume of Wastewater Due Hotel Visitors

$$V_H = OF \cdot \left(150 \frac{Gallons}{\frac{Room}{Day}} \right) \cdot \left(X \frac{Days}{Month} \right) \cdot (141 Rooms)$$

Where:

V_H = Estimated monthly volume of wastewater flow from the hotel $\left({gal}/{month} \right)$

OF = Occupancy factors (Unit Less)

$\left(X \frac{Days}{Month} \right)$ = Number of given days in a month

Table II - C.

Estimated Wastewater Flow due to the Hotel Visitors					
Months	Occupancy Factor	Number of Rooms	Estimated Flow per Room	Days in a Month	Estimated Monthly Flow Rate
(NA)	(Unit less)	(Rooms)	(Gal/Room/Day)	(Days)	(Gal)
January	47.5%	141	150	31	311434
February	55.0%	141	150	28	325710
March	58.7%	141	150	31	384867
April	61.6%	141	150	30	390852
May	68.1%	141	150	31	446498
June	73.0%	141	150	30	463185
July	73.8%	141	150	31	483870
August	76.6%	141	150	31	502228
September	70.0%	141	150	30	444150
October	71.1%	141	150	31	466167
November	57.7%	141	150	30	366107
December	43.8%	141	150	31	287175
Estimated Peak Daily		21150 gallons			
Note: Peak daily based upon full capacity					

Gamer Wastewater Flow Volume – Alternative C:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the gamers of the casino. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to gamers. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative C:

Total local gamers expected in a year: 847,036
(Value was found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value correlates to the number of positions in this alternative)

Total non local gamers expected in a year: 174,751
(Value was found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value correlates to the number of positions in this alternative)

Estimated gamer flow per day = 5 gal/day
(Assumed)

Table III - C. Occupancy Factors and Weighted Average of Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Months	Occupancy Factor	Weighted Average of Occupancy Factor
(NA)	(Unit less)	(Unit less)
January	47.5%	6.3%
February	55.0%	7.3%
March	58.7%	7.8%
April	61.6%	8.1%
May	68.1%	9.0%
June	73.0%	9.6%
July	73.8%	9.8%
August	76.6%	10.1%
September	70.0%	9.2%
October	71.1%	9.4%
November	57.7%	7.6%
December	43.8%	5.8%

Equations – Alternative C:

Number of Local Gamers per Month

$$\left(\frac{LocalGamers}{Month}\right) = \left(\frac{Days/Month}{Days/year}\right)\left(\frac{TotalLocalGamers}{Year}\right)$$

Number of Non Local Gamers per Month

$$\left(\frac{NonLocalGamers}{Month}\right) = \left(WeightedAverageOccupancyFactor\right)\left(\frac{TotalNonLocalGamers}{Year}\right)$$

Total Monthly Wastewater flow expected due to the gamers

$$V_G = \left[\left(\frac{LocalGamers}{Month}\right) + \left(\frac{NonLocalGamers}{Month}\right)\right]\left(\frac{GallonsOfWastewater}{Gamer}\right)$$

Where:

V_G = Total Monthly Wastewater flow expected due to the gamers (not including meals)

Table IV - C.

Estimated Wastewater Flow due to the Gamers			
Months	Estimated Gamer Flow	Days in a Month	Estimated Monthly Flow Rate
(NA)	(Gal/Gamer/Day)	(Days)	(Gal)
January	5	31	414534
February	5	28	388382
March	5	31	427463
April	5	30	419207
May	5	31	438314
June	5	30	432367
July	5	31	444894
August	5	31	448126
September	5	30	428904
October	5	31	441777
November	5	30	414705
December	5	31	410262
Estimated Peak Daily			27994 Gallons
Note: The peak is based upon 2 times the max daily average			

Food and Beverage Wastewater Flow Volume – Alternative C:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the restaurants and bars within the casino and hotel.

Design Parameters – Alternative C:

Gallons of wastewater produced from a meal = 5 gal/meal
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)
Note: Value is a combination of meal and bar flow

Seat capacity in the entertainment center = 1,300 seats
(Value Found in Table 2-3 of the September 2008 Preliminary ESA Report)

Number of events per year in the entertainment center = 36 events
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the entertainment center = 80%
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Estimated Employees = 1170
(Based upon revenues, provided by ESA)

Equations – Alternative C:

Volume of Wastewater from
The Hotel Visitor Meals

$$V_{HM} = (OF)\left(X\,\frac{Days}{Month}\right)(141 Rooms)\left(2\,\frac{Guests}{Room}\right)\left(3\,\frac{Meals}{Guest/Day}\right)\left(5\,\frac{Gallons}{Meal}\right)$$

Where:

V_{HM}=Volume of wastewater from the hotel visitor meals
OF = Occupancy Factor (found in Table I above)
$\left(X\,\frac{Days}{Month}\right)$ = Number of days in a given month

Volume of Wastewater from
The Gamer Visitor Meals

$$V_{GM} = \left(X \frac{LocalGamers}{Month} \right) \left(1 \frac{Meal}{Gamer} \right) \left(5 \frac{Gallons}{Meal} \right)$$

Where:

V_{GM}=Volume of wastewater from the gamer visitor meals

Volume of Wastewater from
The Employee Meals

$$V_{EM} = (XEmployees) \left(X \frac{Days}{Month} \right) \left(1 \frac{Meal}{Employee} \right) \left(5 \frac{Gallons}{Meal} \right)$$

Where:

V_{EM}=Volume of wastewater from employee meals

$\left(X \frac{Days}{Month} \right)$ = Number of days in a given month

Volume of Wastewater from
The Entertainment Center Meals

$$V_{ECM} = \left(1300 \frac{Visitors}{Event} \right) \left(\frac{X \frac{Days}{Month}}{365 \frac{Days}{Year}} \right) \left(36 \frac{Events}{Year} \right) \left(1 \frac{Meal}{Visitor / Event} \right) \left(5 \frac{Gallons}{Meal} \right) (80\%)$$

Where:

V_{ECM}=Volume of wastewater from entertainment center event visitor meals

$\left(X \frac{Days}{Month} \right)$ = Number of days in a given month

Total Monthly Wastewater Volume from
The Food and Beverage

$$V_{FB} = V_{HM} + V_{GM} + V_{EM} + V_{ECM}$$

Where:

V_{FB} = Total monthly wastewater volume from the food and beverage
V_{HM}=Volume of wastewater from the hotel visitor meals
V_{GM}=Volume of wastewater from the gamer visitor meals
V_{EM}=Volume of wastewater from employee meals
V_{ECM}=Volume of wastewater from entertainment center event visitor meals

Table V - C.

Estimated Wastewater Flow due to the Food and Beverage Service	
Months	Total Monthly Flow from Meals
NA	Gallons
January	564831
February	519053
March	579518
April	564504
May	591844
June	578970
July	599318
August	602990
September	575163
October	595778
November	559555
December	559979
Note: All visitors are estimated to have one meal a day with the exception of the hotel visitors. They are estimated to have 3 meals per day	

Table VI - C

Peak Daily Flow due to Food and Beverage (gallons)	
Hotel	4230
Gamers	23206
Employees	5850
Entertainment Visitors	6500
Sum =	39786

Note: The hotel peak daily is based upon full capacity, the gamers peak daily is based upon the maximum daily average times 2, the employees peak daily is based upon each employee having a meal (average based upon 80%), the peak entertainment center is based upon every seat generating a meal

Entertainment Center Wastewater Flow Volume - Alternative C:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the entertainment center. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to visitors. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative C:

Seat capacity in the entertainment center = 1,300 seats
(Value Found in Table 2-3 of the September 2008 Preliminary ESA Report)

Number of events per year in the entertainment center = 36 events
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the entertainment center = 80%
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Equations – Alternative C:

Number of Entertainment Center Visitors per Month

$$E.C.\frac{Visitors}{Month} = \left(1300\frac{Visitors}{Event}\right)\left(\frac{X\ \frac{Days}{Month}}{365\frac{Days}{Year}}\right)\left(36\frac{Events}{Year}\right)(80\%)$$

Where:

$E.C.\frac{Visitors}{Month}$ = Entertainment center visitors per month

$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

Total Monthly Volume of Wastewater Flow Due to The Entertainment Center Visitors

$$V_{Events} = \left(E.C.\frac{Visitors}{Month}\right)\left(5\frac{Gallons}{Visitor}\right)$$

Where:

V_{Events} = Total Monthly Volume of Wastewater Flow Due to Entertainment Center Visitors

$E.C.\frac{Visitors}{Month}$ = Entertainment center visitors per month

Table VII - C.

Estimated Wastewater Flow due to Entertainment Center Visitors	
Months	Total Monthly Flow from Events Centers
January	15899
February	14361
March	15899
April	15386
May	15899
June	15386
July	15899
August	15899
September	15386
October	15899
November	15386
December	15899
Note: It is estimated that events center visitors will use 5 gallons per day, not including meals	
Estimated Peak Daily =	6500

Note: Peak Daily flows are based upon full capacity

Spa Wastewater Flow Volume – Alternative C:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the spa within the hotel.

Design Parameters – Alternative C:

Total spa visitor expected in a year
(Value extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Gallons per spa visit = 40 gallons
(Assumed)

Occupancy factors and the weighted average of occupancy factors (See Table II)

Equations – Alternative C:

Spa Visits per Month

$$\frac{SpaVisits}{Month} = \left(\frac{SpaVisits}{Year}\right)\left(\begin{matrix} WeightedMonthly \\ OccupancyFactor \end{matrix}\right)$$

Total Monthly Wastewater Flow Expected from the Spa

$$V_{Spa} = \left(\frac{SpaVisits}{Month}\right)\left(40\frac{Gallons}{Visit}\right)$$

Where:

V_{Spa} = Total monthly volume of wastewater flow due to the spa visitors

Table VIII - C.

Estimated Wastewater Flow from Spa				
Months	Occupancy Factor	Weighted Average of Occupancy Factor	Gallons per Spa Visit	Estimated Monthly Flow Rate
January	47.5%	6.3%	40	9506
February	55.0%	7.3%	40	11007
March	58.7%	7.8%	40	11747
April	61.6%	8.1%	40	12327
May	68.1%	9.0%	40	13628
June	73.0%	9.6%	40	14609
July	73.8%	9.8%	40	14769
August	76.6%	10.1%	40	15329
September	70.0%	9.2%	40	14008
October	71.1%	9.4%	40	14229
November	57.7%	7.6%	40	11547
December	43.8%	5.8%	40	8765
Estimated Peak Daily		1456 gallons		
Based upon 100% of weekly flow happening on weekend				

Employee Wastewater Flow Volume – Alternative C:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the employees of the casino, hotel, entertainment center and convention center. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to employees. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative C:

Gallons per employee = 12 gallons
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Estimated Employees = 1,170
(Based upon revenue values)

Equations – Alternative C:

Volume of Wastewater from The Employees

$$V_E = (XEmployees)\left(X\,\frac{Days}{Month}\right)\left(12\,\frac{Gallons}{day}\right)$$

Where:

V_E=Volume of wastewater from an employee per month

$\left(X\,\frac{Days}{Month}\right)$ = Number of days in a given month

Table IX - C.

Estimated Monthly Wastewater Flow from Employees			
Month	Days in a Month	Gallons per Employee	Estimated Monthly Flow
January	31	12	435240
February	28	12	393120
March	31	12	435240
April	30	12	421200
May	31	12	435240
June	30	12	421200
July	31	12	435240
August	31	12	435240
September	30	12	421200
October	31	12	435240
November	30	12	421200
December	31	12	435240
Estimated Peak Daily =		17550	gallons
Based upon a use of 15 gpd			

Total Monthly Wastewater Flow – Alternative C:

Equation – Alternative C:

$$V_T = V_H + V_G + V_{FB} + V_{Events} + V_{Spa} + V_E$$

Where:

V_T = Total monthly wastewater flow $\left({gal}/{month} \right)$

V_H = Estimated monthly volume of wastewater flow from the hotel $\left({gal}/{month} \right)$

V_G = Total monthly wastewater flow expected due to the gamers $\left({gal}/{month} \right)$

V_{FB} = Total monthly wastewater volume from the food and beverage $\left({gal}/{month} \right)$

V_{Events} = Total monthly volume of wastewater flow due to entertainment $\left({gal}/{month} \right)$

V_{Spa} = Total monthly volume of wastewater flow due to the spa visitors $\left({gal}/{month} \right)$

V_E = Total monthly volume of wastewater flow due to the employees $\left({gal}/{month} \right)$

Table X - C.

Estimated Total Monthly Flow							
Months	Hotel Flow	Gamer Flow	Food and Beverage Flow	Event Center Flow	Spa Flow	Employee Flow	Total Monthly Flow
	(Gal/Month)						
January	311434	414534	564831	15899	9506	435240	1751444
February	325710	388382	519053	14361	11007	393120	1651632
March	384867	427463	579518	15899	11747	435240	1854733
April	390852	419207	564504	15386	12328	421200	1823477
May	446498	438314	591844	15899	13628	435240	1941423
June	463185	432367	578970	15386	14609	421200	1925718
July	483870	444894	599318	15899	14769	435240	1993990
August	502228	448126	602990	15899	15330	435240	2019813
September	444150	428904	575163	15386	14009	421200	1898812
October	466167	441777	595778	15899	14229	435240	1969090
November	366107	414705	559555	15386	11547	421200	1788500
December	287175	410262	559979	15899	8765	435240	1717321

Table XI - C

Total Estimated Peak Daily Flow (Gallons)	
Hotel	21150
Gamers	27994
Food and Beverage	39786
Event Centers	6500
Spa	1456
Employees	17550
Total	114437

Annual Daily Average Wastewater Flow
61194

Wastewater Flow Calculations
Alternative D

Gamer Wastewater Flow Volume – Alternative D:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the gamers of the casino. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to gamers. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative D:

Total local gamers expected in a year: 739,881
(Value was extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value was extrapolated based upon number of positions)

Total non local gamers expected in a year: 152,644
(Value was extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value was extrapolated based upon number of positions)

Estimated gamer flow per day = 5 gal/day
(Assumed)

Table I - D. Occupancy Factors and Weighted Average of Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Months	Occupancy Factor	Weighted Average of Occupancy Factor
(NA)	(Unit less)	(Unit less)
January	47.5%	6.3%
February	55.0%	7.3%
March	58.7%	7.8%
April	61.6%	8.1%
May	68.1%	9.0%
June	73.0%	9.6%
July	73.8%	9.8%
August	76.6%	10.1%
September	70.0%	9.2%
October	71.1%	9.4%
November	57.7%	7.6%
December	43.8%	5.8%

Equations – Alternative D:

Number of Local Gamers per Month

$$\left(\frac{LocalGamers}{Month}\right) = \left(\frac{Days/Month}{Days/year}\right)\left(\frac{TotalLocalGamers}{Year}\right)$$

Number of Non Local Gamers per Month

$$\left(\frac{NonLocalGamers}{Month}\right) = \left(WeightedAverageOccupancyFactor\right)\left(\frac{TotalNonLocalGamers}{Year}\right)$$

Total Monthly Wastewater flow expected due to the gamers

$$V_G = \left[\left(\frac{LocalGamers}{Month}\right) + \left(\frac{NonLocalGamers}{Month}\right)\right]\left(\frac{GallonsOfWastewater}{Gamer}\right)$$

Where:

V_G = Total Monthly Wastewater flow expected due to the gamers (not including meals)

Table II - D.

Estimated Wastewater Flow due to the Gamers			
Months	Estimated Gamer Flow	Days in a Month	Estimated Monthly Flow Rate
(NA)	(Gal/Gamer/Day)	(Days)	(Gal)
January	5	31	362093
February	5	28	339249
March	5	31	373386
April	5	30	366175
May	5	31	382865
June	5	30	377670
July	5	31	388612
August	5	31	391436
September	5	30	374645
October	5	31	385890
November	5	30	362242
December	5	31	358362
Estimated Peak Daily =			24453 gallons
Note: The peak is based upon 2 times the max daily average			

Food and Beverage Wastewater Flow Volume – Alternative D:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the restaurants and bars within the casino.

Design Parameters – Alternative D:

Gallons of wastewater produced from a meal = 5 gal/meal
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)
Note: Value is a combination of meal and bar flow

Estimated Employees = 960
(Based upon revenue values)

Equations – Alternative D:

Volume of Wastewater from The Gamer Visitor Meals

$$V_{GM} = \left(X \frac{LocalGamers}{Month} \right) \left(1 \frac{Meal}{Gamer} \right) \left(5 \frac{Gallons}{Meal} \right)$$

Where:

V_{GM}=Volume of wastewater from the gamer visitor meals

Volume of Wastewater from The Employee Meals

$$V_{EM} = (XEmployees) \left(X \frac{Days}{Month} \right) \left(1 \frac{Meal}{Employee} \right) \left(5 \frac{Gallons}{Meal} \right)$$

Where:

V_{EM}=Volume of wastewater from employee meals

$\left(X \frac{Days}{Month} \right)$ = Number of days in a given month

Total Monthly Wastewater Volume from The Food and Beverage

$$V_{FB} = V_{GM} + V_{EM}$$

Where:

V_{FB} = Total monthly wastewater volume from the food and beverage
V_{GM}=Volume of wastewater from the gamer visitor meals
V_{EM}=Volume of wastewater from employee meals

Table III - D.

Estimated Wastewater Flow due to the Food and Beverage Service	
Months	Total Monthly Flow from Meals
NA	Gallons
January	418356
February	377870
March	418356
April	404861
May	418356
June	404861
July	418356
August	418356
September	404861
October	418356
November	404861
December	418356
Note: All visitors are estimated to have one meal a day.	

Table IV - D

Peak Daily Flow due to Food and Beverage (gallons)	
Gamers	20271
Employees	4800
Sum =	25071

Note: The gamers peak daily flow is based upon the maximum daily average times 2, the employees peak daily is based upon each employee having a meal (average based upon 80%)

Employee Wastewater Flow Volume – Alternative D:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the employees of the casino. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to employees. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

Design Parameters – Alternative D:

Gallons per employee = 12 gallons
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Estimated Employees = 960
(Based upon revenues, provided by ESA)

Equations – Alternative D:

Volume of Wastewater from The Employees

$$V_E = (XEmployees)\left(X\frac{Days}{Month}\right)\left(12\frac{Gallons}{day}\right)$$

Where:

V_E=Volume of wastewater from an employee per month

$\left(X\frac{Days}{Month}\right)$ = Number of days in a given month

Table V - D.

Estimated Monthly Wastewater Flow from Employees			
Month	Days in a Month	Gallons per Employee	Estimated Monthly Flow
January	31	12	357120
February	28	12	322560
March	31	12	357120
April	30	12	345600
May	31	12	357120
June	30	12	345600
July	31	12	357120
August	31	12	357120
September	30	12	345600
October	31	12	357120
November	30	12	345600
December	31	12	357120
Estimated Peak Daily		14400	gallons
Based upon a use of 15 gpd			

Total Monthly Wastewater Flow – Alternative D:

Equation – Alternative D:

$$V_T = V_G + V_{FB} + V_E$$

Where:

V_T = Total monthly wastewater flow $\left({gal}/{month} \right)$

V_G = Total monthly wastewater flow expected due to the gamers $\left({gal}/{month} \right)$

V_{FB} = Total monthly wastewater volume from the food and beverage $\left({gal}/{month} \right)$

V_E = Total monthly wastewater volume from the employees $\left({gal}/{month} \right)$

Table VI - D.

Estimated Total Monthly Flow				
Months	Gamer Flow	Food and Beverage Flow	Employees Flow	Total Monthly Flow
	(Gal/Month)			
January	362093	418356	357120	780449
February	339249	377870	322560	717119
March	373386	418356	357120	791742
April	366175	404861	345600	771036
May	382865	418356	357120	801221
June	377670	404861	345600	782531
July	388612	418356	357120	806968
August	391436	418356	357120	809792
September	374645	404861	345600	779506
October	385890	418356	357120	804246
November	362242	404861	345600	767103
December	358362	418356	357120	776718

Table VII - D

Total Estimated Peak Daily Flow (Gallons)	
Gamers	24453
Food and Beverage	25071
Employees	14400
Total	63923

Annual Daily Average Wastewater Flow
25722

Wastewater Flow Calculations
Alternative E

Industrial Warehouse Use – Alternative E:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the potential industrial warehouse.

Design Parameters – Alternative E:

Total square footage of the industrial warehouse = 150,000 SF
(Value Found in Table 2-5 of the September 2008 Preliminary ESA Report)

Employees per square feet = 1 Employee/500 SF
(Value Found in Zoning Ordinance County of Sonoma under the Parking Regulation section For number of parking spaces required per square footage of warehouse stores – Note we assumed one employee per required parking space)

Gallons per employee = 12 gallons per day (average)
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Estimated cases of wine to be processed – 200,000 cases
(It is assumed that winery processing will occur in the warehouse)

Gallons of wastewater produced per gallon of wine = $\left(\frac{8 galofwastewater}{1 galofwine}\right)$

Estimated usage of water used during crush = 50%

Equations – Alternative E:

Number of Warehouse Employees

$$300 Employees = (150{,}000 SF)\left(\frac{1 Employee}{500 SF}\right)$$

Wastewater Produced by Employees per Month

$$X\left(\frac{gallons}{day}\right) = (300 Employees)\cdot\left(12\frac{gallons}{day}\right)\cdot\left(X\frac{days}{month}\right)$$

Yearly Winery Wastewater Flow

$$3{,}840{,}000\left(\frac{gallons}{Year}\right)=\left(200{,}000Cases\right)\cdot\left(2.4\frac{gallons}{case}\right)\cdot\left(8\frac{gallonswaste}{gallonwine}\right)$$

Winery Wastewater Flow per Month

$$X\left(\frac{gallons}{month}\right)=\left(3840000\frac{gallons}{year}\right)\cdot\left(MonthlyFactor\right)$$

Where:

Monthly Factor = Estimated percentage of winery waste per month

Table I – E. Winery Wastewater per Month

Months	Percentage of Winery Waste per Month	Yearly Winery Wastewater	Winery Waste per Month
January	5.6%	3840000	215040
February	5.6%	3840000	215040
March	5.6%	3840000	215040
April	5.6%	3840000	215040
May	5.6%	3840000	215040
June	5.6%	3840000	215040
July	5.6%	3840000	215040
August	12.5%	3840000	480000
September	25.0%	3840000	960000
October	12.5%	3840000	480000
November	5.6%	3840000	215040
December	5.6%	3840000	215040

Table II – E.

Estimated Wastewater Produced by the Industrial Warehouse			
Months	Winery Waste per Month	Employee Waste per Month	Total Monthly Waste
January	215040	111600	326640
February	215040	100800	315840
March	215040	111600	326640
April	215040	108000	323040
May	215040	111600	326640
June	215040	108000	323040
July	215040	111600	326640
August	480000	111600	591600
September	960000	108000	1068000
October	480000	111600	591600
November	215040	108000	323040
December	215040	111600	326640

Commercial Office and Retail Use – Alternative E:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the potential commercial office.

Design Parameters – Alternative E:

Total square footage of the commercial offices = 125,000 SF
(Value Found in Table 2-5 of the September 2008 Preliminary ESA Report)

Employees per square feet of commercial office = 1 Employee/250 SF
(Value Found in Zoning Ordinance County of Sonoma under the Parking Regulation section For number of parking spaces required per square footage of commercial offices – Note we assumed one employee per required parking space)

Total square footage of the retail space = 75,000 SF
(Value Found in Table 2-5 of the September 2008 Preliminary ESA Report)

Employees per square feet of retail space = 1 Employee/200 SF
(Value Found in Zoning Ordinance County of Sonoma under the Parking Regulation section For number of parking spaces required per square footage of shopping center – Note we assumed one employee per required parking space)

Gallons per employee = 12 gallons per day (average)
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Equations – Alternative E:

Number of Commercial Office Employees

$$500 Employees = (125{,}000 SF)\left(\frac{1 Employee}{250 SF}\right)$$

Wastewater Produced by Commercial Office Employees per Month

$$X\left(\frac{gallons}{month}\right) = (500 Employees)\cdot\left(12\frac{gallons}{day}\right)\cdot\left(X\frac{days}{month}\right)$$

Number of Retail Employees

$$375 Employees = (75{,}000 SF)\left(\frac{1 Employee}{200 SF}\right)$$

Wastewater Produced by Retail Employees per Month

$$X\left(\frac{gallons}{month}\right) = (375 Employees)\cdot\left(12\frac{gallons}{day}\right)\cdot\left(X\frac{days}{month}\right)$$

Table III – E.

Estimated Wastewater Flow from the Commercial Offices and Retail Space			
Months	Commercial Flow per Month	Retail Space Flow per Month	Total Monthly Flow
January	186000	139500	325500
February	168000	126000	294000
March	186000	139500	325500
April	180000	135000	315000
May	186000	139500	325500
June	180000	135000	315000
July	186000	139500	325500
August	186000	139500	325500
September	180000	135000	315000
October	186000	139500	325500
November	180000	135000	315000
December	186000	139500	325500

Restaurant Use – Alternative E:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the potential restaurant use.

Design Parameters – Alternative E:

Total square footage of seating area of the fast food restaurants = 4,000 SF
(Value is a portion of the value found in Table 2-5 of the September 2008 Preliminary ESA Report – Note: it was assumed that 3000 SF of the total 7000 SF would be working space for employees)

Wastewater flow per square foot of fast food restaurant = 1 Gallon/SF/Day
(Assumed)

Total square footage of the seating area of the sit down restaurants = 5,000 SF
(Value is a portion of the value found in Table 2-5 of the September 2008 Preliminary ESA Report – Note: it was assumed that 2000 SF of the total 7000 SF would be working space for employees)

Seats per square feet of sit down restaurant space = 1 seat/60 SF
(Value Found in Zoning Ordinance County of Sonoma under the Parking Regulation section For number of parking spaces required per square footage of restaurants – Note we assumed one seat per required parking space)

Meals per seat = 5 meals per seat
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Gallons per meal = 5 gallons per meal
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Gallons of restroom use per meal = 2.5 gallons per meal
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Employees in the sit down restaurants = 20 Employees
(Assumed)

Gallons per employee = 12 gallons per meal
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Equations – Alternative E:

Wastewater Flow Produced by the Fast Food Restaurants per Month

$$X\left(\frac{gallons}{Month}\right)=(4000SF)\cdot\left(1\frac{gallon}{SF}\right)\cdot\left(X\frac{days}{month}\right)$$

Wastewater Produced by the Sit Down Restaurants Meals per Month

$$X\left(\frac{gallons}{month}\right)=(5000SF)\cdot\left(\frac{1Seat}{60SF}\right)\left(5\frac{meals}{seat}\right)\left(5\frac{gal}{meal}+2.5\frac{gal}{meal}\right)\left(X\frac{days}{month}\right)$$

Where:

5 Gallons/meal = Gallons produced by making the meal
2.5 gallons/meal = Gallons produced by restroom use per meal

Wastewater Produced by the Employees of the Sit Down Restaurant per Month

$$\left(X\frac{gal}{month}\right)=(20Employees)\left(12\frac{gal}{day/employee}\right)\left(X\frac{days}{month}\right)$$

Table IV – E.

Estimated Wastewater Flow from the Restaurants				
Month	Fast Food Resaurant Flow	Sit Down Restaurant Flow (Meals)	Sit Down Restaurant Flow (Employees)	Total Monthly Flow from Restaurants
January	124000	96875	7440	228315
February	112000	87500	6720	206220
March	124000	96875	7440	228315
April	120000	93750	7200	220950
May	124000	96875	7440	228315
June	120000	93750	7200	220950
July	124000	96875	7440	228315
August	124000	96875	7440	228315
September	120000	93750	7200	220950
October	124000	96875	7440	228315
November	120000	93750	7200	220950
December	124000	96875	7440	228315

Total Monthly Wastewater Flow – Alternative E:

Equation – Alternative E:

$$V_T = V_W + V_{OandR} + V_R$$

Where:

V_T = Total monthly wastewater flow $\left({gal}/{month} \right)$

V_W = Total monthly wastewater flow expected due to the warehouse $\left({gal}/{month} \right)$

V_{OandR} = Total monthly wastewater volume from the office and retail space $\left({gal}/{month} \right)$

V_R = Total monthly wastewater volume from the restaurants $\left({gal}/{month} \right)$

Table V - E.

Estimated Total Monthly Flow				
Months	Warehouse Flow	Office and Retail Space Flow	Restaurant Flow	Total Monthly Flow
	(Gallons/Month)			
January	326640	325500	228315	880455
February	315840	294000	206220	816060
March	326640	325500	228315	880455
April	323040	315000	220950	858990
May	326640	325500	228315	880455
June	323040	315000	220950	858990
July	326640	325500	228315	880455
August	591600	325500	228315	1145415
September	1068000	315000	220950	1603950
October	591600	325500	228315	1145415
November	323040	315000	220950	858990
December	326640	325500	228315	880455

Annual Daily Average Wastewater Flow
32028

Estimated Peak Daily Wastewater Flow – Alternative E

Industrial Warehouse:

Given:

- 15 gallons/employee
- 200,000 Cases of Wine
- 2.4 gallons of water per case
- 1.5 safety factor
- 60 day harvest period

$$DailyPeakWineryWaste\left(\frac{gal}{day}\right) = \frac{(200000Cases)\left(2.4\frac{gal}{Case}\right)(1.5)}{60} = 12000\left(\frac{gal}{day}\right)$$

$$DailyPeakWarehouseEmployeeFlow\left(\frac{gal}{day}\right) = \#Employees\left(15\frac{gal}{day}\right) = 4500\left(\frac{gal}{day}\right)$$

$$TotalDailyPeakWarehouseFlow\left(\frac{gal}{day}\right) = 12000\left(\frac{gal}{day}\right) + 4500\left(\frac{gal}{day}\right) = 16{,}500\left(\frac{gal}{day}\right)$$

Commercial Office:

Given:

- 15 gallons/employee

$$DailyPeakOfficeFlow\left(\frac{gal}{day}\right) = \#Employees\left(15\frac{gal}{day}\right) = 7{,}500\left(\frac{gal}{day}\right)$$

Retail Use:

Given:

- 15 gallons/employee

$$DailyPeak\,\mathrm{Re}\,tailFlow\left(\frac{gal}{day}\right) = \#Employees\left(15\frac{gal}{day}\right) = 5626\left(\frac{gal}{day}\right)$$

Restaurant Flow:

Given:

- 4000 gal/day = Estimated Flow for Fast Food Meals
- 2075 gal/day = Estimated Flow for Sit Down Restaurant Meals
- 15 gallons/employee
- Peak Factor of 2

$$DailyPeakEmployeeFlow\left(\frac{gal}{day}\right) = \#\,Employees\left(15\frac{gal}{day}\right) = 150\left(\frac{gal}{day}\right)$$

$$DailyPeak\,\mathrm{Re}\,staurantFlow\left(\frac{gal}{day}\right) = \left(150\left(\frac{gal}{day}\right) + 2075\left(\frac{gal}{day}\right) + 4000\left(\frac{gal}{day}\right)\right) * 2 = 12500\left(\frac{gal}{day}\right)$$

Table VI – E - Total Peak Daily Flow:

Warehouse Flow	Office and Retail Space Flow	Restaurant Flow	Peak Daily Flow
16500	13126	12500	42126

Summary of Wastewater Flow Volumes
Alternative A – E

Table I – Monthly Wastewater Flow Volumes

Wastewater Flow Volumes (gallons)					
Months	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
January	2607828	1968527	1751444	780449	880455
February	2470975	1850063	1651632	717119	816060
March	2781877	2073998	1854733	791742	880455
April	2739577	2036601	1823477	771036	858990
May	2927954	2162518	1941423	801221	880455
June	2911727	2141062	1925718	782531	858990
July	3016533	2216195	1993990	806968	880455
August	3060045	2242562	2019813	809792	1145415
September	2866424	2113572	1898812	779506	1603950
October	2974575	2190769	1969090	804246	1145415
November	2680683	2000865	1788500	767103	858990
December	2550330	1933684	1717321	776718	880455

Table II – Annual Wastewater Flow Volumes

	Wastewater Annual Flow Volumes (gallons)				
	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Total Annual Wastewater Flow (millions of gallons)	33588530	24930416	22335953	9388428	11690085

Table III – Peak Daily and Average Daily Wastewater Flows

	Estimated Peak Daily Flow	Estimated Average Daily Flow
Alternative A	171496	92023
Alternative B	126673	68303
Alternative C	114437	61194
Alternative D	63923	25722
Alternative E	42126	32028

Attachment 2

Water Balance Calculations

CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

March, 2009
Revised June, 2009

Wastewater Pond Calculations – Based Upon Alternative A (No Recycling Reduction)

Water Balance Determination:

Evaporation Design Parameters:

Pond evaporation = 70% (Pan Evaporation)

Table I. Pan Evaporation Rates and Actual Evaporation Rates (gallons)
(Data was collected from the Warm Springs Dam Weather Station, NCDC #9440, values are based upon averages recorded from the years of 1973 to 1998)

Month	Monthly Pan Evaporation (Inches)	Pond Evaporation (Inches)
January	1.23	0.861
February	2.46	1.722
March	3.63	2.541
April	5.65	3.955
May	8.06	5.642
June	9.2	6.44
July	9.96	6.972
August	8.64	6.048
September	6.79	4.753
October	4.74	3.318
November	2.15	1.505
December	1.44	1.008
Total Yearly Average	63.95	44.765

Table II. Monthly Evaporation Volume (gallons)
(To be conservative the monthly evaporation volume values were calculated based upon the lowest pond volume expected in a month)

Month	Pond Water Depth (ft)	Pond Area (SF)	Evaporation (ft)	Evaporation Volume (gal)
January	15.20	121941	0.07	65444
February	19.00	138384	0.14	148539
March	22.00	152100	0.21	240910
April	24.80	165486	0.33	407970
May	25.60	169415	0.47	595805
June	21.00	147456	0.54	591928
July	15.50	123201	0.58	535417
August	9.10	97719	0.50	368392
September	1.00	69696	0.40	206489
October	1.00	69696	0.28	144147
November	6.40	87853	0.13	82416
December	11.00	104976	0.08	65959

Precipitation Design Parameters:

Top area of the pond (Collection Area) = 202,500 SF
(Based upon a freeboard width of 450' and length of 450')

Table III. Monthly Average Precipitation (Inches)
(Data was collected from the Cloverdale Weather Station, NCDC #1838, values are based upon averages recorded from the years of 1950 to 2008)

Month	Average Monthly Precipitation (Inches)
January	9.29
February	7.73
March	5.53
April	2.84
May	1.07
June	0.21
July	0.04
August	0.13
September	0.54
October	2.35
November	5.77
December	8.29
Total Yearly Average	43.79

Table IV. Monthly Precipitation Volume (gallons)

Month	Monthly Precipitation Volume (gal)
January	1172630
February	975719
March	698024
April	358479
May	135061
June	26507
July	5049
August	16409
September	68162
October	296629
November	728318
December	1046405

Wastewater Design Parameters:

Table V. Monthly Wastewater Volume (gallons)
(The monthly wastewater volumes were taken from Table X-A in the Wastewater Volume Calculations – Alternative A section of this report)

Month	Monthly Wastewater Volume (gal)
January	2607828
February	2470975
March	2781877
April	2739577
May	2927954
June	2911727
July	3016533
August	3060045
September	2866424
October	2974575
November	2680683
December	2550330

Pond Volume Calculations:

Minimum pond storage for fire suppression = 500,000 gallons

Equation 1:

Sum of Yearly Precipitation = 5,527,393 gallons

Sum of Yearly Evaporation = 3,453,415 gallons

Sum of Yearly Wastewater Volume = 33,588,528

Total Volume of Water to be Discharged =

Sum of Yearly Precipitation = 5,527,393 gallons

+ Sum of Yearly Wastewater Volume = 33,588,528

- Sum of Yearly Evaporation = 3,453,415 gallons

= 35,662,506 gallons

Daily Discharge = (Total Volume of Water to be Discharged/138 Days) = 258,424 gallons

(Assumed water could only be discharged from May 16th to September 30th)

Table VI. Required Monthly Pond Volume (Million Gallons)

Months	Monthly Wastewater Flow	Monthly Evaporation	Monthly Precipitation	Monthly Discharge Volume to Land	Pond Volume
	MG				
January	2.61	0.07	1.17	0.00	14.20
February	2.47	0.15	0.98	0.00	17.50
March	2.78	0.24	0.70	0.00	20.74
April	2.74	0.41	0.36	0.00	23.43
May	2.93	0.60	0.14	4.13	21.76
June	2.91	0.59	0.03	7.75	16.35
July	3.02	0.54	0.01	8.01	10.83
August	3.06	0.37	0.02	8.01	5.52
September	2.87	0.21	0.07	7.75	0.50
October	2.97	0.14	0.30	0.00	3.63
November	2.68	0.08	0.73	0.00	6.95
December	2.55	0.07	1.05	0.00	10.48

The maximum monthly pond storage volume required occurs in April at 23.43 MG
(This includes the 500,000 gallons required for fire suppression)

Table VII. Pond Dimensions

Freeboard Width (ft)	Freeboard Length (ft)	Full Width (ft)	Full Length (ft)	Bottom Width (ft)	Bottom Length (ft)	Full Water Depth (ft)	Side Slope	Pond Volume (gal)
450	450	420	420	258	258	27	3 :1	23,651,114

Note: The pond volume of 23.65 MG exceeds the required pond storage volume of 23.43 MG. This is due to rounding the water depth to the nearest half foot that is adequate to contain the required pond storage volume.

Wastewater Pond Calculations – Based Upon Alternative A (With Recycling Reduction)

Water Balance Determination:

Evaporation Design Parameters:

Pond evaporation = 70% (Pan Evaporation)

Table VIII. Pan Evaporation Rates and Actual Evaporation Rates (gallons)
(Data was collected from the Warm Springs Dam Weather Station, NCDC #9440, values are based upon averages recorded from the years of 1973 to 1998)

Month	Monthly Pan Evaporation (Inches)	Pond Evaporation (Inches)
January	1.23	0.861
February	2.46	1.722
March	3.63	2.541
April	5.65	3.955
May	8.06	5.642
June	9.2	6.44
July	9.96	6.972
August	8.64	6.048
September	6.79	4.753
October	4.74	3.318
November	2.15	1.505
December	1.44	1.008
Total Yearly Average	63.95	44.765

Table IX. Monthly Evaporation Volume (gallons)
(To be conservative the monthly evaporation volume values were calculated based upon the lowest volume expected in a month)

Month	Pond Water Depth (ft)	Pond Area (SF)	Evaporation (ft)	Evaporation Volume (gal)
January	9.40	135719	0.07	72839
February	12.20	148379	0.14	159267
March	14.50	159201	0.21	252157
April	16.50	168921	0.33	416438
May	16.90	170900	0.47	601028
June	13.50	154449	0.54	619999
July	9.60	136604	0.58	593665
August	5.40	118611	0.50	447155
September	0.70	99982	0.40	296218
October	0.70	99982	0.28	206786
November	3.60	111289	0.13	104402
December	6.50	123201	0.08	77410

Precipitation Design Parameters:

Top area of the pond (Collection Area)= 202,500 SF
(Based upon a freeboard width of 450' and length of 450')

Table X. Monthly Average Precipitation (Inches)
(Data was collected from the Cloverdale Weather Station, NCDC #1838, values are based upon averages recorded from the years of 1950 to 2008)

Month	Average Monthly Precipitation (Inches)
January	9.29
February	7.73
March	5.53
April	2.84
May	1.07
June	0.21
July	0.04
August	0.13
September	0.54
October	2.35
November	5.77
December	8.29
Total Yearly Average	43.79

Table XI. Monthly Precipitation Volume (gallons)

Month	Monthly Precipitation Volume (gal)
January	1172630
February	975719
March	698024
April	358479
May	135061
June	26507
July	5049
August	16409
September	68162
October	296629
November	728318
December	1046405

Wastewater Design Parameters:

Table XII. Monthly Wastewater Volume (gallons)
(The monthly wastewater volumes were taken from Table X-A in the Wastewater Volume Calculations – Alternative A section of this report and reduced by the volume of water associated with toilet flushing)

Month	Monthly Wastewater Volume (gal)
January	1874892
February	1781742
March	2010874
April	1982337
May	2125001
June	2116700
July	2194206
August	2228202
September	2081341
October	2161425
November	1936371
December	1829970

Pond Volume Calculations:

Minimum pond storage for fire suppression = 500,000 gallons

Equation 1:

Sum of Yearly Precipitation = 5,527,393 gallons

Sum of Yearly Evaporation = 3,847,364 gallons

Sum of Yearly Wastewater Volume = 24,323,061

Total Volume of Water to be Discharged =

Sum of Yearly Precipitation = 5,527,393 gallons

+ Sum of Yearly Wastewater Volume = 24,323,061

- Sum of Yearly Evaporation = 3,847,364 gallons

= 26,003,090 gallons

Daily Discharge = (Total Volume of Water to be Discharged/138 Days) = 188,428 gallons

(Assumed water could only be discharged from May 16th to September 30th)

Table XIII. Required Monthly Pond Volume (Million Gallons)

Months	Monthly Wastewater Flow	Monthly Evaporation	Monthly Precipitation	Monthly Discharge Volume to Land	Pond Volume
	MG				
January	1.87	0.07	1.17	0.00	11.09
February	1.78	0.16	0.98	0.00	13.68
March	2.01	0.25	0.70	0.00	16.14
April	1.98	0.42	0.36	0.00	18.06
May	2.13	0.60	0.14	3.01	16.71
June	2.12	0.62	0.03	5.65	12.58
July	2.19	0.59	0.01	5.84	8.34
August	2.23	0.45	0.02	5.84	4.30
September	2.08	0.30	0.07	5.65	0.50
October	2.16	0.21	0.30	0.00	2.75
November	1.94	0.10	0.73	0.00	5.31
December	1.83	0.08	1.05	0.00	8.11

The maximum monthly pond storage volume required occurs in April at 18.06 MG
(This includes the 500,000 gallons required for fire suppression)

Table XIV. Pond Dimensions

Freeboard Width (ft)	Freeboard Length (ft)	Full Width (ft)	Full Length (ft)	Bottom Width (ft)	Bottom Length (ft)	Full Water Depth (ft)	Side Slope	Pond Volume (gal)
450	450	420	420	312	312	18	3 :1	18,166,701

Note: The pond volume of 18.17 MG exceeds the required pond storage volume of 18.06 MG. This is due to rounding the water depth to the nearest half foot that is adequate to contain the required pond storage volume.

Dispersal Area Sizing – Based Upon Alternative A (No Recycling Credit)

Determining the Allowable Landscape Irrigation Discharge Volume:
We are proposing a landscape irrigation area of 7.6 acres. The following calculations and table calculate the maximum volume of water allowed to be dispersed to the 7.6 acres according to Metcalf and Eddy's method found in "Wastewater Engineering, Treatment and Reuse", published in 2003. The water to be dispersed to the landscape area is only to be taken up by evapotranspiration. Therefore percolation absorption was not taken into consideration when performing the following calculations.

Design Parameters:

Landscape Irrigation Dispersal Area = 7.6 acres

Net Evapotranspiration = Crop Evapotranspiration – Precipitation (in)
(If less than zero, then use zero)

Maximum Volume of Landscape Irrigation Discharge per Month (gal)
=Net Evapotranspiration per Month X 7.6 acres X (1/12) X 7.48 X 43560

Table I. Monthly Allowable Landscape Irrigation Discharge Volume (gal)
(Precipitation data was collected from the Cloverdale Weather Station, NCDC #1838, values are based upon averages recorded from the years of 1950 to 2008) (Crop Evapotranspiration data was determined by Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo. The crop evapotranspiration data refers to a Zone 8, Wet Year, Misc. Deciduous)

Month	Crop Evapotranspiration (Inches)	Precipitation (Inches)	Net Evapotranspiration (Inches)	Maximum Allowable Landscape Discharge Volume (gal)
January	0.42	9.29	0	0
February	0.89	7.73	0	0
March	2.3	5.53	0	0
April	3.4	2.84	0.56	0
May	3.79	1.07	2.72	292750
June	4.41	0.21	4.20	875828
July	5.41	0.04	5.37	1119808
August	5.02	0.13	4.89	1019714
September	3.28	0.54	2.74	571373
October	2.99	2.35	0.64	0
November	0.95	5.77	0	0
December	0.96	8.29	0	0

Note: It is assumed landscape irrigation water could only be discharged from May 16th to September 30th

Determining the Maximum Allowable Discharge:
We are proposing a dispersal area of 4 acres. The following calculations and tables calculate the maximum volume of water allowed to be dispersed to 4 acres according to Metcalf and Eddy's method found in "Wastewater Engineering, Treatment and Reuse", published in 2003. The 4 acre area was determined to be adequate for dispersal.

Design Parameters:

Dispersal Area = 4 acres

Saturated hydraulic conductivity (Permeability) = 20 inch/hour
(Value found in the Soil Survey of Sonoma County California, under the Cortina soil series located in the dispersal area)

Maximum allowable percolation rate = 10% of saturated hydraulic conductivity
= 2 inch/hour

Net Evapotranspiration = Crop Evapotranspiration – Precipitation (in)
(If less than zero, then use zero)

Maximum Depth of Discharge per Month = (in)
Net Evapotranspiration + Maximum Allowable Percolation Rate

Maximum Volume of Discharge per Month (gal)
=Maximum Depth of Discharge per Month X 4 acres X (1/12) X 7.48 X 43560

Table II. Monthly Maximum Depth of Percolation (Inches)
(Values calculated based upon hours in a month multiplied by the maximum allowable percolation rate)

Month	Percolation (Inches)
January	1488
February	1344
March	1488
April	1440
May	1488
June	1440
July	1488
August	1488
September	1440
October	1488
November	1440
December	1488

Table III. Monthly Average Precipitation (Inches)
(Data was collected from the Cloverdale Weather Station, NCDC #1838, values are based upon averages recorded from the years of 1950 to 2008)

Month	Average Monthly Precipitation (Inches)
January	9.29
February	7.73
March	5.53
April	2.84
May	1.07
June	0.21
July	0.04
August	0.13
September	0.54
October	2.35
November	5.77
December	8.29
Total Yearly Average	43.79

Table IV. Monthly Crop Evapotranspiration (Inches)
(Data was determined by Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo. The below data refers to a Zone 8, Wet Year, Pasture and Misc. Grasses)

Month	Crop Evapotranspiration (Inches)
January	0.47
February	0.98
March	2.73
April	4.11
May	4.03
June	4.71
July	5.92
August	5.65
September	3.78
October	3.23
November	1.02
December	0.98

Table V. Monthly Allowable Discharge Volume (gal)

Alternative A	Allowable Discharge				
Month	Net Evapotranspiration (Inches)	Percolation (Inches)	Maximum Depth of Discharge per Month (Inches)	Maximum Allowable Discharge Volume per 4 Acres (gal)	Monthly Discharge Less the Landscape Irrigation (gal)
January	0	1488	NA	0	0
February	0	1344	NA	0	0
March	0	1488	NA	0	0
April	1.27	1440	NA	0	0
May	2.96	1488	745.48	80966285	3842034
June	4.5	1440	1444.5	156886567	6876891
July	5.88	1,488	1493.88	162249709	6891334
August	5.52	1488	1493.52	162210610	6991429
September	3.24	1440	1443.24	156749719	7181345
October	0.88	1488	NA	0	0
November	0	1440	NA	0	0
December	0	1488	NA	0	0
Note: The month of May's Net Evaporation only takes into account 1/2 the precipitation and evapotranspiration					

Determining the Applied Discharge Percolation Rate:

The following calculations and table calculate the applied percolation and soil application rates when dispersing the discharge volumes found in Table IV. "Required Monthly Pond Volume" in the Wastewater Pond Sizing Calculations section over the 4 acre area.

Design Parameters:

Dispersal Area = 4 acres

Precipitation Values found in Table II above

Crop Evapotranspiration values found in Table III above

Net Evapotranspiration = Crop Evapotranspiration - Precipitation
(If less than zero, then use zero) (Values found in Table IV above)

Depth of Discharge per Month = (in)

$$12\,{}^{inch}\!/_{ft}\left(\frac{MonthlyDischarge\,Volume - LandscapeIrrigationDischarge}{(4acre(43560\left({}^{sf}\!/_{acre}\right))(7.48\,{}^{gal}\!/_{ft^3})}\right)$$

Applied Percolation Rate per Month (in)
= Depth of Discharge – Net Evapotranspiration

Applied Percolation Rate per Hour
= Applied Percolation Rate per Month/Allowable Discharge Hours

Table VI. Applied Percolation Rate (Inch/Hour)

Alternative A	Minimum Percolation Rate				
Month	Amount Required to be Discharged (gal)	Applied Discharge Height (Inches)	Applied Percolation per Month (inches)	Applied Percolation Rate (inches/hour)	Applied Soil Application Rate (gal/sf/day)
January	0	0.00	NA	NA	NA
February	0	0.00	NA	NA	NA
March	0	0.00	NA	NA	NA
April	0	0.00	NA	NA	NA
May	3842034	35.37	32.41	0.087	1.26
June	6876891	63.32	58.82	0.082	1.22
July	6891334	63.45	57.57	0.077	1.16
August	6991429	64.37	58.85	0.079	1.18
September	7181345	66.12	62.88	0.087	1.31
October	0	0.00	NA	NA	NA
November	0	0.00	NA	NA	NA
December	0	0.00	NA	NA	NA

The table above shows an approximate Applied Percolation Rate of 0.09 inch/hour, which corresponds to the Maximum Allowable Percolation Rate from the Wastewater Engineering Method. This predicts the need for at least 0.9 inch/hour percolation rate in the spray field soil to accept the projected discharge.

Dispersal Area Sizing – Based Upon Alternative A (With Recycling Credit)

Determining the Allowable Landscape Irrigation Discharge Volume:
We are proposing a landscape irrigation area of 7.6 acres. The following calculations and table calculate the maximum volume of water allowed to be dispersed to the 7.6 acres according to Metcalf and Eddy's method found in "Wastewater Engineering, Treatment and Reuse", published in 2003. The water to be dispersed to the landscape area is only to be taken up by evapotranspiration. Therefore percolation absorption was not taken into consideration when performing the following calculations.

Design Parameters:

Landscape Irrigation Dispersal Area = 7.6 acres

Net Evapotranspiration = Crop Evapotranspiration – Precipitation (in)
(If less than zero, then use zero)

Maximum Volume of Landscape Irrigation Discharge per Month (gal)
=Net Evapotranspiration per Month X 7.6 acres X (1/12) X 7.48 X 43560

Table VII. Monthly Allowable Landscape Irrigation Discharge Volume (gal)
(Precipitation data was collected from the Cloverdale Weather Station, NCDC #1838, values are based upon averages recorded from the years of 1950 to 2008) (Crop Evapotranspiration data was determined by Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo. The crop evapotranspiration data refers to a Zone 8, Wet Year, Misc. Deciduous)

Month	Crop Evapotranspiration (Inches)	Precipitation (Inches)	Net Evapotranspiration (Inches)	Maximum Allowable Landscape Discharge Volume (gal)
January	0.42	9.29	0	0
February	0.89	7.73	0	0
March	2.3	5.53	0	0
April	3.4	2.84	0.56	0
May	3.79	1.07	2.72	292750
June	4.41	0.21	4.20	875828
July	5.41	0.04	5.37	1119808
August	5.02	0.13	4.89	1019714
September	3.28	0.54	2.74	571373
October	2.99	2.35	0.64	0
November	0.95	5.77	0	0
December	0.96	8.29	0	0

Note: It is assumed landscape irrigation water could only be discharged from May 16th to September 30th

Determining the Maximum Allowable Discharge:
We are proposing a dispersal area of 4 acres. The following calculations and tables calculate the maximum volume of water allowed to be dispersed to 4 acres according to Metcalf and Eddy's method found in "Wastewater Engineering, Treatment and Reuse", published in 2003. The 4 acre area was determined to be adequate for dispersal.

Design Parameters:

Dispersal Area = 4 acres

Saturated hydraulic conductivity (Permeability) = 20 inch/hour
(Value found in the Soil Survey of Sonoma County California, under the Cortina soil series located in the dispersal area)

Maximum allowable percolation rate = 10% of saturated hydraulic conductivity
= 2 inch/hour

Net Evapotranspiration = Crop Evapotranspiration – Precipitation (in)
(If less than zero, then use zero)

Maximum Depth of Discharge per Month = (in)
Net Evapotranspiration + Maximum Allowable Percolation Rate

Maximum Volume of Discharge per Month (gal)
=Maximum Depth of Discharge per Month X 4 acres X (1/12) X 7.48 X 43560

Table VIII. Monthly Maximum Depth of Percolation (Inches)
(Values calculated based upon hours in a month multiplied by the maximum allowable percolation rate)

Month	Percolation (Inches)
January	1488
February	1344
March	1488
April	1440
May	1488
June	1440
July	1488
August	1488
September	1440
October	1488
November	1440
December	1488

Table IX. Monthly Average Precipitation (Inches)
(Data was collected from the Cloverdale Weather Station, NCDC #1838, values are based upon averages recorded from the years of 1950 to 2008)

Month	Average Monthly Precipitation (Inches)
January	9.29
February	7.73
March	5.53
April	2.84
May	1.07
June	0.21
July	0.04
August	0.13
September	0.54
October	2.35
November	5.77
December	8.29
Total Yearly Average	43.79

Table X. Monthly Crop Evapotranspiration (Inches)
(Data was determined by Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo. The below data refers to a Zone 8, Wet Year, Pasture and Misc. Grasses)

Month	Crop Evapotranspiration (Inches)
January	0.47
February	0.98
March	2.73
April	4.11
May	4.03
June	4.71
July	5.92
August	5.65
September	3.78
October	3.23
November	1.02
December	0.98

Table XI. Monthly Allowable Discharge Volume (gal)

Alternative A	Allowable Discharge				
Month	Net Evapotranspiration (Inches)	Percolation (Inches)	Maximum Depth of Discharge per Month (Inches)	Maximum Allowable Discharge Volume per 4 Acres (gal)	Monthly Discharge Less the Landscape Irrigation (gal)
January	0	1488	NA	0	0
February	0	1344	NA	0	0
March	0	1488	NA	0	0
April	1.27	1440	NA	0	0
May	2.96	1488	745.48	80966285	2722101
June	4.5	1440	1444.5	156886567	4777018
July	5.88	1,488	1493.88	162249709	4721465
August	5.52	1488	1493.52	162210610	4821560
September	3.24	1440	1443.24	156749719	5081472
October	0.88	1488	NA	0	0
November	0	1440	NA	0	0
December	0	1488	NA	0	0
Note: The month of May's Net Evaporation only takes into account 1/2 the precipitation and evapotranspiration					

Determining the Applied Discharge Percolation Rate:

The following calculations and table calculate the applied percolation and soil application rates when dispersing the discharge volumes found in Table XIII. "Required Monthly Pond Volume" in the Wastewater Pond Sizing Calculations section over the 4 acre area.

Design Parameters:

Dispersal Area = 4 acres

Precipitation Values found in Table IX above

Crop Evapotranspiration values found in Table X above

Net Evapotranspiration = Crop Evapotranspiration – Precipitation (in)
(If less than zero, then use zero) (Values found in Table IX above)

Depth of Discharge per Month = (in)

$$12\,{}^{inch}\!/_{ft}\left(\frac{MonthlyDischarge\,Volume - LandscapeIrrigationDischarge}{(4acre(43560\left({}^{sf}\!/_{acre}\right))(7.48\,{}^{gal}\!/_{ft^3})}\right)$$

Applied Percolation Rate per Month (in)
= Depth of Discharge – Net Evapotranspiration

Applied Percolation Rate per Hour
= Applied Percolation Rate per Month/Allowable Discharge Hours

Table XII. Applied Percolation Rate (Inch/Hour)

Alternative A	Minimum Percolation Rate				
Month	Amount Required to be Discharged (gal)	Applied Discharge Height (Inches)	Applied Percolation per Month (inches)	Applied Percolation Rate (inches/hour)	Applied Soil Application Rate (gal/sf/day)
January	0	0.00	NA	NA	NA
February	0	0.00	NA	NA	NA
March	0	0.00	NA	NA	NA
April	0	0.00	NA	NA	NA
May	2722101	25.06	22.10	0.059	0.86
June	4777018	43.98	39.48	0.055	0.82
July	4721465	43.47	37.59	0.051	0.76
August	4821560	44.39	38.87	0.052	0.78
September	5081472	46.79	43.55	0.060	0.90
October	0	0.00	NA	NA	NA
November	0	0.00	NA	NA	NA
December	0	0.00	NA	NA	NA

The table above shows an approximate Applied Percolation Rate of 0.06 inch/hour, which corresponds to the Maximum Allowable Percolation Rate from the Wastewater Engineering Method. This predicts the need for at least 0.6 inch/hour percolation rate in the spray field soil to accept the projected discharge.

Appendix K

Phase II Environmental Investigations Reports

ESA

PHASE II ENVIRONMENTAL INVESTIGATION REPORT

Sirrah Property, Cloverdale, California

Prepared for
Perry, Johnson, Anderson, Miller
and Moskowitz LLP

March 2009

PHASE II ENVIRONMENTAL INVESTIGATION REPORT

Sirrah Property, Cloverdale, California

Prepared for
Perry, Johnson, Anderson, Miller and Moskowitz LLP

March 2009

225 Bush Street
Suite 1700
San Francisco, CA 94104
415.896.5900
www.esassoc.com

Los Angeles

Oakland

Olympia

Petaluma

Portland

Sacramento

San Diego

Seattle

Tampa

Woodland Hills

207737

ESA

TABLE OF CONTENTS

Phase II Environmental Investigation Report
Sirrah Property, Cloverdale, California

		Page
1.	Introduction	1
2.	Site Overview	1
3.	Field Investigation and Sample Analysis	4
4.	Screening Criteria for Analytical Results	6
5.	Investigation Results and Findings	7
6.	Conclusions	14
7.	Limitations and Exceptions	14
8.	Signature of Environmental Professionals	15
9.	References Cited	16

List of Figures

1.	Site Vicinity Map	2
2.	Site Map and Sample Locations	5

List of Tables

1.	Background Metal Concentrations in Soil--Summary of Previous Studies	8
2.	CAM 17 Metals in Surface Soil	9
3.	Organochlorine Pesticides and Nitrate in Surface Soil	10
4.	CAM 17 Metals in Ground Water and Surface Water	12
5.	TPH-Gas, Diesel and Motor Oil (8015M), VOCs, and Pesticides in Ground Water	13

Appendices

A.	Analytical Laboratory Reports	A-1

PHASE II ENVIRONMENTAL INVESTIGATION REPORT

1. Introduction

Perry, Johnson, Anderson, Miller and Moskowitz LLP (PJAMM), retained Environmental Science Associates (ESA) to complete a Phase II environmental investigation report for a 37-acre parcel of land located south-southeast of downtown Cloverdale, California (herein referred to as the "Sirrah Property"; **Figure 1**). This investigation and resulting report is based on ESA's proposal for Phase II services dated September 4, 2008. The objective of this Phase II investigation was to evaluate the information and data gathered, primarily by Weiss, complete a Phase II report summarizing the data collected and findings, and from the findings, develop conclusions with regards to soil and groundwater contamination as it pertains to future site development.

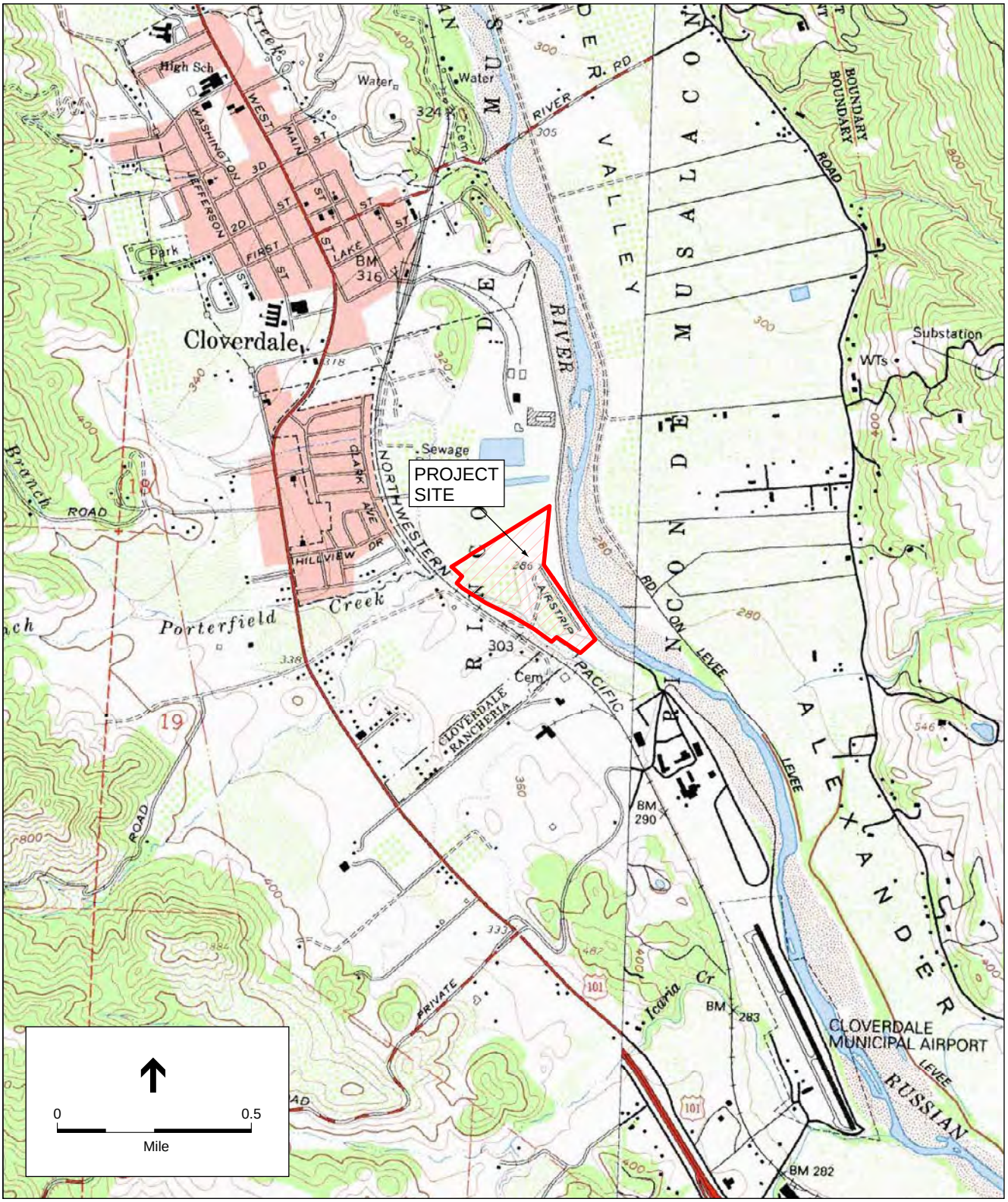
This report presents a summary of the investigation methods and procedures, investigation results, and an evaluation of environmental conditions based on the data collected. The scope of the Phase II investigation was based on conversations with PJAMM, and soil and groundwater data provided to ESA. ESA's investigation relied on the field investigation and reconnaissance work completed by Weiss Associates (Weiss) at the Sirrah Property. ESA also obtained additional lithologic and groundwater information from three groundwater wells that were recently installed on the Sirrah Property. ESA reviewed the data and information provided by Weiss for technical adequacy and included it in this report, as appropriate.

ESA understands that additional studies are currently underway to assess the potential development of water supplies at the Sirrah Property; this report does not address opportunities or constraints of developing a viable water supply on the Sirrah Property.

2. Site Overview

Site Location and Description

The Sirrah Property is located in a rural area of Cloverdale, east and across Highway 101 from the downtown area and west of the Russian River (**Figure 1**). The property consists of parcel 116-310-044 (25 acres) and parcel 116-310-005 (12 acres), which are bound by the City Of Cloverdale Waste Water Treatment Facility to the north, rural vineyard property to the south, the Russian River to the east and Lile Lane and the Northwestern Pacific Railroad right-of-way to the west. The Amonos Property, subject of a similar Phase II investigation completed concurrently by ESA, is located immediately west of the Sirrah Property.



SOURCE: USGS 7.5' Cloverdale and Asti Quadrangles

Figure 1
Site Vicinity Map

The Sirrah Property is located on the flat-lying floodplain of the Russian River at an elevation of approximately 280 feet above mean sea level (amsl). The majority of property is currently under cultivation with vineyards and has been for about 32 years. The remaining acreage is uncultivated and vacant.

Site Geology and Groundwater Conditions

The Sirrah Property is located in the Alexander Valley, which in this area, is also considered the Cloverdale Valley. The Alexander Valley is one of the many northwest trending valleys in the Coast Range Geomorphic Province that are bound by strike-slip (lateral displacement) faults. The Alexander Valley is likely a sediment filled valley that has been pulled apart by the Maacama and the Healdsburg Fault Zones.

The Sirrah Property lies within the eastern flank of the northern Coast Ranges, which is underlain by the Franciscan Complex, an assemblage of igneous, sedimentary, and metamorphic rocks. Bedrock underlying the project area is about 50 feet to 60 feet deep and consists of fractured dark greenish-gray shale of the Franciscan Formation. Overlying the bedrock assemblages in the project region are younger (10,000 to 1.6 million years old) alluvium and river channel deposits consisting of various clay, silt, sand, and gravel mixtures. Boring logs revealed that these alluvial sediments occur generally as alternating sandy clay mixtures and gravels from the surface to the interface with the bedrock. The sediment transport and depositional history of the Russian River has controlled the placement of the alluvial sediments and the horizontal and vertical distribution of these materials.

Groundwater beneath the Sirrah Property is present in the alluvium and underlying bedrock. The only formation capable of providing significant quantities of groundwater is the younger alluvium and river channel deposits. The Franciscan Bedrock tends to have a low specific yield. Groundwater in the alluvial deposits fluctuates seasonally and is, for the most part, controlled by the surface flow in the Russian River and groundwater flow from the adjacent upland areas to the west and east of the property. Groundwater flow beneath the Sirrah Property likely follows topography and flows in a general north-northeasterly direction towards the Russian River. According to a pump test conducted at the agricultural well located at 505 Lile Lane on the Sirrah Property, groundwater was 15 feet below ground surface in December 2008. The pump test extracted water at 100 gallons per minute for about 11 hours and the water level was lowered about 1.7 feet. Water level in the well recovered 100 percent (15 feet) following the pump test (County of Sonoma, 2008). Additional investigation is currently underway to determine the viability of a permanent water supply on the Sirrah Property and thus, further water supply analysis is not included in this report.

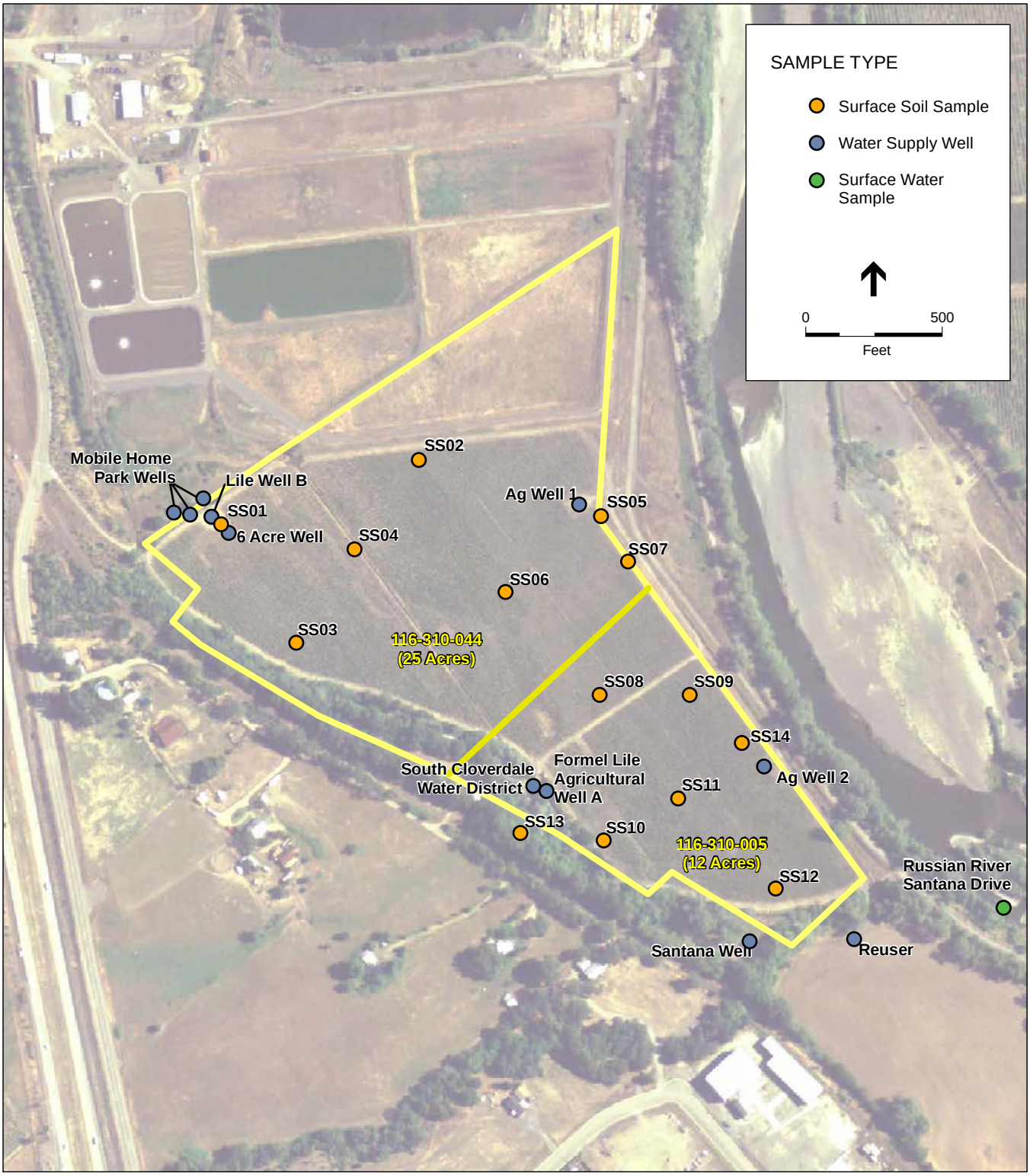
3. Field Investigation and Sample Analysis

Weiss sampled near surface soils, surface water, and groundwater and submitted the samples for chemical analysis by a California state-certified analytical laboratory. Soil samples were collected from 14, 1.5–foot deep, hand-augered soil borings at locations shown on **Figure 2**. Samples represented depths ranging from 0.5 feet to 1.5 feet. Boring locations were randomly selected throughout the Sirrah Property to obtain a representative sampling of the soil conditions. Sample collection from shallow borings is appropriate for evaluation of soil conditions in agricultural settings where the primary concern is the bioaccumulation of chlorinated pesticides, metals, and nitrates. Surface water samples were collected from the Russian River near Santana Drive. Groundwater samples were collected from three agricultural production wells (referred to as the "6 Acre Well," "Ag Well 1," and Former Lile Agricultural Well A, as shown on **Figure 2**).

Soil samples were analyzed for California Administrative Manual (CAM) metals, nitrate, and pesticides. This list of analytes is appropriate to evaluate shallow soils for chemical contamination in former and current vineyard settings. Surface water samples were analyzed for CAM-17 metals and groundwater samples were analyzed for CAM-17 metals, total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel, TPH as motor oil, pesticides, chlorinated volatile organic compounds (VOCs), *E. coli* and total coliform. Additional analyses for general chemistry were also requested that are not applicable to this Phase II investigation report, as they were part of the water supply investigation. Analytical laboratory reports are provided in Appendix A.

Soil samples were collected from shallow hand-augered borings as disturbed samples and placed in polymer or glass containers. Water samples were collected in an appropriately sized container prepared by the laboratory. Soil and water quality analyses were performed by Curtis & Tompkins, LTD, a California state-certified laboratory, using EPA Methods 6010/6020/7410 for metals, 8260B for VOCs, 8015 for TPH, 8081A for pesticides, 8082 for PCBs, and 300.0 for nitrate as nitrogen. All samples were analyzed within the appropriate holding time for each of the analyses unless otherwise noted.

The quality assurance (QA) objectives for this Phase II Investigation report focused on assessing the appropriateness of data generated during the Phase II activities (precision, accuracy, completeness, comparability, and representative application and use), and evaluating the quality of data collected before the data was used as a basis for analysis. Quality control (QC) procedures included data reduction and validation for field and laboratory activities, and data acceptance criteria were defined and achieved. The soil and groundwater activities conducted by Weiss included the collection of samples throughout the site and along the property boundaries. Based on review of the data provided to ESA, it appears that Weiss generally adhered to industry-accepted methods and procedures for soil and groundwater sample collection, analysis and reporting.



SOURCE: Wiess Associates, NAIP 2005

Figure 2
Site Map and
Sample Locations

4. Screening Criteria for Analytical Results

To facilitate the evaluation of the analytical results of the soil and groundwater samples collected at the Sirrah Property, the data were compared using the San Francisco Regional Water Quality Control Board (SFRWQCB) Environmental Screening Levels (ESLs; SFRWQCB, 2008) as the primary screening values for soil and groundwater. The ESLs that were used reflect both a residential and an industrial/commercial land use scenario and consider groundwater where groundwater is a current or potential source of drinking water.

The ESLs are considered to be conservative. Under most circumstances, and within the limitations described, the presence of a chemical in soil or groundwater at concentrations below the corresponding ESL can be assumed to not pose a significant, long term (chronic) threat to human health and the environment. Additional evaluation would generally be necessary at sites where a chemical is present at concentrations above the corresponding ESL. Active remediation may or may not be required depending on site specific conditions and considerations. The presence of a chemical at concentrations in excess of an ESL does not necessarily indicate that adverse impacts to human health or the environment are occurring; this simply indicates that a potential for adverse risk may exist and that additional evaluation is warranted (SFRWQCB, 2008).

Additionally, to facilitate the evaluation of analytical results for the surface water and groundwater samples collected at and near the Sirrah Property, the data were compared using the United States Environmental Protection Agency (USEPA) Drinking Water Maximum Contaminant Levels (MCL-USEPA) and California Department of Environmental Health Services Drinking Water Maximum Contaminant Levels (MCL-CDHS). These criteria reflect drinking water standards and are used because the future site development plans include the development of an on-site drinking water source. The feasibility of the water supply development is not addressed as part of this Phase II report, but water quality standards for drinking water purposes are relevant.

Background Concentrations of Metals

Metals were detected in the soil and groundwater samples collected at the Sirrah Property. Some of these concentrations are considered elevated but can be attributed to naturally-occurring background concentrations. Elevated concentrations of metals in soil can occur due to natural and anthropogenic sources. Naturally occurring concentrations of metals depend on the geology of the source rock and the weathering processes and depositional environments of a given area. In the Coast Ranges Geomorphic Province, naturally occurring metals are common due to the ultramafic and mafic parent rock present in the mélange of the northern Coast Ranges. However, elevated concentrations of metals can also be introduced to soils by industrial activities (anthropogenic sources), such as through the application of herbicides, the use and storage of various chemicals, and the use of chemically treated woods.

Several reports document background concentrations of metals in soils collected throughout California from a variety of geologic units and soils. In Professional Paper 1270, “Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States” (USGS,

1984), the USGS cites a range of concentrations of naturally occurring metals in soil. In its paper titled, "Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory", Lawrence Berkeley National Laboratory (LBNL) cited a range of concentrations of metals in soil samples collected from the Great Valley sediments in the East Bay Hills. Additionally, the City of Oakland conducted a survey of background metal concentration studies and compiled additional literature resources to determine relevant background metal concentrations of soils (City of Oakland, 2008); a summary table of background metal concentrations compiled by the City of Oakland is included as **Table 1,** and includes the USGS and LBNL literature values.

5. Investigation Results and Findings

Soil and groundwater samples were collected from the Sirrah property at the locations shown on **Figure 2**. Analytical results obtained from the soil, surface water, and groundwater samples are presented in **Tables 1** through **4**. Observations and analytical results are presented in the sections below. Analytical laboratory reports are provided in Appendix A.

Surface Soil

Laboratory results for soils analyses are presented in **Tables 2** (metals) and **Table 3** (nitrate and pesticides. Soil samples collected from the Sirrah Property contained metal concentrations characteristic of naturally-occurring background levels (**Table 1**). Soils samples contained antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, vanadium and zinc. Arsenic, mercury, nickel and vanadium were present in the samples at concentrations above the relevant residential ESL, while arsenic and nickel concentrations were above the relevant industrial/commercial ESL. The concentration range of arsenic (2.0 milligram per kilogram [mg/kg] to 4.5 mg/kg, mercury (2.0 mg/kg), nickel (100 mg/kg to 230 mg/kg), and vanadium (40 mg/kg to 57 mg/kg).

Because the future site development would be commercial, metals concentrations that exceed the relevant ESL for industrial/commercial land use scenarios are discussed further. Background arsenic and nickel concentrations can exceed ESL limits in many locations throughout the San Francisco Bay Area. LBNL reports a range of background arsenic concentration between 9.3 mg/kg and 31.0 mg/kg and background concentrations of chromium ranging between 24.8 mg/kg and 142.2 mg/kg. The background concentration for nickel ranges between 32.4 mg/kg and 144.3 mg/kg in the greater Bay Area, according to the LBNL report, and range of nickel reported for the western U.S. ranges from 5-500 mg/kg. Four soils samples exhibited concentrations of nickel (maximum 230 mg/kg) that exceeded the residential ESL, and are above the LBNL report for naturally occurring background concentrations of nickel. Given the narrow range of concentrations detected and the potential that background concentrations of nickel can exceed ESLs in the San Francisco Bay Area, the four concentrations of nickel over the ESL are considered background and do not indicate an active source of soil or groundwater contamination.

TABLE 1
BACKGROUND METAL CONCENTRATIONS IN SOIL
SUMMARY OF PREVIOUS STUDIES
(concentrations reported in milligrams per kilogram [mg/kg])

Source	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
Lawrence Berkeley National Laboratories[1]	5.5	19.1	1.0	2.7	99.6	69.4	16.1	0.4	119.8	5.6	1.8	27.1	106.1
-Colluvian & Fill[1]	5.9	14	0.9	1.5	91.4	59.6	14.7	0.3	120.2	5.6	1.7	42.5	91.5
-Great Valley Group[1]	6.3	31	1.0	3.2	59.0	99.7	21.5	0.6	69.7	4.8	2.2	8.7	135.9
-Moraga Formation[1]	6.1	9.3	0.8	2.6	142.2	54.1	8.9	0.3	100.4	4.7	2	38.9	84.7
-Orinda Formation[1]	5.2	17.8	1.1	3.3	95.2	66.9	14.8	0.3	144.3	7	1.9	19.8	98.3
-San Pablo Group[1]	7.1	15.7	0.8	2.9	78.9	40.9	10.3	0.4	125.9	4.9	1.5	10.9	97.7
San Leandro, CA[2]	<3-<15	1.8-5.9	<0.25-<1.30	<0.25-<1.30	24.8-43.0	11.8-68.0	3.3-10.4	<0.10	2.93-43.6	<0.25-<2.50	<0.50-<2.50	<0.50-<5.00	9.3-61.3
Union City, CA[3]	5	6.92-9.34	0.5-0.81	0.5-1.30	46.5-112	28.2-60.1	19.8-148	0.1-0.36	32.4-60.6	0.5	0.5	5.0	97.1-474
Western U.S.[4]	--	1-50	--	0.1-0.7	1-1,000	2-100	20-100	0.01-0.3	5-500	--	--	--	10-300

Notes:

[1] = Lawrence Berkeley National Laboratory (LBNL) Environmental Restoration Program, 1995. 500 samples were taken from 71 locations representing 5 geologic units at LBNL: Colluvium & Fill, Great Valley group, Moraga formation, Orinda formation and San Pablo group. Concentrations listed are Upper 95% Confidence Limits of data from 71 monitoring well borings.

[2] = Chemical Testing on Background Soil Samples: Roberts Landing Development Site, San Leandro, CA, 1994.

[3] = Site Wide Remedial Investigation: Pacific States Steel Corp. Union City, CA, 1992.

[4] = USEPA (found in Remedial Investigation Report, Hercules Properties, Inc., 1991).

SOURCE: City of Oakland, 2008

TABLE 2
CAM 17 METALS IN SURFACE SOIL
SIRRAH PROPERTIES, CLOVERDALE, CALIFORNIA

Sample Location	Sample ID	Date	Depth (ft bgs)	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Pb	Hg	Mo	Ni	Se	Ag	Tl	V	Zn
				<<								mg/kg								>>
SS01	0208-01	02/19/08	0.5	1.8	**4.5**	130	0.39	0.41	110	22	37	7.4	0.32	<0.25	**200**	<0.50	<0.25	<0.50	**54**	57
SS02	0208-02	02/19/08	0.5	1.8	**3.1**	150	0.38	0.31	84	15	27	5.6	0.94	<0.25	130	<0.50	<0.25	<0.50	**42**	52
SS03	0208-03	02/19/08	0.5	1.8	**4.0**	140	0.38	0.42	120	24	34	6.9	0.22	<0.25	**230**	<0.50	<0.25	<0.50	**57**	47
SS04	0208-04	02/19/08	0.5	<0.50	**3.1**	160	0.37	0.33	83	15	30	7.1	**2.0**	<0.25	130	<0.50	<0.25	<0.50	**41**	48
SS05	0208-05	02/20/08	0.5	0.50	**2.0**	120	0.33	0.35	76	13	26	5.4	0.76	<0.25	100	<0.50	<0.25	<0.50	**40**	54
SS06	0208-06	02/19/08	0.5	0.89	**2.7**	140	0.38	0.32	79	14	31	7.4	0.11	<0.25	120	<0.50	<0.25	<0.50	**43**	64
SS07	0208-07	02/20/08	0.5	<0.50	**2.1**	120	0.32	0.34	82	13	24	4.9	0.24	<0.25	110	<0.50	<0.25	<0.50	**43**	54
SS08	0208-08	02/20/08	0.5	0.61	**3.2**	140	0.34	0.30	77	13	25	4.2	0.96	<0.25	110	<0.50	<0.25	<0.50	**41**	50
SS09	0208-09	02/19/08	0.5	1.6	**2.8**	150	0.36	0.37	86	14	27	5.7	1.2	<0.25	120	<0.50	<0.25	<0.50	**42**	59
SS10	0208-10	02/19/08	0.5	1.2	**3.1**	130	0.36	0.33	83	14	32	6.0	0.47	<0.25	130	<0.50	<0.25	<0.50	**42**	62
SS11	0208-11	02/19/08	0.5	<0.50	**2.6**	150	0.37	0.33	82	14	33	6.6	0.73	<0.25	120	<0.50	<0.25	<0.50	**42**	56
SS12	0208-12	02/19/08	0.5	1.1	**3.3**	120	0.32	0.33	96	18	32	7.2	0.28	<0.25	**170**	<0.50	<0.25	<0.50	**42**	53
SS13	0208-13	02/20/08	0.5	<0.50	**4.4**	120	0.33	0.33	82	18	32	6.7	0.41	<0.25	**190**	<0.50	<0.25	<0.50	**41**	63
SS14	0208-14	02/19/08	0.5	<0.50	**2.2**	140	0.35	0.31	70	13	120	5.4	0.70	<0.25	110	<0.50	<0.25	<0.50	**43**	90
			Residential ESL	6.3	0.39	750	4.0	1.7	750/8[1]	40	225	200	1.3	40	150	10	20	1.3	16	600
			Commercial/Industrial ESL	40	1.6	1500	8.0	7.4	750/8[1]	80	225	750	10	40	150	10	40	16	200	600

Abbreviations:

Ag = Silver
As = Arsenic
Ba = Barium
Be = Beryllium
CAM = California Assesment Method
Cd = Cadmium
Co = Cobalt
Cr = Chromium
Cu = Copper
ft bgs = feet below ground surface
Hg = Mercury
mg/kg = milligrams per kilogram
Mo = Molybdenum
Ni = Nickel
Pb = Lead
Sb = Antimony
Se = Selenium
Ss = Soil sample
Tl = Thallium
USEPA = U.S. Environmental Protection Agency chemical analytical method
V = Vanadium
Zn = Zinc

Notes:

Analysis for CAM 17 Metals by USEPA Method 6020 and Mercury by USEPA Method 7471A. All samples analyzed by Curtis and Tompkins, Berkeley, California

Bold = Result exceeds screening level for that analyte.

ESL = Environmental Screening Levels, from "Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater" where groundwater is a current or potential drinking water resource (SFRWQCB, 2008).

[1] = There is no ESL for total chromium. However, the ESL for chromium III at 750 mg/kg and for chromium VI at 8 mg/kg are shown on the table and were used for screening purposes.

TABLE 3
ORGANOCHLORINE PESTICIDES
AND NITRATE IN SURFACE SOIL,
SIRRAH PROPERTIES, CLOVERDALE, CA

Boring ID	Sample ID	Date	Depth (ft bgs)	Nitrate (300)	4,4′-DDD	4,4′-DDE	4,4′-DDT	alpha Chlor-dane	gamma-Chlor-dane	Other Pesticides (8081)
				<< mg/kg						>>
SS01	0208-01	02/19/08	.05	0.5	<0.0032	0.03 #	0.02	<0.0017	<0.0017	<0.0017 - <0.060
SS02	0208-02	02/19/08	.05	<0.5	<0.0033	0.027 #	0.0099	<0.0017	<0.0017	<0.0017 - <0.060
SS03	0208-03	02/19/08	.05	0.7	<0.0033	<0.0033	<0.0033	<0.0017	<0.0017	<0.0017 - <0.060
SS04	0208-04	02/19/08	.05	<0.5	<0.0033	0.09 #	0.035	<0.0017	<0.0017	<0.0017 - <0.060
SS05	0208-05	02/20/08	.05	<0.5	<0.0033	0.038 #	0.014	<0.0017	<0.0017	<0.0017 - <0.060
SS06	0208-06	02/19/08	.05	<0.5	<0.0033	0.017 #	0.0086	<0.0017	<0.0017	<0.0017 - <0.060
SS07	0208-07	02/20/08	.05	2.0	<0.0033	<0.0033	<0.0033	<0.0017	<0.0017	<0.0017 - <0.060
SS08	0208-08	02/20/08	.05	<0.5	<0.0033	0.012	0.0046	<0.0017	<0.0017	<0.0017 - <0.060
SS09	0208-09	02/19/08	.05	0.8	<0.0033	0.037 #	0.016	<0.0017	<0.0017	<0.0017 - <0.060
SS10	0208-10	02/19/08	.05	<0.5	<0.0033	0.011 C	0.0057	<0.0017	<0.0017	<0.0017 - <0.060
SS11	0208-11	02/19/08	.05	0.6	<0.0033	0.027 #	0.011	<0.0017	<0.0017	<0.0017 - <0.060
SS12	0208-12	02/19/08	.05	1.3	<0.0033	0.0040 #	<0.0033	<0.0017	<0.0017	<0.0017 - <0.060
SS13	0208-13	02/20/08	.05	1	<0.0033	<0.0033	<0.0033	<0.0017	<0.0017	<0.0017 - <0.060
SS14	0208-14	02/19/08	.05	1.1	<0.0033	0.022 #	0.0080	<0.0017	<0.0017	<0.0017 - <0.060
			ESL:[1]	NE	2.4	1.7	1.7	0.44	0.44	NA

Abbreviations:

ft bgs = feet below ground surface
mg/kg= milligrams per kilogram
NE = not established

Notes:

All samples analyzed by Curtis Tompkins, Berkeley, California.

Bold = Result exceeds screening level for that analyte.

= CCV drift outside limits; average CCV drift within limits per method requirements.

C = Presence confirmed, but RPD between columns exceeds 40%.

NA = Not Applicable because screening levels or criteria are establishedfor individual compounds in group and /or no compounds in the group were detected.

[1] = ESL: Environmental Screening Levels, from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater prepared by California Regional Water Quality Control Board San Francisco Bay Region, 1515 Clay Street, Suite 1400, Oakland, California, 94612, November 2007 (Revised May 2008), Table A. Shallow Soil Screening Levels (less than or equal to 3 meters below ground surface), Residential Land Use (potentially impacted groundwater is a current or potential drinking water resource).

Alpha and gamma chlordane do not have an established ESL, therefore the total chlordane ESL of 0.44 mg/kg was used for each of these analytes.

Nitrates were detected at very low concentrations (0.5 mg/kg to 2.0 mg/kg) in the soil samples. These concentrations do not indicate nitrate contamination in the soils. Organochlorine pesticides (4,4-DDD, 4,4-DDE, and 4,4-DDT) were detected at very low concentrations ranging from 0.0033 mg/kg to 0.035 mg/kg. The residential ESL is 2.4 mg/kg for 4,4-DDD and 1.7 mg/kg for 4,4-DDE and 4,4 DDT—the detected concentrations are well below the residential ESLs. The trace pesticide detections in the soils likely reflect residual concentrations from past use when these chemicals were legal and used widely in agricultural. Organochlorine pesticides, such as DDT, can remain in the environment for many years in trace amounts following initial application.

Surface Water and Groundwater

Analytical results of metals detected the surface water and groundwater samples are summarized on **Tables 4** and **5**, with the corresponding maximum contaminant levels (MCLs) set forth by the US Environmental Protection Agency (USEPA) and California Department of Health Services (CDHS). Metals concentrations in surface water and groundwater with reported detections above their laboratory detection limits were arsenic, barium, cobalt, copper, molybdenum, nickel, vanadium and zinc. The levels detected are characteristic of naturally-occurring concentrations and do not suggest a groundwater contamination source. No detected metals concentrations were above the relevant USEPA or CDHS groundwater MCL.

Volatile organic compounds, pesticides, TPH as gasoline and motor oil were not detected in the groundwater samples above the method laboratory detection limits (see **Table 3**). TPH as diesel was detected in the three agricultural wells at low concentrations ranging from 51 to 67 micrograms per liter (μg/L); the ESL for diesel is 100 μg/L. The laboratory noted that the samples exhibited a chromatographic pattern that does not resemble the diesel standard. This can occur if the petroleum in the water is aged and degraded. The source of the diesel-like compound in the well water is not known but based on its low level and degraded nature, the concentration could represent a localized detection originating from petroleum lubrication used in the well pump.

E. Coli was not detected in any of the monitoring wells sampled and total coliform was detected at a concentration of 1 Most Probable Number per 100 milliliters (MNP/100 ml) in Ag Well 1, 23 MPN/100ml in the 6 Acre Well, 110 MPN/100 ml in the Former Lile Agricultural Well A, and 2,000 MPN/100 ml in the water sample collected from the Russian River.[1]

[1] Coliform bacteria are organisms that are present in the environment and in the feces of all warm-blooded animals and humans. Coliform bacteria will not likely cause illness. However, their presence in drinking water indicates that disease-causing organisms (pathogens) could be in the water system. Total coliform bacteria are commonly found in the environment (e.g., soil or vegetation) and are generally harmless. If only total coliform bacteria are detected in drinking water, the source is probably environmental. Fecal contamination is not likely. However, if environmental contamination can enter the system, there may also be a way for pathogens to enter the system. Total coliform, fecal coliform, and *E. coli* are all indicators of drinking water quality. The total coliform group is a large collection of different kinds of bacteria. Fecal coliforms are types of total coliform that mostly exist in feces. *E. coli* is a sub-group of fecal coliform.

TABLE 4
CAM 17 METALS IN GROUND WATER AND SURFACE WATER
SIRRAH PROPERTIES, CLOVERDALE, CALIFORNIA

Sample Location	Sample ID	Date	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Pb	Hg	Mo	Ni	Se	Ag	Tl	V	Zn
			<<								µg/L								>>
6 Acre well	6 Acre Well	09/10/03	---	---	---	---	---	---	---	<50	---	---	---	---	---	---	---	---	<50
	6 Acre Well	06/27/07	<6	<2	180	<1	<1	<1	---	<50	---	<1	---	13	<5	<10	<1	---	<50
	0308-01	03/10/08	<1.0	<1.0	150	<1.0	<1.0	<1.0	<1.0	1.6	<1.0	<0.20	<1.0	4.6	<1.0	<1.0	<1.0	1.1	<5.0
Ag well 1	0308-02	03/10/08	<1.0	1.6	200	<1.0	<1.0	<1.0	2.0	5.8	<1.0	<0.20	1.3	14	<1.0	<1.0	<1.0	1.9	9.6
Artesian Spring	0408-11	04/11/08	<1.0	<1.0	9.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	<5.0
Fore Lile Agricultural Well A	0308-03	03/10/08	<1.0	<1.0	86	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<1.0	<1.5	<1.0	<1.0	<1.0	1.1	<5.0
Russian River at Santana Drive	0408-10	04/11/08	<1.0	<1.0	74	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	38
South Cloverdale Water District Well	South Cloverdale Water District Well	06/27/07	<6	<2	110	<1	<1	1.5	---	<50	---	<1	---	<10	<5	<10	<1	---	<50
		MCL-USEPA:[1]	6	10	2,000	4	5	100	NE	1,300	15	2	NE	Ne	50	NE	2	NE	NE
		MCL-CDHS:[2]	6	50	1,000	4	5	50	NE	1,000	15	2	NE	100	50	NE	2	NE	NE

Abbreviations:

Ag = Silver	Cd = Cadmium	ft bgs = feet below ground surface	NE= not established	Se = Selenium
As = Arsenic	Co = Cobalt	Hg = Mercury	Ni = Nickel	Tl = Thallium
Ba = Barium	Cr = Chromium	µg/L= micrograms per liter	Pb = Lead	V = Vanadium
Be = Beryllium	Cu = Copper	Mo = Molybdenum	Sb = Antimony	Zn = Zinc

Notes:

Data for the Six Acre Well from September 10, 2003 and June 27, 2007 and South Cloverdale Water District Well from June 27, 2007 were taken from data sheets provided by California Department of Health and Services, Field Testing Division.

Analysis for CAM 17 Metals by USEPA Method 6010B and Mercury by USEPA Method 7471A. All samples analyzed by Curtis and Tompkins, Berkeley, California

Bold = Result exceeds most stringent screening level for that analyte.

[1] = MCL-USEPA: Maximum Contaminant Level, the USEPA Drinking Water Maximum Contaminant Levels, September 2007.

[2] = MCL-CDHS: Maximum Contaminant Level, the California Department of Health Services Drinking Water Maximum Contaminant Levels, September 2007.

TABLE 5
TPH-GAS, DEISEL AND MOTOR OIL (8015M)
VOCS, AND PESTICIDES IN GROUND WATER,
SIRRAH PROPERTIES, CLOVERDALE, CALIFORNIA

Sample Location	Name	Date	VOCs (8260B)	Pesticides (8081A)	TPH-Gas (8015M)	TPH-Diesel (8015M)	TPH-Motor Oil (8015M)
			<<		μg/L		>>
6 Acre well	6 Acre Well	09/10/03	<0.5 - <10	<0.50 - <1.0	---	---	---
	6 Acre Well	06/27/07	<0.5 - <1,750	---	---	---	---
	0308-01	03/10/08	<0.5 - <10	<0.50 - <1.0	<50	60 Y	<3000
Ag well 1	0308-02	03/10/08	<0.5 - <10	<0.50 - <1.0	<50	67 Y	<300
Former Lile Agricultural Well A	0308-03	03/10/08	<0.5 - <10	<0.50 - <1.0	<50	51 Y	<300
South Cloverdale Water District Well	South Cloverdale Water District Well	06/27/07	<0.5 - <1,750	---	---	---	---
		MCL-USEPA:[1]	NA	NA	NE	NE	NE
		MCL-CDHS:[2]	NA	NA	NE	NE	NE
		ESL:[3]	NA	NA	100	100	100

Abbreviations:

μg/L = micrograms per liter
NE = not established
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

Notes:

Data for the Six Acre Well from September 10, 2003 and June 27, 2007 and South Cloverdale Water District Well from June 27, 2007 were taken from data sheets provided by California Department of Health and Services, Field Testing Division.

All samples analyzed by Curtis and Tompkins, Berkeley, California.

Bold = Result exceeds the most stringent screening level for that analyte.
NA = Not Applicable because screening levels or criteria are established for individual compounds in group and /or no compounds in the group were detected.
Y = Sample exhibits chromatographic pattern which does not resemble standard.
[1] = MCL-USEPA: Maximum Contaminant Level, the USEPA Drinking Water Maximum Contaminant Levels, September2007.
[2] = MCL-CDHS: Maximum Contaminant Level, the California Department of Health Services Drinking Water Maximum Contaminant Levels, September 2007.
[3] = ESL: Environmental Screening Level, from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater prepared by San Francisco Bay Regional Water Quality Control Board, Interim Final – November 2007 (Revised May 2008), Table F. Surface Water Screening Levels (freshwater). The ESL classification for TPH-Diesel corresponds to TPH-middle distillates and TPH-Motor Oil corresponds to TPH-residual fuel.

ESLs used for TPHs because MCLs are not established

6. Conclusions

This Phase II investigation effort reviewed and evaluated soil and groundwater sampling and analysis work conducted to assess the potential environmental impacts to soil and groundwater at the Sirrah Property in Cloverdale, California. The field investigation and sampling program conducted for this Phase II was appropriate given the past and present use of the property as a vineyard. Available information and data reviewed for the Sirrah Property indicates that historical and ongoing site uses have not resulted in notable soil or groundwater contamination on the Sirrah Property.

Concentrations of metals in the soil, surface water (Russian River) and groundwater appear to be characteristic of naturally-occurring background levels although there are a few instances of metals concentrations exceeding the ESLs. Considering the geologic environment, especially in the northern Coast Ranges region, it is not uncommon for background metals to exceed ESLs. Overall, the metals detected do not suggest a surface contaminant source or a more widespread soil and groundwater contamination issue.

The total coliform detected in the property groundwater wells may indicate that the groundwater and surface water at the Sirrah Property is impacted by the upstream and adjacent City of Cloverdale Waste Water Treatment Facility. Other sources of total coliform include faulty well seals that do not isolate the screened zone of the well from surface infiltration. The presence of total coliform, however, is not considered an impediment to development of the Sirrah Property because if a potable water system is developed, the California Department of Health Services would require that the production well and water treatment system be designed to treat and eliminate concentrations of total coliform in the potable water supply, and meet MCL-CDHS standards for the delivery of potable water.

Detections of residual pesticides at very low concentrations in the soil and low levels of degraded diesel do not represent an ongoing impact to soil and groundwater and the levels are well below the ESL screening criteria used to protect human health and the environment. Nitrates and pesticide concentrations detected in soils do not indicate significant residual soil contamination by agricultural fertilizers, herbicides, or pesticides.

This Phase II investigation did not reveal soil and groundwater conditions that would impede the future development of the Sirrah Property for the proposed commercial land use.

7. Limitations and Exceptions

The opinions and recommendations presented in this report are based upon the scope of services, information obtained from PJAMM from previous site investigation activities, and the schedule as agreed upon by ESA and PJAMM. Site specific activities performed by Weiss Associates and information collected regarding these activities, were reviewed by ESA to the extent practical for use in this Phase II Investigation Report. To the extent that ESA relied upon any information prepared by other parties not under contract to ESA, ESA makes no representation as to the

accuracy or completeness of such information beyond the reasonable evaluation of site activities and analytical data received. This report is an instrument of professional service and was prepared in accordance with the generally accepted standards and level of skill and care under similar conditions and circumstances established by the environmental consulting industry. It must be recognized, however, that this Phase II was intended for the purpose of determining and characterizing the potential extent for contamination and does represents a conclusive or complete site characterization. ESA's ability to interpret investigation results is dependant on the availability of the data and the extent of the investigation activities. The conclusions and recommendations presented in this Phase II pertain to the conditions judged to be present or applicable at the site (Sirrah Property, Cloverdale California) and the time the work was performed. ESA developed its opinions in accordance with accepted site assessment and engineering practices for this time and specific site. It should be understood that some of the findings presented in this report are based on analytical results of soil and groundwater samples collected at select onsite locations. These results may not reflect conditions at locations not sampled. As such, 100 percent confidence in Phase II conclusions cannot be reasonably achieved. The interpretations and conclusions contained in this report represent our professional opinions. Other than this, no warranty is implied or intended.

8. Signature of Environmental Professionals

This Phase II Investigation Report has been prepared by ESA staff whose signatures appear below. The recommendations, specifications, and methodologies presented herein were prepared and presented in accordance with generally accepted practices at the time that this report was prepared, and are true and correct to the best of our knowledge.

Prepared by:

Peter B. Hudson
Senior Geologist
PG # 6730, CEG # 2348 Expires 10/31/09

9. References Cited

City of Oakland, 2008. City of Oakland, Survey of Background Metal Concentrations Studies. Available at http://www.oaklandpw.com/Asset1116.aspx, accessed December 2008.

County of Sonoma, Permit and Resource Management Department, 2008 Certification of Water Yield in Water Scarce Areas, Pump Test Worksheet completed by Dave Lowman. 505 Lile Lane, Cloverdale California, Well Permit 020644, December.

San Francisco, Regional Water Quality Control Board, 2008. Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final – November 2007 (Revised May 2008).

United States Geological Survey (USGS), 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States, Professional Paper 1270.

APPENDIX A

Analytical Laboratory Reports

Please Note: Analytical laboratory reports in “hard-copy” format were not available at the time of publication of this document. Laboratory data in electronic spreadsheet format is available on request from Perry, Johnson, Anderson, Miller and Moskowitz LLP.

PHASE II ENVIRONMENTAL INVESTIGATION REPORT

Amonos Site, Cloverdale, California

Prepared for
Perry, Johnson, Anderson, Miller
and Moskowitz LLP

March 2009

PHASE II ENVIRONMENTAL INVESTIGATION REPORT

Amonos Site, Cloverdale, California

Prepared for
Perry, Johnson, Anderson, Miller and Moskowitz LLP

March 2009

225 Bush Street
Suite 1700
San Francisco, CA 94104
415.896.5900
www.esassoc.com

Los Angeles

Oakland

Olympia

Petaluma

Portland

Sacramento

San Diego

Seattle

Tampa

Woodland Hills

208262

ESA

TABLE OF CONTENTS

Phase II Environmental Investigation Report
Amonos Site, Cloverdale, California

	Page
1. Objective	1
2. Site Overview	1
3. Investigation Activities	4
4. Screening Criteria	12
5. Investigation Results and Findings	13
6. Conclusions	25
7. Limitations and Exceptions	26
8. Signature of Environmental Professionals	27
References Cited	28

List of Figures

1. Site Vicinity Map	2
2. Site Map and Soil Boring Sample Locations	5
3. Site Map and Groundwater Sample Locations	8

List of Tables

1. Amonos Site Phase II Investigation Sample Matrix, Shallow and Deep Soil Locations	9
2. Amonos Site Phase II Investigation Sample Matrix, Grab Groundwater and Monitoring Well	10
3. Background Metal Concentrations in Soil, Summary of Previous Studies	14
4. Analytical Results for Detected Metals in Shallow and Deep Soil Samples	15
5. Analytical Results for Detected Metals in Grab and Monitoring Well Groundwater Samples	19
6. Analytical Results for VOCs and TPH in Shallow and Deep Soil Samples	21
7. Analytical Results for VOCs and TPH in Grab and Monitoring Well Groundwater Samples	22
8. Analytical Results for Pesticides in Soil Samples and Grab Groundwater Samples	26

Page

Appendices

A. Drilling Permits, Field Notes, Boring Logs, Well Elevation Survey A-1
B. Quality Assurance and Quality Control Summary B-1
C. Analytical Laboratory Reports C-1

PHASE II ENVIRONMENTAL INVESTIGATION REPORT

Perry, Johnson, Anderson, Miller and Moskowitz LLP (PJAMM), retained Environmental Science Associates (ESA) to complete a Phase II environmental investigation report for properties located at 208, 250 and 496 Lile Lane and 585 Santana Drive in Cloverdale, California (herein referred to as the "Amonos site"; **Figure 1**). ESA's investigation relied on previously prepared reports including the Phase I reports completed for the Amonos site by Geomatrix Consultants Inc. (Geomatrix) (Geomatrix; 2007a and 2007b) and the Due Diligence Report prepared by Weiss Associates (Weiss) (Weiss; 2007). Additional information provided to ESA for this investigation included soil and groundwater data collected by Weiss at the Amonos site. ESA reviewed the Weiss data for technical adequacy and included the data in this report as appropriate.

This report presents a summary of the investigation methods and procedures, ESA's quality assurance and quality control verification, investigation results, and an evaluation of environmental conditions based on the data collected. ESA understands that development of water supplies at the Amonos site is not expected as part of the potential future site development; therefore, consideration of water supply development is not addressed in this report. This investigation and resulting report is based on ESA's proposal and bid for Phase II services dated September 4, 2008.

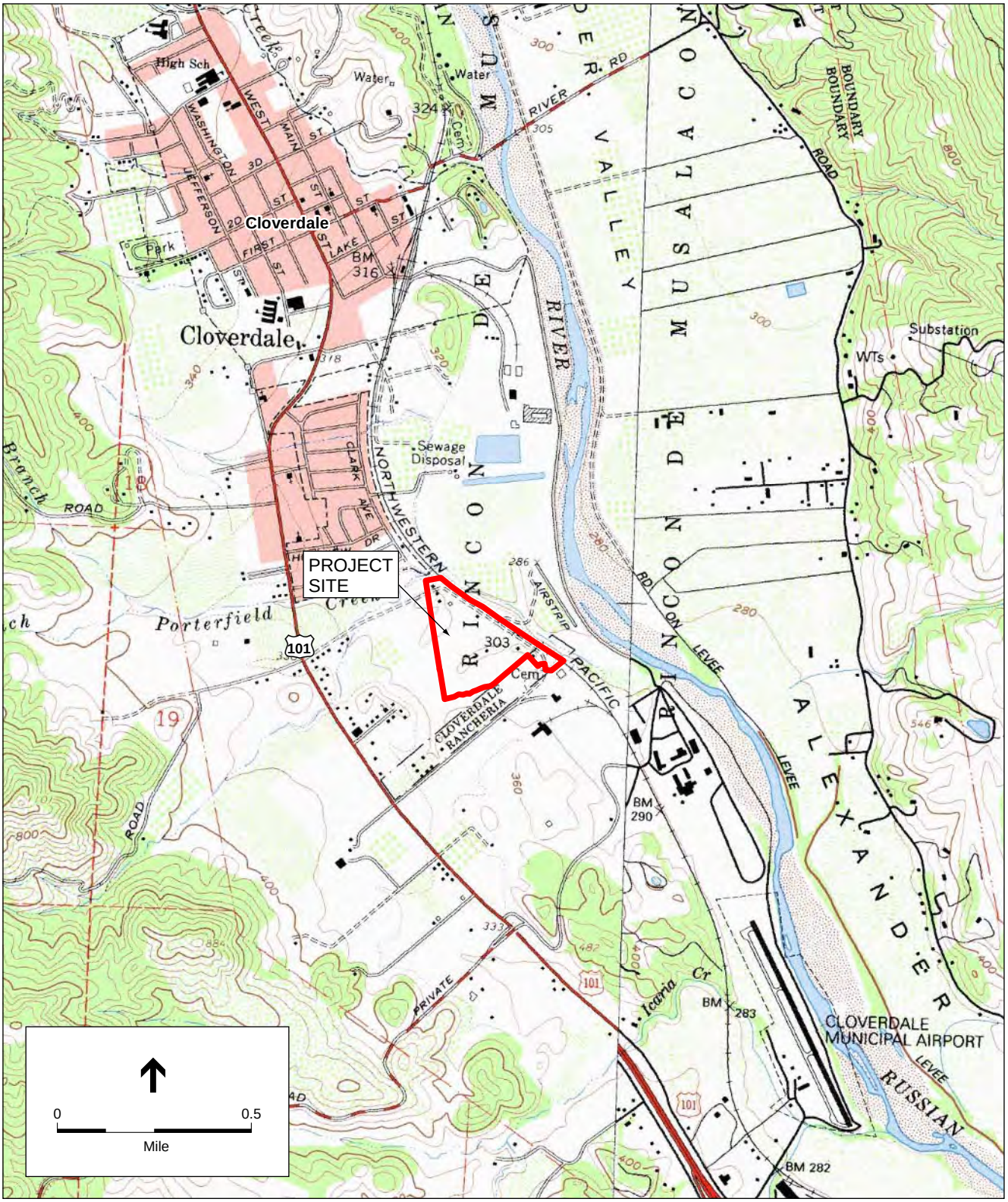
1. Objective

The objective of this Phase II investigation summary report was to evaluate the information and data gathered by Geomatrix and Weiss, conduct a site reconnaissance, and issue a Phase II report summarizing the data collected and findings. The scope of the Phase II investigation summary was based on conversations with PJAMM, review of the existing Phase I reports, and soil and groundwater data provided to ESA. Based on ESA's review of available information, and considering the soil and groundwater investigation completed by Weiss, ESA has developed conclusions and recommendations with regards to soil and groundwater contamination as it pertains to future site development.

2. Site Overview

2.1 Site Location and Description

The Amonos site is located in a rural area of Cloverdale, east and across Highway 101 from the downtown area and west of the Russian River (**Figure 1**). The site is bordered by Highway 101 and Asti Road to the west, Porterfield Creek to the north, Lile Lane to the east, and the unnamed creek to the south. The Amonos site is comprised of four separate parcels; parcel number 116-



SOURCE: USGS

Amonos Site, Phase II Environmental Site Investigation . 207737

Figure 1
Site Vicinity Map

310-035 is a 17-acre property, parcel number 116-310-040 is an 8.5 acre property, parcel number 116-310-020 is a 2 acre property, and parcel number 116-310-039 is a 5 acre property. Wooded areas are present along the southern and eastern boundaries of the site and near residential dwellings located on each property. The majority of the site is open grassland that is currently used for horse grazing pasture.

The Amonos site slopes gently to the east and consists of rolling topography with three swales, one along the southern boundary where the un-named creek flows eastward towards the Russian River, one through the center of the property, where intermittent water flows, and one along the northeastern boundary of the property forming Porterfield Creek. The valleys are separated by two eastward sloping hills with site elevations ranging from 300 to 325 feet above mean sea level.

2.2 Site Geology

The Amonos site is located within the eastern flank of the northern Coast Ranges, which consist of a complex assemblage of igneous, sedimentary, and metamorphic rocks. The mixture of rocks found throughout the northern Coast Ranges is often referred to as a mélange that includes blocks of ultramafic and mafic compositions in a sheared ultramafic matrix. Surface sediments in the area consist of clays, sands, and silts that are underlain by fractured bedrock consisting of dark greenish-gray shale of the Franciscan Formation. Based on subsurface investigation results obtained from boring logs recorded by Weiss, the alluvium extends from the surface to depths ranging between 4 and 65 feet. Generally, the thicker sediments are located in the valleys and the thinner sediments are present on the ridges. Below the unconsolidated sediments are siltstone and shale recorded to depths up to 90 feet below ground surface (bgs).

2.4 Site Hydrogeology

Groundwater beneath the Amonos site is present in the alluvium and underlying bedrock. Artesian conditions observed within a localized area of the alluvium along the east central portion of the site at depths of approximately 20 feet bgs. Depth to groundwater in the installed monitoring wells ranges from approximately 7 feet bgs to 23 feet bgs, and the groundwater gradient is generally east towards Russian River.

Groundwater present in fractures within the underlying bedrock was observed at depths of 8 to 21 feet bgs, with a groundwater gradient that appears to be towards the southeast. Based on information presented in documents related to the MGM Brake Assembly Plant (the MGM site) located southwest of the Amonos site, shallow groundwater flow appears to occur in valleys following topography (EKI, 2002; Geomatrix, 2007b). The MGM site is an open remediation case with the North Coast Regional Water Quality Control Board (NCRWQCB) with active remediation for various contaminants of concern, as discussed in more detail below.

3. Investigation Activities

Weiss drilled 15 borings ranging from 50 feet to 90 feet in depth, and installed 9 monitoring wells ranging from 20 feet to 93 feet below ground surface (bgs), and collected soil, rock and/or groundwater samples from the borings and groundwater samples from the wells. These activities were conducted from September 24, 2007 through May 23, 2008, in six separate mobilizations.

3.1 Pre-Field Investigation Activities

Weiss prepared a drilling workplan and submitted it to the Sonoma County Environmental Health Division and appropriate permits were issued by that agency. Permits are included in Appendix A. The proposed boring locations were marked and Underground Service Alert (USA) was contacted to identify and mark the locations of underground utilities relative to the proposed drilling locations. A private utility locating service, Cruz Brothers Inc. of Scotts Valley, California, was also contracted to verify that the proposed well sites were not co-located with existing underground utilities. Prior to initiating drilling, pilot holes for the borings were hand augured and widened by post-hole digger to 5 feet bgs to confirm the absence of buried utilities.

3.2 Field Activities

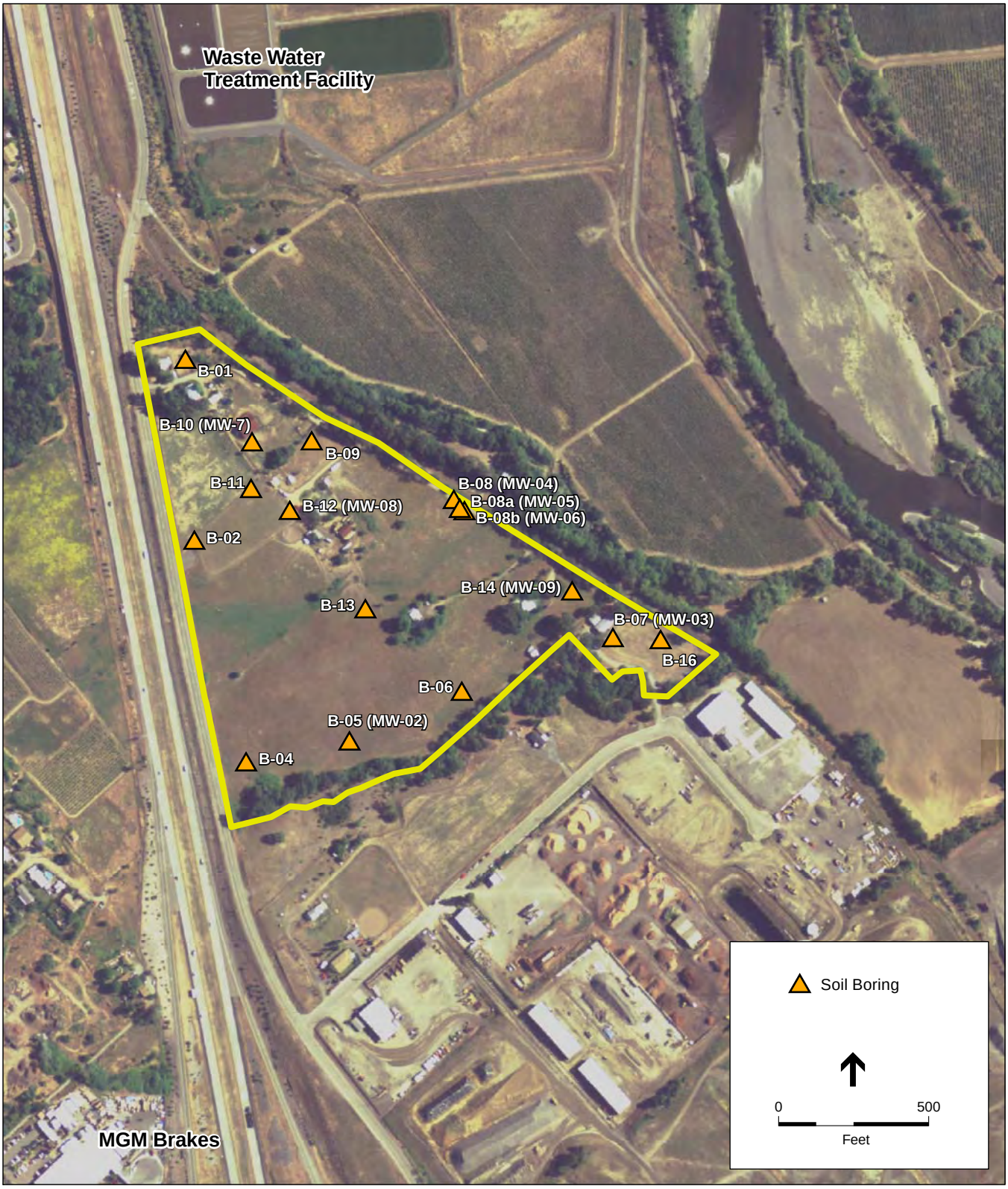
Exploratory Soil and Rock Borings

Weiss directed the drilling of a total of 15 exploratory soil and rock borings to total depths ranging from 30 feet to 90 feet bgs. Westex/Western Strata Exploration, Inc., of Clarksburg, California advanced 8-inch diameter boreholes into alluvium using a hollow stem auger rig, and 6-inch diameter boreholes into bedrock using an air rotary rig. A temporary steel casing was advanced behind the air-rotary cutting head to seal off the hole and prevent collapse. Drilling activities for this task were conducted from September 24 to October 17, 2007, as permitted by weather and site access conditions and rig availability. Soil boring locations are illustrated on **Figure 2**. Field notes are included as Appendix A.

All logging and sampling activities were performed under the supervision of a California Professional Geologist. Hollow-stem auger borings were continuously cored and logged by hand. Air rotary borings were logged from observation of extracted cuttings. All exploratory logs were compiled using the Unified Soil Classification System (USCS). Based on information provided and reviewed by ESA, it appears that Weiss applied industry-accepted standards and procedures for exploratory drilling and soil/bedrock logging. Boring logs are included in Appendix A.

Soil boring B-08 exhibited artesian water conditions at 20 feet bgs.[1] The artesian conditions observed in soil boring B-08 could have been due to the surface elevation of the Russian River and high groundwater in the surrounding strata. When the boring was advanced to 70 feet bgs, the

[1] Groundwater flowing up and out of a well or borehole indicates an artesian condition. Artesian conditions occur when groundwater is under greater than atmospheric pressures, such as water–bearing zones that are confined under an impervious geologic strata.



SOURCE: Wiess Associates

Amonos Site, Phase II Environmental Site Investigation . 207737

Figure 2
Site Map and Soil Boring
Sample Locations

water level dropped to 9.35 feet bgs. Because of the shallow artesian conditions in this boring, an additional boring was advanced (B-08a) and drilled to 90 feet bgs and the upper alluvium section was sealed and placed behind solid casing, and a third boring (B-08b) was drilled to a depth of 20 feet bgs to further investigate shallow groundwater conditions along the eastern boundary of the Amonos site. B-08 was completed as a monitoring well (MW-04) uniquely in the alluvium, and B-08a was completed as a monitoring well (MW-05) uniquely in the bedrock, and B-08b was completed as a monitoring well in the shallow alluvium (MW-06).

Soil and "Grab" Groundwater Sampling

Surface soil, subsurface soil at the alluvium bedrock interface, and grab groundwater samples were collected for chemical analysis during drilling of each of the 15 new boreholes. The field sampling logs do not describe soil sampling techniques.

Grab groundwater samples were collected from the alluvium at the first encounter of groundwater. Prior to collecting the grab groundwater samples from the borings, the borehole was blown dry and water was allowed to flow from the formation into the borehole. Once the sample was collected, the borehole was blown dry a second time and casing was advanced to seal off the water zone in the alluvium and then drilling continued down to bedrock. Once groundwater was encountered in the bedrock, the borehole was blown dry again and groundwater was allowed to flow into the borehole from the formation prior to collecting a grab groundwater sample from the bedrock.

Following the drilling and sampling, the 15 exploratory borings were properly destroyed by backfilling with neat Portland cement grout, concurrent with well installation activities (described below), and according to state and local standards.

Monitoring Well Installation

Weiss directed the installation of a total of 9 groundwater monitoring wells at selected boring locations (as illustrated on **Figure 2**) to total depths ranging from 20 feet to 90 feet bgs, based on soil and rock types and groundwater recharge conditions encountered in the 15 exploratory soil borings. Based on artesian conditions observed in B-08, a three well cluster was installed to monitor potential artesian conditions in the shallow alluvium well and to investigate water quality.

It is assumed that the exploratory borings locations identified for monitoring well installation were converted to groundwater monitoring wells based on the description of backfilling activities described above. TestAmerica, Inc., of Rancho Cordova and Anaheim, California was retained to drill and install the 9 monitoring wells by advancing 8-inch and 10-inch borings into bedrock using an air rotary rig. Drilling activities for the well installation task were implemented on December 17, 2007, and from January 14 to 15, February 19 to 21, and March 11 to 14, 2008, as permitted by weather and site access conditions and rig availability (Appendix A, Field Logs). Based on the available information, Weiss and TestAmerica followed industry-accepted standards and procedures for installing the groundwater monitoring wells.

Monitoring Well Development

Weiss and TestAmerica conducted well development activities from April 8 to 11, 2008 after the nine groundwater monitoring wells were complete and concrete and grout seal materials had attained sufficient strength. The wells were developed to remove fine sediments from each well and well annulus by either bailing the well or pumping the well with a submersible pump at 1 gallon per minute (gpm) for intervals ranging from 30 minutes to 2 hours. Subsequent to pumping and removal of approximately 16 to 490 gallons of water as necessary for each well development, stabilization parameters were within the ranges established in the field protocols for dissolved oxygen (DO, ± 10%), specific conductance (± 10%), pH (± 0.2), turbidity (<5-50 nephelometric turbidity units [NTUs]), and temperature (± 0.3º C) for three consecutive readings. Based on review of the well development procedures, it appears that Weiss and TestAmerica followed industry-accepted field standards and procedures to ensure that cross-contamination of wells did not occur. Following well development, each monitoring well was surveyed for elevation (Appendix A).

3.3 Sample and Analysis Usage

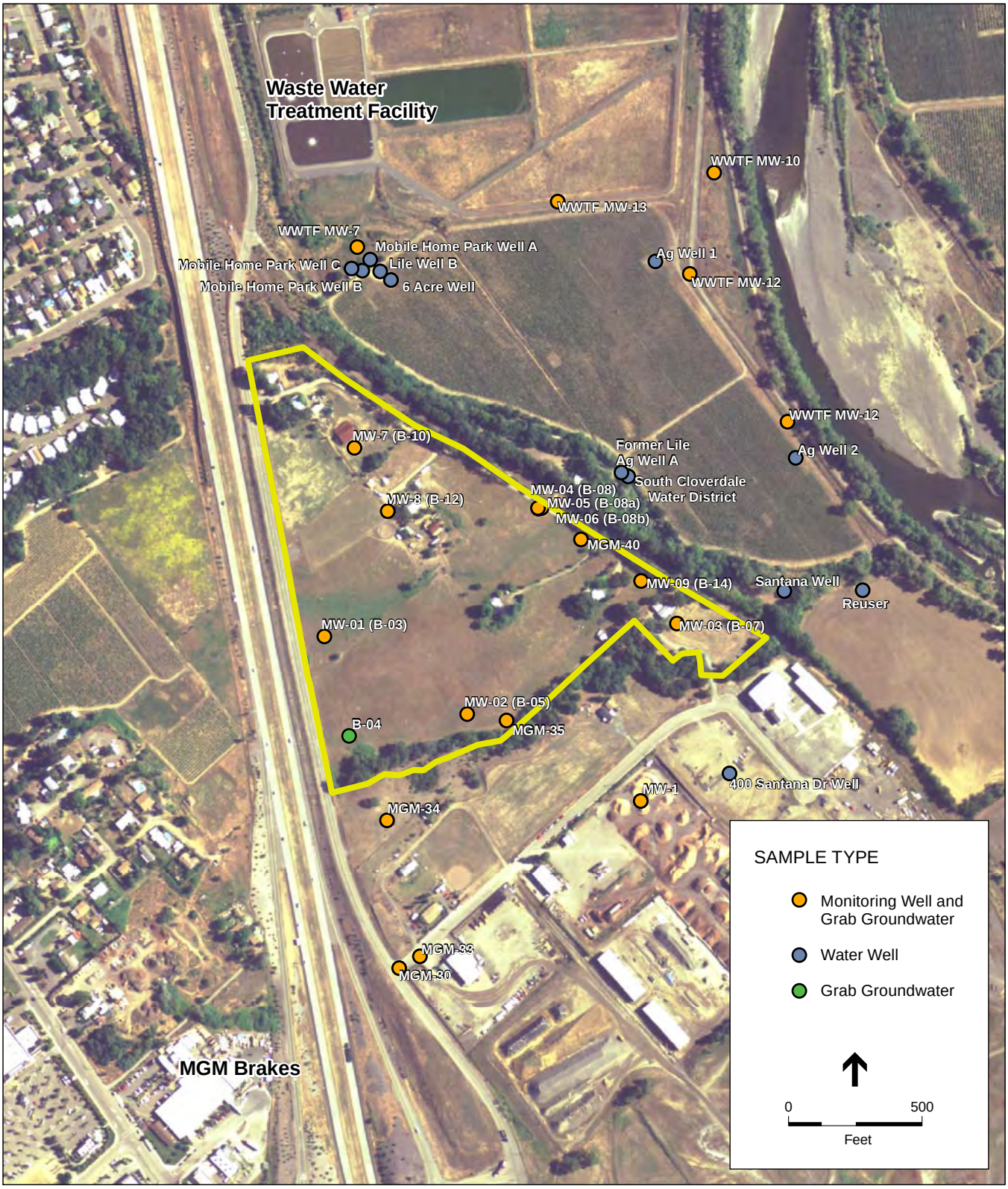
In its Phase I investigation, Geomatrix identified potential *recognized environmental conditions* (RECs) at the Amonos site that required additional investigation. According to the ASTM Standard (as presented in Geomatrix, 2007a), a REC is defined as:

> "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a threat to public health or the environment that generally would not be the subject of an enforcement action if brought to the attention of appropriate government agencies."

The Geomatrix findings are based on the historical uses of the properties and a neighboring site with known contamination and active remediation (Geomatrix 2007a; Geomatrix, 2007b). The soil and groundwater investigation conducted by Weiss addressed the RECs identified by Geomatrix. Soil and groundwater sampling locations are illustrated on **Figures 2** and **3**, and sample location and designated data uses are summarized on **Tables 1** and **2**.

Historical Uses

Certain historical uses of the properties that comprise the Amonos site were not considered RECs on the basis of visual observation. Site reconnaissance indicated no evidence of environmental impact to on-site soils or vegetation and certain historical activities involving chemicals (such as activities inside the barn) are considered de minimis because the floor is intact and the chemicals stored there are handled appropriately and stored with secondary containment.



SOURCE: Wiess Associates

Amonos Site, Phase II Environmental Site Investigation . 207737

Figure 3
Site Map and Groundwater
Sample Locations

TABLE 1
AMONOS SITE PHASE II INVESTIGATION SAMPLE MATRIX
SHALLOW AND DEEP SOIL LOCATIONS
CLOVERDALE, CALIFORNIA

Sample Location	Sample Depth/ Screen Interval (ft bgs)	Total Depth (ft bgs)	Metals (EPA 6010/6020/ 7470)	VOCs (EPA 8260)	TPH-gro (EPA 8015)	TPH-dro (EPA 8015)	TPH-moro (EPA 8015)	Pesticides (EPA 8081)	PCBs (EPA 8082)	Data Uses
B-01	0	40	x	x	X	x	x	x	x	1,2
	36		x	x	X	x	x			1,2
B-02	0	40	x	x	X	x	x			2,3
	35		x	x	X	x	x			2
B-03	0	35	x	x	X	x	x			2,3
	25			x	X	x	x			2
	35		x							2
B-04	0	70	x	x	X	x	x			2,3
B-05	0	50	x	x	X	x	x			2,3
B-06	46		x	x	X	x	x			2
	0	30	x	x	X	x	x			2,3
	25		x	x	X	x	x			2
B-07	0	50	x	x	X	x	x			2,3
B-08	0		x	x	X	x	x			1,2,3
	68		x	x	X	x	x			1,2
B-09	0	45	x	x	X	x	x			1,2,3
B-10	0	50	x	x	X	x	x	x	x	2,3
	45		x	x	X	x	x			2
B-11	0	40	x	x	X	x	x	x	x	1,2,3
	35		x	x	X	x	x			1,2
B-12	0	45	x	x	X	x	x	x*	x	1,2,3
	42		x	x	X	x	x			1,2
B-13	0	50	x	x	X	x	x	x	x	1,2,3
	45		x	x	X	x	x			1,2
B-14	0	70	x	x	X	x	x			2,3
	53		x	x	X	x	x			2
B-16	0	55	x	x	X	x	x			2,3
	55		x	x	X	x	x			2

NOTES:

ft bgs = feet below ground surface
VOCs = Volatile organic compounds
TPH-gro = Total petroleum hydrocarbons – gasoline range organics
TPH-dro = Total petroleum hydrocarbons – diesel range organics
TPH-moro = Total petroleum hydrocarbons – motor oil range organics

* = 6 step out surface soil samples were collected at location B-12.
1 = Investigation results used to evaluate residual contamination from above ground storage tanks removed in the 1980's.
2 = Investigation results used to evaluate the use of pesticides during historical agricultural operations.
3 = Investigation results used to evaluate the migration of VOCs from neighboring MGM Brakes Assembly Plant

TABLE 2
AMONOS SITE PHASE II INVESTIGATION SAMPLE MATRIX
GRAB GROUNDWATER AND MONITORING WELL
CLOVERDALE, CALIFORNIA

Sample Location	Sample Depth/ Screen Interval	Metals (EPA 6010/ 6020/7470)	VOCs (EPA 8260)	TPH-gro (EPA 8015)	TPH-dro (EPA 8015)	TPH-moro (EPA 8015)	Pesticides (EPA 8081)	PCBs (EPA 8082)	Data Uses
Grab Groundwater Samples									
B-01	24	x	x	x	x	x			1,2,3
B-02	30	x	x	x	x	x			1,2,3
B-03 (MW-01)	7.5	x	x	x	x	x			1,2,3
	10	x	x	x	x	x			1,2,3
B-04	2.5	x	x	x	x	x			1,2,3
B-05 (MW-02)	45	x	x	x	x	x			1,2,3
B-06	17	x	x	x	x	x			1,2,3
B-07 (MW-03)	41	x	x	x	x	x			1,2,3
B-08 (MW-04)	+1.25	x	x	x	x	x			1,2,3
B-08a (MW-05)	70	x	x	x	x	x			1,2,3
B-09	25	x	x	x	x	x			1,2,3
	30.8	x	x	x	x	x			1,2,3
B-10 (MW-07)	27.5	x	x	x	x	x			1,2,3
	45	x	x	x	x	x			1,2,3
B-11	24	x	x	x	x	x			1,2,3
B-12 (MW-08)	28	x	x	x	x	x	x	x	1,2,3
	33	x	x	x	x	x	x	x	1,2,3
B-13	38	x	x	x	x	x			1,2,3
B-14 (MW-09)	45	x	x	x	x	x			1,2,3
B-16	45	x	x	x	x	x			1,2,3
Groundwater Monitoring Well Samples									
MW-01	9-19	x	x		x	x			1,2,3
MW-02	40-50	x	x		x	x			1,2,3
MW-03	40-50	x	x		x	x			1,2,3
MW-04	55-65	x	x		x	x			1,2,3
MW-05	80-90	x	x		x	x			1,2,3
MW-06	10-20	x	x		x	x			1,2,3
MW-07	25-35	x	x		x	x			1,2,3
MW-08	20-30	x	x		x	x			1,2,3
MW-09	55-65	x	x		x	x			1,2,3

NOTES:

1 = Investigation results used to evaluate residual contamination from above ground storage tanks removed in the 1980's.
2 = Investigation results used to evaluate the use of pesticides during historical agricultural operations.
3 = Investigation results used to evaluate the migration of VOCs from neighboring MGM Brakes Assembly Plant

Potential RECs associated with historical uses of the site include the following:

- Three 500-gallon aboveground fuel storage tanks were previously located on exposed soil at the northern ranch site on the Hayes Property. No staining or distressed vegetation was observed in the area. The tanks were removed in the mid-1980s.

- As a former plum and grape farm, pesticides, including lime, sulfur, and "winter oil" were applied within the central portion of the Hayes Property until the 1980s. There may be residual pesticides in the area and around the ranch site, where the chemicals were stored.

Neighboring Sites

Previous work by Geomatrix identified an REC at the Amonos site because it is located in close vicinity of the MGM Brakes Assembly Plant (the MGM site). The MGM site has a historical release of chlorinated solvents with a suspected dense non-aqueous phase liquid (DNAPL) source area and concentrations of volatile organic compounds (VOCs) are present in groundwater. As noted by Geomatrix (2007b), impacted groundwater has moved preferentially in the backfill of a sewer that runs along the southern side of the Amonos site and then northward up Lile Lane, and in surface water and groundwater moving along the un-named creek. Geomatrix noted that at the time of their investigation, it was unclear if impact to the Amonos site is limited to the areas around the southern creek along the sanitary sewer line or extends more broadly across the Amonos site. Geomatrix concluded that there was a potential for DNAPL and impacted groundwater associated with the MGM site to migrate onto the Amonos site and therefore, recommended additional investigation. Weiss included necessary field assessment work to address this concern.

3.4 Chemical Analyses of Soil and Groundwater Samples

As previously discussed, previous work by Weiss advanced 15 soil borings at the Amonos site and soil samples were collected from each boring. In addition, the nine groundwater monitoring wells were installed and sampled for various chemicals of concern, as summarized on **Tables 1** and **2**.

Sampling Containers, Preservation, and Holding Times

Weiss submitted soil samples for analysis of metals, VOCs, total petroleum hydrocarbons (TPH) as gasoline-range organics (TPH-gro), diesel-range organics (TPH-dro), and motor oil-range organics (TPH-moro), pesticides, and polychlorinated biphenyls (PCBs). Soil samples were collected in brass tubes for undisturbed soils, and disturbed soil samples were collected in polymer or glass containers.

Grab groundwater samples were analyzed for metals, VOCs, TPH-gro, TPH-dro, TPH-moro, pesticides, PCBs, and nitrate as nitrogen. Each sample was collected in an appropriately sized container prepared by the laboratory. Groundwater samples were also collected for the groundwater monitoring wells using a micropurge sampling technique and analyzed for metals, VOCs, TPH-dro, TPH-moro, and nitrate.

Soil and water quality analyses were performed by Curtis & Tompkins, LTD, a California state-certified laboratory, using EPA Methods 6010/6020/7410 for metals, 8260B for VOCs, 8015 for TPH, 8081A for pesticides, 8082 for PCBs, and 300.0 for nitrate as nitrogen. All samples were analyzed within the appropriate holding time for each of the analyses unless otherwise noted.

Quality Assurance and Control Verification

The quality assurance (QA) objectives for this Phase II Investigation report focused on assessing the appropriateness of data generated during the Phase II activities (precision, accuracy, completeness, comparability, and representative application and use), and evaluating the quality of data collected before the data was used as a basis for analysis. Quality control (QC) procedures included data reduction and validation for field and laboratory activities, and data acceptance criteria were defined and achieved. The soil and groundwater activities conducted by Weiss included the collection of samples throughout the site and along the property boundaries. ESA linked the soil and groundwater sample locations with the RECs identified by the Phase I investigation, as summarized in **Tables 1** and **2**. Based on review of the data provided to ESA, it appears that Weiss generally adhered to industry-accepted methods and procedures for soil and groundwater sample collection, analysis and reporting. Appendix B provides a detailed summary of the analytical data validation process and resulting data qualifiers are discussed.

In general, results of “grab” groundwater samples can be considered suspect because they may not necessarily represent actual groundwater conditions and can be inherently unreliable. The uncertainty stems from several factors including the difficulty in isolating specific groundwater flow zones, potential for cross-contamination during sampling, and impacts to groundwater from drilling equipment. Due to the generally undependable nature of grab groundwater sample results, this investigation relies on the analytical results from the water samples collected from the monitoring wells. Results of the groundwater samples collected from wells are more reliable because groundwater monitoring wells were installed and sampled following proper well development procedures. Analytical data from monitoring wells are considered more representative of groundwater conditions within the screened interval of the groundwater monitoring wells.

4. Screening Criteria

To facilitate the evaluation of the analytical results of the soil and groundwater samples collected at the Amonos site, the data were compared using the San Francisco Regional Water Quality Control Board (SFRWQCB) Environmental Screening Levels (ESLs; SFRWQCB, 2008) as the primary screening values for soil and groundwater. The ESLs that were used reflect both a residential and an industrial/commercial land use scenario and consider groundwater where groundwater is a current or potential source of drinking water.

The ESLs are considered to be conservative. Under most circumstances, and within the limitations described, the presence of a chemical in soil, soil gas, or groundwater at concentrations below the corresponding ESL can be assumed to not pose a significant, long term (chronic) threat to human health and the environment. Additional evaluation will generally be necessary at sites where a chemical is present at concentrations above the corresponding ESL.

Active remediation may or may not be required depending on site specific conditions and considerations. The presence of a chemical at concentrations in excess of an ESL does not necessarily indicate that adverse impacts to human health or the environment are occurring; this simply indicates that a potential for adverse risk may exist and that additional evaluation is warranted (SFRWQCB, 2008).

4.1 Background Concentrations of Metals

Metals were detected in the soil and groundwater samples collected at the Amonos site. Some of these concentrations are considered elevated but can be attributed to naturally-occurring background concentrations. Elevated concentrations of metals in soil can occur due to both natural and anthropogenic sources. Naturally occurring concentrations of metals depend on the geology of the source rock and the weathering processes and depositional environments of a given area. In the Coast Ranges geomorphic province, naturally occurring metals are common due to the ultramafic and mafic parent rock present in the mélange of the northern Coast Ranges. Although, elevated concentrations of metals can also be introduced to soils by industrial activities (anthropogenic sources), such as through the application of herbicides, the use and storage of various chemicals, and the use of chemically treated woods.

Several reports document background concentrations of metals in soils collected throughout California from a variety of geologic units and soils. In Professional Paper 1270, “Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States” (USGS, 1984), the USGS cites a range of concentrations of naturally occurring metals in soil. In its paper entitled, “Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory”, Lawrence Berkeley National Laboratory (LBNL) cited a range of concentrations of metals in soil samples collected from the Great Valley sediments in the East Bay Hills. Additionally, the City of Oakland conducted a survey of background metal concentration studies and compiled additional literature resources to determine relevant background metal concentrations of soils (City of Oakland, 2008); a summary table of background metal concentrations compiled by the City of Oakland is included as **Table 3**, and includes the USGS and LBNL literature values.

5. Investigation Results and Findings

Soil and groundwater samples were collected from the site and along the property boundaries as illustrated on **Figures 2** and **3**. **Tables 1** and **2** provide a summary of the sample rationale and chemical analyses used to evaluate potential environmental concerns based on historical site use and neighboring environmental contamination. Observations and analytical results are presented in the sections below. Laboratory reports are provided in Appendix C.

5.1 Metals

Deep and Shallow Soils

Shallow and deep soil samples were analyzed for metals using EPA Method 6010 (and EPA Method 7471A for mercury). Analytical results are summarized in **Table 4**.

TABLE 3
BACKGROUND METAL CONCENTRATIONS IN SOIL
SUMMARY OF PREVIOUS STUDIES
(concentrations reported in milligrams per kilogram [mg/kg])

Source	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
Lawrence Berkeley National Laboratories[1]	5.5	19.1	1.0	2.7	99.6	69.4	16.1	0.4	119.8	5.6	1.8	27.1	106.1
-Colluvian & Fill[1]	5.9	14	0.9	1.5	91.4	59.6	14.7	0.3	120.2	5.6	1.7	42.5	91.5
-Great Valley Group[1]	6.3	31	1.0	3.2	59.0	99.7	21.5	0.6	69.7	4.8	2.2	8.7	135.9
-Moraga Formation[1]	6.1	9.3	0.8	2.6	142.2	54.1	8.9	0.3	100.4	4.7	2	38.9	84.7
-Orinda Formation[1]	5.2	17.8	1.1	3.3	95.2	66.9	14.8	0.3	144.3	7	1.9	19.8	98.3
-San Pablo Group[1]	7.1	15.7	0.8	2.9	78.9	40.9	10.3	0.4	125.9	4.9	1.5	10.9	97.7
San Leandro, CA[2]	<3-<15	1.8-5.9	<0.25-<1.30	<0.25-<1.30	24.8-43.0	11.8-68.0	3.3-10.4	<0.10	2.93-43.6	<0.25-<2.50	<0.50-<2.50	<0.50-<5.00	9.3-61.3
Union City, CA[3]	5	6.92-9.34	0.5-0.81	0.5-1.30	46.5-112	28.2-60.1	19.8-148	0.1-0.36	32.4-60.6	0.5	0.5	5.0	97.1-474
Western U.S.[4]	--	1-50	--	0.1-0.7	1-1,000	2-100	20-100	0.01-0.3	5-500	--	--	--	10-300

NOTES:

1 Lawrence Berkeley National Laboratory (LBNL) Environmental Restoration Program, 1995. 500 samples were taken from 71 locations representing 5 geologic units at LBNL: Colluvium & Fill, Great Valley group, Moraga formation, Orinda formation and San Pablo group. Concentrations listed are Upper 95% Confidence Limits of data from 71 monitoring well borings.
2 Chemical Testing on Background Soil Samples: Roberts Landing Development Site, San Leandro, CA, 1994.
3 Site Wide Remedial Investigation: Pacific States Steel Corp. Union City, CA, 1992.
4 USEPA (found in Remedial Investigation Report, Hercules Properties, Inc., 1991).

SOURCE: City of Oakland, 2008

TABLE 4
AMONOS SITE PHASE II INVESTIGATION
ANALYTICAL RESULTS FOR DETECTED METALS IN SHALLOW AND DEEP SOIL SAMPLES
CLOVERDALE, CALIFORNIA
(soil concentrations in milligrams per kilogram [mg/kg])

Sample Location	Sample Identification	Depth (ft bgs)	Date Sampled	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Shallow Soil Samples																				
B-01	B-1-SS-0.0' *	0	10/2/2007	1.2	**7.3**	200	0.68	<0.25	52	20	27	19	0.084	0.31	89	1.9	<0.25	<0.50	**47**	87
B-02	B-02-SS-0.0' *	0	9/25/2007	<0.50	**5.3**	160	0.53	<0.25	100	23	31	5.6	0.23	<0.25	**230**	1.2	<0.25	<0.50	**56**	42
B-03	B-03-SS-0.0 *	0	9/25/2007	1.1	**5.2**	80	0.33	<0.25	70	18	17	18	0.22	<0.25	100	<0.50	<0.25	<0.50	**41**	41
B-04	B-4-SS-0.0' *	0	10/3/2007	0.65	**8.4**	150	0.44	<0.25	110	26	36	11	0.081	<0.25	**160**	2.3	<0.25	<0.50	**64**	60
B-05	B-5-SS-0.0' *	0	10/3/2007	<0.50	**9.7**	150	0.41	<0.25	82	18	30	9.3	0.053	<0.25	120	2	<0.25	<0.50	**53**	55
B-06	B-6-SS-0.0' *	0	10/4/2007	0.93	**7.2**	130	0.42	<0.25	90	22	25	9.6	0.055	<0.25	110	<0.50	<0.25	<0.50	**59**	48
B-07	B-7-SS-0.0	0	10/11/2007	1.4	**6.8**	200	0.45	<0.25	40	12	42	10	0.21	<0.25	61	1.8	<0.25	<0.50	**45**	120
B-08	B-8-SS-0.0' +	0	10/8/2007	1.4	**5.1**	130	0.36	<0.25	92	22	26	7.3	0.049	<0.25	130	<0.50	<0.25	<0.50	**57**	48
B-09	B-9-SS-0.0	0	10/11/2007	1.2	**5.8**	73	0.35	<0.25	77	18	18	14	0.39	<0.25	94	1.8	<0.25	<0.50	**45**	30
B-10	B-10-SS-0.0' *	0	10/1/2007	0.57	**4.9**	110	0.37	0.95	71	15	16	15	0.28	<0.25	72	1.5	<0.25	<0.50	**49**	340
B-11	B-11-SS-0.0' *	0	9/26/2007	<0.50	**5.9**	100	0.41	<0.25	62	20	26	18	0.23	0.51	100	<0.50	<0.25	<0.50	**47**	47
B-13	B-13-SS-0.0' *	0	10/4/2007	<0.50	**6.7**	85	0.34	<0.25	65	16	17	12	0.88	<0.25	73	1.5	<0.25	<0.50	**49**	35
B-14	B-14-SS-0.0	0	10/8/2007	1.6	**5.1**	140	0.41	<0.25	100	19	28	6.4	0.18	<0.25	**200**	1	<0.25	<0.50	**49**	47
B-16	B-16-SS-0.0'	0	10/16/2007	5.9	**6.0**	120	0.48	<0.25	24	9	27	8.4	0.023	<0.25	33	1.2	<0.25	<0.50	**27**	61
B-12	B-12-SS-0.0' *	0	9/26/2007	<0.50	**5.9**	74	0.36	<0.25	78	16	21	21	0.18	<0.25	100	0.76	<0.25	<0.50	**43**	60
B-12	B-12-SS-0.0' *	0	10/1/2007	0.85	**6.8**	73	0.33	<0.25	63	17	24	33	0.19	<0.25	83	1.5	<0.25	<0.50	**40**	54
			Residential ESL	6.3	0.39	750	4.0	1.7	750	40	225	200	1.3	40	150	10	20	1.3	16	600
			Commercial/Industrial ESL	40	1.6	1500	8.0	7.4	750	80	225	750	10	40	150	10	40	16	200	600
Deep Soil Samples																				
B-01	B-1-SS-36' *	36	10/3/2007	<0.50	8.7	110	0.34	<0.25	170	29	31	4.4	0.17	0.59	**350**	3.7	<0.25	<0.50	43	42
B-02	B-02-SS-35'	35	9/25/2007	<0.50	7.6	170	0.47	<0.25	29	12	60	9.6	0.15	<0.25	44	0.7	0.33	<0.50	44	120
B-03	B-03-SS-25.0 *	25	9/25/2007	<0.50	2.4	140	0.19	<0.25	320	**130**	49	3.1	0.55	3.3	**2100**	2.8	<0.25	<0.50	22	31
B-05	B-5-SS-46' *	46	10/3/2007	<0.50	8.3	81	0.39	<0.25	43	11	17	4.9	0.04	<0.25	39	1.6	<0.25	0.63	55	55
B-06	B-6-SS-25' *	25	10/4/2007	<0.50	**16**	82	0.49	<0.25	47	17	46	8.4	0.11	<0.25	73	2.9	<0.25	<0.50	52	75
B-08	B-8-SS-68' +	68	10/9/2007	0.64	5.6	110	0.41	<0.25	120	12	45	8.2	0.26	<0.25	48	1.8	<0.25	<0.50	41	60
B-11	B-11-SS-35' *	35	9/26/2007	<0.50	8.2	110	0.46	<0.25	40	16	52	6.7	0.072	0.28	69	1.5	<0.25	<0.50	45	68
B-13	B-13-SS-45' *	45	10/4/2007	<0.50	**29**	36	0.34	<0.25	22	17	44	7.8	0.43	1.1	46	3.9	0.25	1.1	35	61
B-14	B-14-SS-53' *	53	10/8/2007	1.7	6.5	72	0.31	<0.25	32	11	31	4.9	0.095	0.67	53	1.4	<0.25	<0.50	33	38
B-16	B-16-SS-55'	55	10/17/2007	6.3	5.3	230	0.40	<0.25	28	11	47	9.7	0.18	<0.25	38	2.8	<0.25	<0.50	40	74
B-12	B-12-SS-42' *	42	10/1/2007	<0.50	9.2	160	0.51	<0.25	42	16	59	6.4	0.12	1	74	<0.50	<0.25	<0.50	44	85
B-10	B-10-SS-45' *	45	10/1/2007	<0.50	6.7	190	0.49	<0.25	67	17	72	6.8	0.11	4.3	120	<0.50	<0.25	<0.50	46	61
			Residential ESL	310	15	2500	100	39	2500	94	2500	750	58	2500	260	2500	2500	62	770	2500
			Commercial/Industrial ESL	310	15	2600	100	39	5000	94	5000	750	58	3900	260	3900	3900	62	770	5000

Notes:
ft bgs = feet below ground surface
* = soil sample collected in a polymer container
+ = soil sample container type is not noted on chain of custody record
< = analyte not detected above laboratory reporting limit

ESL = Environmental Screening Levels, from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater where groundwater is a current or potential drinking water resource (SFRWQCB, 2008).

Soil samples collected from the site contained metal concentrations indicative of naturally-occurring background levels. Those samples collected from shallow and deep intervals at locations B-1 through B-14 and B-16 contained all or some of the following metals above their respective analytical reporting limit: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc.

Arsenic, nickel, and vanadium concentrations detected in shallow soil samples were the only metals detected above the relevant residential ESL, while arsenic and nickel concentrations were above the relevant industrial/commercial ESL. The concentration range of arsenic (5 mg/kg to 10 mg/kg) and vanadium (27 mg/kg to 57 mg/kg) coupled with the consistent distribution of these metals throughout the shallow soils at the site indicate that the arsenic and vanadium concentrations detected are likely naturally-occurring and at background levels. Background arsenic and vanadium concentrations can exceed ESL limits in many locations throughout the San Francisco Bay Area. LBNL reports a range of background arsenic concentration between 9.3 mg/kg and 31.0, and the USGS reports an average background vanadium concentration for the western US as 70 mg/kg. Three detections exceeded the ESL of 150 mg/kg. Given the range of concentrations detected and the potential that background concentrations of nickel can exceed ESLs in the San Francisco Bay Area, the three concentrations of nickel over the ESL are considered background and do not suggest a contaminant source.

A few detected concentrations of arsenic, cobalt, and nickel from deep soil samples exceeded the residential ESLs. The arsenic and nickel concentrations are generally below the range of published values for background metals concentrations except for detected concentration of nickel at 2,100 mg/kg at 25 feet (Boring B-03). The anomalously high concentration of nickel at 2,100 mg/kg is suspect because it is at a depth that precludes potential surface contaminant sources (high nickel concentrations were not found in the surface sample above) and the historical and neighboring RECs do not suggest that industrial processes have introduced nickel into the environment. The nickel detection found at boring B-03 is an order of magnitude higher than the remainder of background nickel concentrations detected at the site, that range consistently between 38 mg/kg and 120 mg/kg, and the next highest nickel concentration in deep soils is 350 mg/kg. The high nickel detection could be due to metals contained in the natural alluvial/bedrock materials at this location. Based on results of soil samples elsewhere on the site, the nickel concentrations detected in soils appear localized. The uncharacteristically high concentration of nickel detected in the deep alluvial soils is not considered an environmental concern for future site development because there is not an identified exposure pathway to sensitive receptors due to its depth.

A concentration of cobalt at 130 mg/kg was detected in a sample from 25 feet. The concentration is inconsistent with the other detected concentrations of cobalt that range between 11 mg/kg and 29 mg/kg. While it exceeds the ESL for cobalt by 36 mg/kg, it is not an indication of an environmental concern because it was detected at a depth that precludes a surface contaminant source and it is an isolated, elevated detection. Note that this detection of cobalt was in the same sample as the 2,100 mg/kg detection of nickel discussed above, which provides further evidence that the soil sample intersected alluvial material with particularly high natural metals

concentrations. The uncharacteristically high concentration of cobalt detected in the deep alluvial soils is not considered an environmental concern for future site development because there is not an identified exposure pathway to sensitive receptors due to its depth.

Groundwater

Analytical results of metals detected in grab groundwater and groundwater monitoring well samples are summarized on **Table 5**, along with the corresponding ESLs. Metals detected in grab groundwater samples include antimony, arsenic, barium, chromium, lead, molybdenum, nickel, selenium, vanadium, and zinc. Of these detected metals in grab groundwater samples, only antimony, chromium, molybdenum, nickel, selenium, and vanadium had detected concentrations above the relevant groundwater ESL. As mentioned previously, grab groundwater samples can be inherently unreliable due to several factors including the difficulty in isolating specific groundwater flow zones, potential for cross-contamination, and impacts to groundwater from drilling equipment. Due to the generally undependable nature of grab groundwater sample results, this investigation relies on the analytical results from the water samples collected from the monitoring wells.

With the exception of a few metals concentrations above the ESLs, the groundwater beneath the Amonos site contains naturally occurring metals concentrations, and do not indicate contamination from a surface contaminant source. Chromium was detected in one well at 390 µg/l, above the ESL of 50 µg/l. This detection is an isolated detection at a concentration uncharacteristic with other wells. Although this concentration of chromium exceeds the ESLs, it is likely a naturally-occurring concentration characteristic of the alluvial geology and not indicative of a surface source of contamination. Molybdenum and vanadium were detected in groundwater monitoring wells slightly above the respective ESL but these concentrations are also considered characteristic of the background geologic environment and not considered an indicator of a surface contaminant source.

5.2 Total Petroleum Hydrocarbons (TPH)

Shallow and deep soil samples were analyzed for gasoline-range organics (TPH-gro), diesel-range organics (TPH-dro), and motor oil-range organics (TPH-moro) using EPA method 8015. Results of the TPH analyses are summarized on **Table 6**. TPH-gro was not detected in shallow or deep soil samples, TPH-dro and TPH-moro were detected at low concentrations below the relevant ESLs for shallow and deep soils for residential and commercial/industrial land use scenarios for shallow soils.

Grab groundwater samples were analyzed for TPH-gro, TPH-dro, and TPH-moro, and results are summarized on **Table 7**. TPH-gro was not detected in grab groundwater samples. Both TPH-dro and TPH-moro were detected above the relevant ESLs for groundwater. TPH-dro was detected in eight of the 21 grab groundwater samples collected, and TPH-dro was detected in nine of the 21 grab groundwater samples collected. Note that the laboratory reporting limit for TPH-moro was above the ESL for 11 of the 21 grab groundwater samples. As mentioned previously, grab groundwater samples can be inherently unreliable due to several factors including the difficulty in isolating specific groundwater flow zones, potential for cross-contamination, and impacts to

TABLE 5
AMONOS SITE PHASE II INVESTIGATION
ANALYTICAL RESULTS FOR DETECTED METALS IN GRAB AND MONITORING WELLGROUNDWATER SAMPLES
CLOVERDALE, CALIFORNIA
(water concentrations in micrograms per liter [µg/l])

Sample Location	Sample Identification	Date Sampled	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (total)	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Grab Groundwater Samples																			
B-01	B-1-GW-24'	10/2/2007	<10	<5.0	610	<2.0	<5.0	<5.0	<5.0	<5.0	<3.4	<0.20	**40**	<5.0	<10	<5.0	<10	<5.0	<20
B-02	B-02-GW-30'	9/25/2007	<10	<6.1	200	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	<5.0	<5.0	<10	<5.0	<10	<5.0	<20
MW-01 (B-03)	B-03-GW-10'	9/25/2007	<10	<6.1	100	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	<5.0	**13**	<10	<5.0	<10	<5.0	<20
MW-01 (B-03)	B-03-GW-7.5	9/27/2007	<10	<5.0	470	<2.0	<5.0	<5.0	<5.0	<5.0	<3.4	<0.20	**270**	**37**	<10	<5.0	<10	<5.0	<20
B-04	B-4-GW-2.5'	10/17/2007	<10	<6.1	200	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	12	7.5	<10	<5.0	<10	<5.0	<20
MW-02 (B-05)	B-5-GW-45'	10/3/2007	**16**	<6.1	130	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	6.6	<5.0	<10	<5.0	<10	<5.0	<20
B-06	B-6-GW-17'	10/4/2007	<10	<6.1	81	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	5.2	<5.0	<10	<5.0	<10	<5.0	<20
MW-03 (B-07)	B-7-GW-41	10/11/2007	<10	<6.1	51	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	**170**	<5.0	<10	<5.0	<10	<5.0	<20
MW-04 (B-08)	B-8-GW-+1.25'	10/9/2007	<10	<6.1	54	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	**130**	<5.0	<10	<5.0	<10	<5.0	<20
MW-05 (B-08A)	B-8A-GW-70'	10/17/2007	**30**	<6.1	620	<2.0	<5.0	**150**	<5.0	<5.0	<3.0	<0.20	**65**	<5.0	**31**	<5.0	<10	**35**	<20
B-09	B-9-GW-25	10/11/2007	<10	<6.1	61	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	<5.0	<5.0	<10	<5.0	<10	<5.0	<20
B-09	B-9-GW-30.8'	10/17/2007	<10	<6.1	110	<2.0	<5.0	11	<5.0	<5.0	<3.0	<0.20	<5.0	<5.0	<10	<5.0	<10	6.6	<20
MW-07 (B-10)	B-10-GW-27.5'	10/1/2007	<10	<5.0	85	<2.0	<5.0	<5.0	<5.0	<5.0	<3.4	<0.20	10	**12**	<10	<5.0	<10	<5.0	<20
MW-07 (B-10)	B-10-GW-45'	10/2/2007	<10	<5.0	210	<2.0	<5.0	<5.0	<5.0	<5.0	<3.4	<0.20	8.3	<5.0	<10	<5.0	<10	<5.0	<20
B-11	B-11-GW-24'	9/26/2007	<10	<6.1	330	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	<5.0	<5.0	<10	<5.0	<10	<5.0	<20
MW-08 (B-12)	B-12-GW-28	9/28/2007	<10	<5.0	140	<2.0	<5.0	<5.0	<5.0	<5.0	<3.4	<0.20	25	<5.0	<10	<5.0	<10	<5.0	28
MW-08 (B-12)	B-12-GW-33'	10/1/2007	<10	<5.0	160	<2.0	<5.0	<5.0	<5.0	<5.0	<3.4	<0.20	23	<5.0	<10	<5.0	<10	<5.0	<20
B-13	B-13-GW-38'	10/4/2007	**41**	9.1	51	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	31	<5.0	<10	<5.0	<10	<5.0	<20
MW-09 (B-14)	B-14-GW-45'	10/8/2007	<10	<6.1	230	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	**77**	<5.0	<10	<5.0	<10	<5.0	<20
B-16	B-16-GW-45'	10/17/2007	**17**	<6.1	67	<2.0	<5.0	**370**	<5.0	<5.0	3.3	<0.20	**54**	<5.0	<10	<5.0	<10	**23**	<20
Groundwater Monitoring Well Samples																			
MW-01 (B-03)	0508-01	5/19/2008	<10	<5.0	120	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	<5.0	<5.0	<10	<5.0	<10	<5.0	<20
MW-02 (B-05)	0508-02	5/19/2008	<10	8.7	21	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	**36**	<5.0	<10	<5.0	<10	<5.0	<20
MW-03 (B-07)	0508-03	5/19/2008	<10	<5.0	21	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	<5.0	<5.0	<10	<5.0	<10	<5.0	21
B-08/MW-04	0508-04	5/20/2008	<10	12	170	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	<5.0	<5.0	<10	<5.0	<10	<5.0	<20
B-08A/MW-05	0508-05	5/20/2008	<10	<5.0	110	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	13	<5.0	<10	<5.0	<10	<5.0	<20
B-08A/MW-05	0508-12	5/20/2008	<10	<5.0	120	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	14	<5.0	<10	<5.0	<10	<5.0	<20
B-08B/MW-06	0508-06	5/20/2008	<10	<5.0	18	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	<5.0	<5.0	<10	<5.0	<10	<5.0	<20
B-10/MW-07	0508-07	5/19/2008	<10	<5.0	67	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	<5.0	<5.0	<10	<5.0	<10	<5.0	<20
MW-08 (B-12)	0508-08	5/19/2008	<10	<5.0	<5.0	<2.0	<5.0	**390**	<5.0	<5.0	<3.0	<0.20	8.7	<5.0	<10	<5.0	<10	**18**	<20
B-14/MW-09	0508-09	5/19/2008	<10	<5.0	200	<2.0	<5.0	<5.0	<5.0	<5.0	<3.0	<0.20	<5.0	<5.0	<10	<5.0	<10	<5.0	<20
		Groundwater ESL	6.0	36	1000	0.53	0.25	50	3.0	3.1	2.5	0.025	35	8.2	5.0	0.19	2.0	15	81

Notes:
< = analyte not detected above laboratory reporting limit

ESL = Environmental Screening Levels, from "Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater" where groundwater is a current or potential drinking water resource (SFRWQCB, 2008).

TABLE 6
AMONOS SITE PHASE II INVESTIGATION
ANALYTICAL RESULTS FOR VOCS AND TPH IN SHALLOW AND DEEP SOIL SAMPLES
CLOVERDALE, CALIFORNIA
(soil concentrations in milligrams per kilogram [mg/kg])

Sample Location	Sample Identification	Depth (ft bgs)	Date Sampled	2-Butanone	Methylene Chloride	Other VOCs	TPH-gro	TPH-dro	TPH-moro
Shallow Soil Samples									
B-01	B-1-SS-0.0' *	0	10/2/2007	<0.0098	<0.02	<0.0044-<0.050	<0.97	34 Y	100
B-02	B-02-SS-0.0' *	0	9/25/2007	<0.0089	<0.018	<0.0044-<0.050	<0.98	30 Y	150
B-03	B-03-SS-0.0 *	0	9/25/2007	<0.01	<0.02	<0.0044-<0.050	<0.97	26 H Y	150 H L
B-04	B-4-SS-0.0' *	0	10/3/2007	0.069	<0.019	<0.0044-<0.050	<0.98	21 Y	100
B-05	B-5-SS-0.0' *	0	10/3/2007	<0.0094	<0.019	<0.0044-<0.050	<1	26 Y	110
B-06	B-6-SS-0.0' *	0	10/4/2007	<0.0098	<0.02	<0.0044-<0.050	<0.96	23 Y	69
B-07	B-7-SS-0.0	0	10/11/2007	<0.0093	<0.019	<0.0044-<0.050	<1	28 Y	140
B-08	B-8-SS-0.0' +	0	10/8/2007	<0.0094	0.071	<0.0044-<0.050	<1	29 Y	240
B-09	B-9-SS-0.0	0	10/11/2007	<0.0088	<0.018	<0.0044-<0.050	<0.93	15 Y	81
B-10	B-10-SS-0.0' *	0	10/1/2007	<0.0093	<0.019	<0.0044-<0.050	<0.95	18 Y	86
B-11	B-11-SS-0.0' *	0	9/26/2007	<0.0098	<0.02	<0.0044-<0.050	<1	21 H Y	100 H L
B-12	B-12-SS-0.0' *	0	9/26/2007	<0.0096	<0.019	<0.0044-<0.050	<1	11 H Y	66 H L
B-12	B-12-SS-0.0' *	0	10/1/2007	<0.0091	<0.018	<0.0044-<0.050	<0.94	10 Y	60
B-13	B-13-SS-0.0' *	0	10/4/2007	<0.0094	<0.019	<0.0044-<0.050	<0.97	26 Y	94
B-14	B-14-SS-0.0	0	10/8/2007	<0.0091	<0.018	<0.0044-<0.050	<1.1	28 Y	140
B-16	B-16-SS-0.0'	0	10/16/2007	<0.0096	<0.019	<0.0044-<0.050	<1	10 Y	31
	Residential ESL			3.9	0.077	NA	83	83	370
	Commercial/Industrial ESL			3.9	0.077	NA	83	83	2500
Deep Soil Samples									
B-01	B-1-SS-36' *	36	10/3/2007	<0.0096	<0.019	<0.0045-<0.049	<1.1	17 Y	53
B-02	B-02-SS-35'	35	9/25/2007	<0.0096	<0.019	<0.0045-<0.049	<0.95	30 Y	42
B-03	B-03-SS-25.0 *	25	9/25/2007	<0.0098	<0.02	<0.0045-<0.049	<0.95	26 H Y	110 H L
B-05	B-5-SS-46' *	46	10/3/2007	<0.0096	<0.019	<0.0045-<0.049	<0.99	3.7 Y	7.4
B-06	B-6-SS-25' *	25	10/4/2007	<0.0098	<0.02	<0.0045-<0.049	<0.96	7.3 Y	8.3
B-08	B-8-SS-68' +	68	10/9/2007	<0.0094	<0.019	<0.0045-<0.049	<0.99	17 Y	11
B-10	B-10-SS-45' *	45	10/1/2007	<0.0094	<0.019	<0.0045-<0.049	<1.0	42 Y	190
B-11	B-11-SS-35' *	35	9/26/2007	<0.0096	<0.019	<0.0045-<0.049	<1	15 H Y	24 H L
B-12	B-12-SS-42' *	42	10/1/2007	<0.0089	<0.018	<0.0045-<0.049	<0.96	11 Y	34
B-13	B-13-SS-45' *	45	10/4/2007	<0.0096	<0.019	<0.0045-<0.049	<1.0	8.9 Y	17
B-14	B-14-SS-53' *	53	10/8/2007	<0.0096	<0.019	<0.0045-<0.049	<1	19	35
B-16	B-16-SS-55'	55	10/17/2007	<0.0093	<0.019	<0.0045-<0.049	<1.0	6.3 Y	<5.0
	Residential ESL			3.9	0.077	NA	83	83	5000
	Commercial/Industrial ESL			3.9	0.077	NA	83	83	5000

Notes:
ft bgs = feet below ground surface
* = soil sample collected in a polymer container
+ = soil sample container type is not noted on chain of custody record
< = analyte not detected above laboratory reporting limit
VOCs = volatile organic compounds
TPH = total petroleum hydrocarbons

TPH-gro = total petroleum hydrocarbons – gasoline range organics
TPH-dro = total petroleum hydrocarbons – diesel range organics
TPH-moro = total petroleum hydrocarbons – motor oil range organics

ESL = Environmental Screening Levels, from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater where groundwater is a current or potential drinking water resource (SFRWQCB, 2008).

TABLE 7
AMONOS SITE PHASE II INVESTIGATION
ANALYTICAL RESULTS FOR VOCS AND TPH IN GRAB AND MONITORING WELLGROUNDWATER SAMPLES
CLOVERDALE, CALIFORNIA
(water concentrations in micrograms per liter [µg/l])

Sample Location	Sample Identification	Date Sampled	VOCs	TPH-gro	TPH-dro	TPH-moro
Grab Groundwater Samples						
B-01	B-1-GW-24'	10/2/2007	<0.5 - <10	<50	53 Y	**<300**
B-02	B-02-GW-30'	9/25/2007	<0.5 - <10	<50	<50	**<300**
B-03/MW-01	B-03-GW-7.5	9/27/2007	<0.5 - <10	<50	79 Y	**120 J**
B-03/MW-01	B-03-GW-10'	9/25/2007	<0.5 - <10	<50	**120 H Y**	**180 J**
B-04	B-4-GW-2.5'	10/17/2007	<0.5 - <10	<50	<50	**81 J**
B-05/MW-02	B-5-GW-45'	10/3/2007	<0.5 - <10	<50	**260 Y**	**290 J**
B-06	B-6-GW-17'	10/4/2007	<0.5 - <10	<50	77 Y	**110 J**
B-07/MW-03	B-7-GW-41	10/11/2007	<0.5 - <10	<50	<50	**<300**
B-08/MW-04	B-8-GW-+1.25'	10/9/2007	<0.5 - <10	<50	**180 Y**	**<300**
B-08/MW-04	B-8-GW-+1.25'	10/9/2007	<0.5 - <10	<50	<50 b	**<300 b**
B-08A/MW-05	B-8A-GW-70'	10/17/2007	<0.5 - <10	<50	**350 Y**	**170 J**
B-09	B-9-GW-25	10/11/2007	<0.5 - <10	<50	57 Y	**<300**
B-09	B-9-GW-30.8'	10/17/2007	<0.5 - <10	<50	<50	**<300**
B-10/MW-07	B-10-GW-27.5'	10/1/2007	<0.5 - <10	<50	<50	**<300**
B-10/MW-07	B-10-GW-45'	10/2/2007	<0.5 - <10	<50	52 Y	**<300**
B-11	B-11-GW-24'	9/26/2007	<0.5 - <10	<50	<50	**<300**
B-12/MW-08	B-12-GW-28	9/28/2007	<0.5 - <10	<50	**760 Y**	**670**
B-12/MW-08	B-12-GW-33'	10/1/2007	<0.5 - <10	<50	**110 Y**	**120 J**
B-13	B-13-GW-38'	10/4/2007	<0.5 - <10	<50	74 Y	**<300**
B-14/MW-09	B-14-GW-45'	10/8/2007	<0.5 - <10	<50	**280 Y**	**370**
B-16	B-16-GW-45'	10/17/2007	<0.5 - <10	<50	**390 Y**	**220 J**
Groundwater Monitoring Well Samples						
B-03/MW-01	MW-01	5/19/2008	<0.5 - <10	NA	<50	**<300**
B-05/MW-02	MW-02	5/19/2008	<0.5 - <10	NA	<50	**<300**
B-07/MW-03	MW-03	5/19/2008	<0.5 - <10	NA	<50	**<300**
B-08/MW-04	MW-04	5/20/2008	<0.5 - <10	NA	<50	**<300**
B-08A/MW-05	MW-05	5/20/2008	<0.5 - <10	NA	<50	**<300**
B-08A/MW-05	MW-05	5/20/2008	<0.5 - <10	NA	<50	**<300**
B-08B/MW-06	MW-06	5/20/2008	<0.5 - <10	NA	<50	**<300**
B-10/MW-07	MW-07	5/19/2008	<0.5 - <10	NA	<50	**<300**
B-12/MW-08	MW-08	5/19/2008	<0.5 - <10	NA	<50	**<300**
B-14/MW-09	MW-09	5/19/2008	<0.5 - <10	NA	<50	**<300**
		Groundwater ESL	--	100	100	100

NOTES:

< = analyte not detected above laboratory reporting limit
VOCs = volatile organic compounds
TPH = total petroleum hydrocarbons
NA = not analyzed

TPH-gro = total petroleum hydrocarbons – gasoline range organics
TPH-dro = total petroleum hydrocarbons – diesel range organics
TPH-moro = total petroleum hydrocarbons – motor oil range organics

H = heavier hydrocarbons contributed to the quantification
L = lighter hydrocarbons contributed to the quantification
Y = sample exhibits chromatographic pattern which does not resemble standard
J = estimated value

ESL = Environmental Screening Levels, from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater where groundwater is a current or potential drinking water resource (SFRWQCB, 2008).

groundwater from drilling equipment. Due to the generally undependable nature of grab groundwater sample results, this investigation relies on the analytical results from the water samples collected from the monitoring wells.

The nine groundwater monitoring wells were sampled and analyzed for TPH-dro and TPH-moro and the results are summarized on **Table 7**. TPH-dro and TPH-moro were not detected in any of the groundwater monitoring well samples. Note that the laboratory reporting limit for TPH-moro was above the ESL for the nine groundwater samples analyzed.

5.3 Volatile Organic Compounds

Shallow and deep soil samples were collected and analyzed for VOCs using EPA method 8260B and the results are summarized in **Table 6**. 2-Butanone (also known as methyl ethyl ketone) was detected above the laboratory detection limit in the surface sample collected at B-04, and methylene chloride was detected above the laboratory detection limit at location B-08. The detections of 2-butanone and methylene chloride were below the relevant ESL for shallow soils (3.9 mg/kg and 0.077 mg/kg, respectively, for both residential and commercial/industrial land use scenario). It should be noted that both 2-Butanone and methylene chloride are found in household solvents and degreasers. In addition, they are often found in soil and groundwater samples as cross contaminants introduced in the analytical laboratory.

VOCs were not detected above the laboratory reporting limit in the deep soil samples. Similarly, VOCs were not detected above the laboratory reporting limit in grab groundwater samples or in samples collected from the groundwater monitoring wells, as summarized in **Table 7**.

Neighboring MGM Site

The potential for DNAPL and impacted groundwater associated with the MGM site to migrate onto the Amonos site required additional investigation according to the Phase I conducted by Geomatrix. Evaluation of remedial investigation and groundwater monitoring reports of the MGM site indicate that VOCs have been migrating off the MGM site through groundwater conduits associated with storm drain lines, an underground industrial waste line, and an underground sanitary sewer line. An additional conduit is also associated with a potential west-to-east alignment of the creek where a fracture system may be controlling both the creek alignment and groundwater flow on the northeast side of the MGM site (EKI, 2002).

Previous investigations conducted by Erler & Kalinowski, Inc. (EKI) on behalf of MGM Brakes Assembly Plant have delineated a potential extent of DNAPL below the main assembly plant and along two preferential flow paths, the extent of which remains on the MGM site. Further investigation of soil gas concentrations indicated that soil gas concentrations of VOCs were present just above the DNAPL plume. Sub-slab soil gas samples were collected in September of 1999 with the highest detected VOCs being trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE). TCE concentrations ranged from 1.542 micrograms per cubic meter ($\mu g/m^3$) to 1,257 $\mu g/m^3$ and cis-1,2-DCE concentrations ranged from 1.832 $\mu g/m^3$ to 464 $\mu g/m^3$ (EKI, 2000). The concentrations of TCE detected in soil gas are above the current ESL for residential land use (1,200 $\mu g/m^3$), but

below the current ESL for commercial land use (4,100 µg/m^3); the concentrations of cis-1,2-DCE were below the current ESL for residential and commercial/industrial land use (7,300 µg/m^3 and 20,000 µg/m^3, respectively). These elevated soil gas concentrations would be expected above a DNAPL source zone, and where elevated concentrations of VOCs are detected in soil. As noted by the SFRWQCB, soil gas data should be collected for additional evaluation of potential indoor-air impacts at sites with areas of VOC contaminated soil (SFRWQCB, 2008).

Additionally, surface and shallow groundwater samples collected along the unnamed creek indicate that in 1997, TCE, cis-1,2- DCE, and vinyl chloride were detected at elevated concentrations. Data for these samples were presented in EKI's "Summary Remedial Investigation Report and Final Remedial Action Plan" dated May 7, 2002. Groundwater samples were collected along transects; TCE concentrations ranged from less than 0.5 µg/l to 1,200 µg/l; cis-1,2-DCE concentrations ranged from less than 0.5 µg/l to 6,600 µg/l, and vinyl chloride concentrations ranged from less than 0.5 µg/l to less than 250 µg/l with one detection of 9.3 µg/l (EKI, 2002).

Subsequent to these findings, EKI, on behalf of MGM Brakes Assembly Plant and under RWQCB oversight, expanded their groundwater extraction system to capture the off-site migration of VOCs along the identified preferential flow paths, however additional remediation activities may be required to ensure that VOCs are fully captured by the remediation systems within the vicinity of the unnamed creek and the underground sanitary sewer line, which both run along the southern boarder of the Amonos site.

However, recent groundwater monitoring of shallow groundwater within the vicinity of the unnamed creek indicate that TCE and cis-1,2-DCE have decreased significantly since 1997. Surface and shallow groundwater samples were collected from the same surface water monitoring locations and installed piezometers on September 18, 2007 and analyzed for VOCs; the analytical results were downloaded from the State Water Resources Control Board (SWRCB) Geotracker website in December 2008 (SWRCB, 2008). Detected concentrations of TCE ranged from less than 0.5 µg/l to 2.95 µg/l in collected surface water samples, and TCE ranged from less than 0.5 µg/l to 1.02 µg/l in shallow groundwater samples; detected concentrations of cis-1,2-DCE ranged from less than 0.5 µg/l to 2.84 µg/l in collected surface water samples, and from less than 0.5 µg/l to 4.25 µg/l in shallow groundwater. These recent concentrations of TCE and cis-1,2-DCE in surface water and shallow groundwater are below the respective ESLs of 5 µg/l for TCE and 6 µg/l for cis-1,2-DCE (the ESLs are the same for surface water and groundwater).

Three MGM groundwater monitoring wells are located adjacent to or on the Amonos site, including MGM-30 (screened from 15.5 feet bgs to 25.5 feet bgs), MGM-35 (screened from 5 feet bgs to 15 feet bgs), and MGM-40 (screened from 5.5 feet bgs to 9.5 feet bgs). The location of these wells is illustrated on **Figure 3**. These wells were sampled on September 18, 2007 and analyzed for VOCs; the analytical results were downloaded from the SWRCB Geotracker website in December 2008 (SWRCB, 2008). Detected concentrations of TCE ranged from 1.28 µg/l at MGM-35, 3.38 µg/l at MGM-40, and 118 µg/l at MGM-30; detected concentrations of cis-1,2-DCE ranged from 0.75 µg/l at MGM-35, 1.38 µg/l at MGM-40, and 38.9 µg/l at MGM-30. These

detected concentrations indicate that shallow groundwater on the Amonos site (as measured from MGM-35 and MGM-40) are below the respective ESLs for TCE and cis-1,2-DCE.

5.4 Pesticides and Polychlorinated Biphenols (PCBs)

Analytical results of pesticides and PCBs for surface soils and grab groundwater samples are summarized on **Table 8**. Surface soil samples were collected from B-1 and B-10 through B-13 and analyzed for pesticides using EPA method 8081and PCBs using EPA method 8082. Pesticide compounds 4,4-DDT, 4,4-DDE, and 4,4-DDD and PCB compound Arochlor were detected above the laboratory reporting limit. None of the detected concentrations were above the relevant ESLs.

Grab groundwater samples were collected from boring location B-12 at a depth of 27 and 31 feet bgs, respectively. Pesticides and PCBs were not detected in the grab groundwater samples. Please note that the laboratory reporting limit for pesticides and PCBs was above the ESL for the two grab groundwater samples.

6. Conclusions

This Phase II Investigation reviewed and evaluated previous Phase I studies and soil and groundwater sampling and analysis work, which was previously conducted to assess the potential impacts to soil and groundwater at the Amonos site in Cloverdale, California. Available information and data reviewed for this site does not suggest that ongoing or historical site uses have resulted in significant soil or groundwater contamination on the site.

Concentrations of metals in the soil and groundwater appear to be indicative of naturally-occurring background levels although there are a few instances of metals concentrations exceeding the ESLs. Considering the geologic environment, especially in the northern Coast Ranges region, it is not uncommon for background metals to exceed ESLs. Of the elevated metals concentrations detected, the results do not suggest a surface contaminant source or more widespread soil and groundwater contamination.

TPH and VOCs did not exceed Environmental Screening Levels (ESLs) established by the State of California to protect human health and the environment. Additionally, the environmental impact to the Amonos site from the MGM Brake facility is negligible. A release of industrial solvents occurred at the MGM Brake facility located southwest and across Highway 101 from the Amonos site many years ago and the plume has migrated offsite. The MGM Brake site is currently under regulatory clean up oversight by the Regional Water Quality Control Board, which is requiring continued monitoring and remediation activities. Although there is reported concentrations of volatile organic compounds (VOCs) in the groundwater flowing through backfill of an offsite sewer main, the impact to groundwater appears minor, localized within the backfill, and contained within the identified preferential flow paths. Investigation results indicate that VOCs from the MGM site have not migrated onto the Amonos site above the relevant ESLs.

Based on the findings of this Phase II, soil and groundwater contamination does not appear to present a significant issue for the proposed future development at the Amonos site.

TABLE 8
AMONOS SITE PHASE II INVESTIGATION
ANALYTICAL RESULTS FOR PESTICIDES IN SOIL SAMPLES
AND GRAB GROUNDWATER SAMPLES
CLOVERDALE, CALIFORNIA

Sample Location	Sample Identification	Date Sampled	4,4'-DDD	4,4'-DDE	4,4'-DDT	alpha-Chlordane	gamma-Chlordane	Aroclor-1260
Shallow Soil Samples (reported in milligrams per kilogram)								
B-10	B-10-SS-0.0'	10/1/2007	<3.3	<3.3	<3.3	<1.7	<1.7	<12
B-11	B-11-SS-0.0'	9/26/2007	<3.3	<3.3	<3.3	<1.7	<1.7	<12
B-12	B-12-SS-0.0'	9/26/2007	<3.3	4.8	<3.3	<1.7	<1.7	49
B-12	B-12-SS-0.0'	10/1/2007	<3.3	7.6	<3.3	<1.7	<1.7	<12
B-12	B-12-SS-0.0'-EAST 2.5	10/17/2007	<3.3	5.4	<3.3	<1.7	<1.7	19
B-12	B-12-SS-0.0'-EAST 5.0	10/17/2007	<3.3	5.9	<3.3	<1.7	<1.7	<12
B-12	B-12-SS-0.0'-NORTH 2.5	10/17/2007	<3.3	3.6	<3.3	<1.7	<1.7	<12
B-12	B-12-SS-0.0'-NORTH 5.0	10/17/2007	<3.3	4.4	<3.3	<1.7	<1.7	<12
B-12	B-12-SS-0.0'-SOUTH 2.5	10/17/2007	<3.3	<3.3	<3.3	<1.7	<1.7	<12
B-12	B-12-SS-0.0'-SOUTH 5.0	10/17/2007	<3.3	3.5	<3.3	<1.7	<1.7	<12
B-12	B-12-SS-0.0'-WEST 2.5	10/17/2007	<3.3	<3.3	<3.3	<1.7	<1.7	<12
B-12	B-12-SS-0.0'-WEST 5.0	10/17/2007	<3.3	<3.3	<3.3	<1.7	<1.7	<12
B-13	B-13-SS-0.0'	10/4/2007	<3.3	<3.3	<3.3	<1.7	<1.7	<12
B-01	B-1-SS-0.0'	10/2/2007	5.7	17	94	6.1 C	15 C	<12
		Residential ESL	2.4	1.7	1.7	0.44	0.22	0.22
		Commercial/Industrial ESL	10	4.0	4.0	1.7	0.74	0.74
Grab Groundwater Samples (reported in micrograms per liter)								
B-12	B-12-GW-28'	9/28/2008	<0.1 b	<0.1 b	<0.1 b	<0.05 b	<0.05 b	<0.50 b
B-12	B-12-GW-33'	10/1/2007	<0.1	<0.1	<0.1	<0.05	<0.05	<0.50
		Groundwater ESL	0.0010	0.0010	0.0010	0.0040	0.0040	0.014

NOTES:

* = soil sample collected in a polymer container
+ = soil sample container type is not noted on chain of custody record
< = analyte not detected above laboratory reporting limit

b = sample was prepared outside of hold time

ESL = Environmental Screening Levels, from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater where groundwater is a current or potential drinking water resource (SFRWQCB, 2008).

7. Limitations and Exceptions

The opinions and recommendations presented in this report are based upon the scope of services, information obtained from PJAMM from previous site investigation activities, and the schedule as agreed upon by ESA and PJAMM. Site specific activities performed by Weiss Associates, and Geomatrix Consultants, and information collected regarding these activities, were reviewed by ESA to the extent practical for use in this Phase II Investigation Report. To the extent that ESA relied upon any information prepared by other parties not under contract to ESA, ESA makes no representation as to the accuracy or completeness of such information beyond the reasonable evaluation of site activities and analytical data received. This report is an instrument of professional service and was prepared in accordance with the generally accepted standards and

level of skill and care under similar conditions and circumstances established by the environmental consulting industry. It must be recognized, however, that this Phase II was intended for the purpose of determining and characterizing the potential extent for contamination, based on the observations from a Phase I Environmental Site Assessment and does represents a conclusive or complete site characterization. ESA's ability to interpret investigation results is dependant on the availability of the data and the extent of the investigation activities. The conclusions and recommendations presented in this Phase II pertain to the conditions judged to be present or applicable at the site (Amonos site, Cloverdale California) and the time the work was performed. ESA developed its opinions in accordance with accepted site assessment and engineering practices for this time and specific site. It should be understood that some of the findings presented in this report are based on analytical results of soil and groundwater samples collected at select onsite locations. These results may not reflect conditions at locations not sampled. As such, 100 percent confidence in Phase II conclusions cannot reasonably be achieved. The interpretations and conclusions contained in this report represent our professional opinions. Other than this, no warranty is implied or intended.

8. Signature of Environmental Professionals

This Phase II Investigation Report has been prepared by ESA staff whose signature appears below. The recommendations, specifications, and methodologies presented herein were prepared and presented in accordance with generally accepted practices at the time that this report was prepared, and are true and correct to the best of my knowledge.

Prepared by:

Peter B. Hudson
Senior Geologist
PG # 6730, CEG # 2348 Expires 10/31/09

References Cited

City of Oakland, 2008. City of Oakland, Survey of Background Metal Concentrations Studies. Available at http://www.oaklandpw.com/Asset1116.aspx, accessed December 2008.

Erler & Kalinowski, Inc. (EKI), 2002. Summary Remedial Investigations Report and Final Remedial Action Plan, MGM Brakes Assembly Plant, Cloverdale, California. Prepared for MGM Brakes. May 7, 2002.

Geomatrix Inc., 2007a. Phase I Environmental Site Assessment, Lile Property, Cloverdale, California. Prepared for Perry, Johnson, Anderson, Miller & Moskowitz, LLP. November 2007.

Geomatrix Inc., 2007b. Phase I Environmental Site Assessment, Hayes & Ruiz Properties, Cloverdale, California. Prepared for Perry, Johnson, Anderson, Miller & Moskowitz, LLP. September 2007.

San Francisco, Regional Water Quality Control Board, 2008. Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final – November 2007 (Revised May 2008).

State Water Resources Control Board, 2008. GeoTracker Website for MGM Brakes Assembly Plant (TO6090793349), available at http://geotracker.swrcb.ca.gov/profile_report.asp?global_id=T0609793349# , accessed December 2008.

United States Geological Survey (USGS), 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States, Professional Paper 1270.

Weiss Associates, 2007. Confidential Cloverdale Project, Due Diligence Technical Report. Prepared for Perry, Johnson, Anderson, Miller & Moskowitz LLP.

APPENDIX A

Drilling Permits
Field Notes
Boring Logs
Well Elevation Survey Results

PERMITS

Villegas printing & copycenter
707.545.8990
fax: 707.545.0229 3551 Westwind Blvd., Santa Rosa, CA 95403

FAX COVER SHEET

Date: 9/17/07
To: Jessica Rotich
Company: Weiss Associates
Phone: 510-450-6000
Fax: 510-547-5043

From: Gini Gandhar
Phone:
Company:

Message: Here are the permit copies.

If there is any problem with this transmission, plase call (707) 545-8990. Thank you.

For Office Use Only
Address _____
_____
Site ID# _____
Permit # _____

I hereby agree to comply with all laws and regulations of the County of Sonoma and State of California pertaining to water well construction. I will telephone (707) 565-6565, 48 hours in advance, to notify the Environmental Health Specialist when completing or destroying a well. I will furnish the Director of Health Services and the owner a legible copy of the State Water Well Driller's Report within 15 days; and a copy of the Summary Report, including sample results, should be received by this Department within 90 days in order to obtain final approval on this well permit. I acknowledge that the application will become a permit *only* after site approval and payment of fee. I understand that this permit is not transferable and expires one year from date of issuance.

Gordon [illegible] Date 9/14/07

Signature of Well Driller—*no proxies*

Insurance Carrier State Fund Expiration Date 02/01/08

Once all wells/borings are installed, submit a Well Driller's Log and/or Summary Report to complete permit process.

Indicate on attached plot plan the exact location of well(s) with respect to the following items: property lines, water bodies or water courses drainage pattern, roads, existing wells, sewer main and laterals and private sewage disposal systems or other sources of contamination or pollution. INCLUDE DIMENSIONS. The validity of this permit depends upon the accuracy of the information provided by the applicant.

Conditions of permit:

_____

_____

_____

_____

_____

_____

_____

❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖

FOR OFFICE USE ONLY – ENVIRONMENTAL HEALTH DIVISION

Permit approved by _____ Date ____/____/____

Constr. approved by _____ Observed? [ ] Yes [ ] No Well # _____ Date ____/____/____

RWQCB / LOP approval _____ Date ____/____/____

APN #	Propery Address	Property Owner Address	Phone #
116-310-039	80 El Rancho Dr.	Vern Lile, 80 El Rancho Dr. Cloverdale, CA 95425	707-894-2977
116-310-040 and 116-310-035	250 Lile Lane through 496 Lile Lane, Cloverdale, CA	Micky Hayes, Pacific Gulf LLC, 1225 Walters Lane Yreka, CA 96907	530-841-1818
116-310-020	585 Santana Dr., Cloverdale, CA	Lety Ruiz 585 Santana Dr, Cloverdale, CA 95425	707-669-0393

COUNTY OF SONOMA — DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL HEALTH DIVISION
475 Aviation Blvd., Suite 220, Santa Rosa, CA 95403
Phone (707) 565-6565 Fax (707) 565-6525 www.sonoma-county.org

APPLICATION FOR DRILLING PERMIT
for Regional Board Lead/Environmental Assessment / LOP Lead

For Office Use Only
Amount paid _____
Receipt number _____
Payment date _____ Rev code _____
Site ID# _____
Permit # _____

Well type: [✓] Monitoring well [ ] Recovery extraction well [ ] Boring [ ] Injection well [ ] Destruct [✓] Environmental assessment
[ ] Soil gas survey [ ] Direct push [ ] Air sparging/venting [ ] Remediation well [ ] Other _____

Well depth 50' Boring depth _____
On-site well/boring 7 ID # 10M, 8M, 14M, 7M, 5M, 3M, 4M # Off-site well/boring — ID # —

Submit legal right-of-entry/off-site well address/encroachment permit
On-site Address 250 through 496 Lile Lane/585 Santana Dr Cloverdale CA 95425 APN# 116-310-039, 116-310-040, 116-310-035, 116-310-020
Facility Name None
On-site Owner See attached sheet Phone _____
Street _____ City _____ State _____ Zip _____
Responsible Party Confidential Client Phone 503-221-2261
Street One SW Columbia St, Ste 950 City Portland State OR Zip 97258
Consultant Weiss Associates Phone 510-450-6162
Street 5801 Christie Ave. City Emeryville State CA Zip 94608
License #/Type 606481
Drilling Contractor Western State Exploration Inc. Phone 916-744-1440
Street P.O. Box 657 City Clarksburg State CA Zip 95612
C-57 License # CALIC# 552198

Type of work: [✓] Initial investigation 7 # Wells [ ] Subsequent investigation _____ # Wells [ ] Destruct _____ # Wells

Groundwater investigation due to: [ ] Underground tank [ ] Surface impoundment [✓] Environmental assessment
[ ] Surface disposal practice—specify involved industry _____
[ ] Other _____

Perforated intervals ~40-50' Chemical constituents VOCs, TPHg/d/MO, Nitrate
Disposal method for soil cuttings * Disposal method for development water **
Drilling method Air Rotary Case Hammer Method of drill equip. rinsate containment 55 gallon drums
If destroying a well, abandonment method —

Submit plot plan of wells in relation to all sewer or septic lines.

Is well to be constructed within: 100 feet of a septic tank or leachfield? [ ] Yes [✓] No
50 feet of any sanitary sewer line? [✓] Yes [ ] No
25 feet of any private sanitary sewer line? [ ] Yes [✓] No

In addition, all monitoring wells must include ***identification system*** affixed to interior surface:
1) Well identification 2) Well type 3) Well depth 4) Well casing diameter 5) Perforated intervals

Well identification number and well type shall be ***affixed*** to the ***exterior surface*** security structure.

* Cuttings will be sampled + stored onsite. If cuttings are not contaminated, they will stockpiled onsite. If cuttings are contaminated they will be disposed using an appropriate waste hauler.
** Same as soil cuttings, will be stored onsite pending analysis.

C. INTY OF SONOMA — DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL HEALTH DIVISION
475 Aviation Blvd., Suite 220, Santa Rosa, CA 95403
Phone (707) 565-6565 Fax (707) 565-6525 www.sonoma-county.org

APPLICATION FOR DRILLING PERMIT
for Regional Board Lead/Environmental Assessment / LOP Lead

For Office Use Only
Amount paid ____
Receipt number ____
Payment date ____ Rev. code ____
Site ID# ____
Permit # ____

Well type: [ ] Monitoring well [ ] Recovery extraction well [✓] Boring [ ] Injection well [ ] Destruct [✓] Environmental assessment
[ ] Soil gas survey [ ] Direct push [ ] Air sparging/venting [ ] Remediation well [ ] Other ____

Well depth ____ Boring depth 50'

On-site well/boring 9 ID # 1,2,6,9,11,12,13,15+ ~~[illegible]~~ 16 # Off-site well/boring – ID # –

Submit legal right-of-entry/off-site well address/encroachment permit

On-site Address 250 through 496 Lile Lane / 585 Santana Dr, Cloverdale CA 95425 P# 116-310-039, 116-310-040, 116-310-035, 116-310-020

Facility Name None

On-site Owner See attached Sheet Phone ____

Street ____ City ____ State ____ Zip ____

Responsible Party Confidential Client Phone 503-221-2261

Street One SW Columbia St, Ste 950 City Portland State OR Zip 97258

Consultant Weiss Associates Phone 510-450-6162

Street 5801 Christie Ave City Emeryville State CA Zip 94608

License #/Type 606481

Drilling Contractor Western Strata Exploration Inc. Phone 916-744-1440

Street P.O. Box 657 City Clarksburg State CA Zip 95612

C-57 License # CA LIC# 552198

Type of work: [✓] Initial investigation ____ # Wells [ ] Subsequent investigation ____ # Wells [ ] Destruct ____ # Wells

Groundwater investigation due to: [ ] Underground tank [ ] Surface impoundment [✓] Environmental assessment
[ ] Surface disposal practice—specify involved industry ____
[ ] Other ____

Perforated intervals ~40-50' Chemical constituents VOCs, TPHg/d/MO, Nitrate

Disposal method for soil cuttings * Disposal method for development water **

Drilling method Air Rotary Casing Hammer Method of drill equip. rinsate containment 55 gallon drums

If destroying a well, abandonment method —

Submit plot plan of wells in relation to all sewer or septic lines.

Is well to be constructed within: 100 feet of a septic tank or leachfield? [ ] Yes [✓] No
50 feet of any sanitary sewer line? [✓] Yes [ ] No
25 feet of any private sanitary sewer line? [ ] Yes [✓] No

In addition, all monitoring wells must include ***identification system*** affixed to interior surface:

1) Well identification 2) Well type 3) Well depth 4) Well casing diameter 5) Perforated intervals

Well identification number and well type shall be ***affixed*** to the ***exterior surface*** security structure.

* Cuttings will be sampled + stored onsite. If cuttings are not contaminated, they will be stored/stockpiled onsite. If cuttings are contaminated, they will be disposed using an appropriate waste hauler.

** Same as soil cuttings; will be stored onsite pending analysis.

For Office Use Only
Address _____
_____
Site ID# _____
Permit # _____

I hereby agree to comply with all laws and regulations of the County of Sonoma and State of California pertaining to water well construction. I will telephone (707) 565-6565, 48 hours in advance, to notify the Environmental Health Specialist when completing or destroying a well. I will furnish the Director of Health Services and the owner a legible copy of the State Water Well Driller's Report within 15 days; and a copy of the Summary Report, including sample results, should be received by this Department within 90 days in order to obtain final approval on this well permit. I acknowledge that the application will become a permit *only* after site approval and payment of fee. I understand that this permit is not transferable and expires one year from date of issuance.

Gordon Ofensen Date 9/14/07

Signature of Well Driller—*no proxies*

Insurance Carrier State Fund Expiration Date 02/01/08

Once all wells/borings are installed, submit a Well Driller's Log and/or Summary Report to complete permit process.

Indicate on attached plot plan the exact location of well(s) with respect to the following items: property lines, water bodies or water courses drainage pattern, roads, existing wells, sewer main and laterals and private sewage disposal systems or other sources of contamination or pollution. INCLUDE DIMENSIONS. The validity of this permit depends upon the accuracy of the information provided by the applicant.

Conditions of permit:

_____

_____

_____

_____

_____

_____

_____

❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖

FOR OFFICE USE ONLY – ENVIRONMENTAL HEALTH DIVISION

Permit approved by _____ Date ____/____/____

Constr. approved by _____ Observed? [ ] Yes [ ] No Well # _____ Date ____/____/____

RWQCB / LOP approval _____ Date ____/____/____

APN #	Propery Address	Property Owner Address	Phone #
116-310-039	80 El Rancho Dr.	Vern Lile, 80 El Rancho Dr. Cloverdale, CA 95425	707-894-2977
116-310-040 and 116-310-035	250 Lile Lane through 496 Lile Lane, Cloverdale, CA	Micky Hayes, Pacific Gulf LLC, 1225 Walters Lane Yreka, CA 96907	530-841-1818
116-310-020	585 Santana Dr., Cloverdale, CA	Lety Ruiz 585 Santana Dr, Cloverdale, CA 95425	707-669-0393

FIELD NOTES

FIELD ACTIVITY LOG

Weiss Associates

Project Name: Perry Johnson Date: April 07, 2008 Page 1 of 1

Project #: 379-1824-15-3 Project Manager: JEA

Name: JMD

Total Hours Billed: 13.75 Other:

Vehicle (Field Use): Weiss X Personal Rental

Odometer in: Odometer out: Mileage: X

Time	Activity Description
0430	Arrived @ shop, Mob
0530	Depart for site
0800	Onsite, checked w/ hotel to ensure was RTG for later/All ok Located mail center
0830	Met w/ Dave from TA. could not locate first ~~2~~ two wells, called REK, GG, RD + JEA, left messages w/all.
0900	REK returned call + helped w/ access issues
0930	@ MW-3, setup + ~~began development~~
1000	Began surging + development. Standpipe is 29" above gs
1030	Well dry, Moving on to MW-2, will return, Decon
1110	@ MW-2 began surge for 10 min + development Standpipe is 33" above gs. Well recharge slow.
1145	MW-2 Dry, will return, decon equip
1215	Lunch
1245	To MW-9, setup + surge. Casing bent around 25'. Had to work past with every pass on the way down. Casing is 23.5" above gs. Extremely silty. Called JEA and asked how to proceed. Waited for response.
1700	Reached 10 casing volumes. Well did not clean up @ all. Called JEA, she said to stop for the day. Packed up
1745	Departed site.
1800	Checked into hotel
1845	~~Done~~ Unloaded equip + Done
	~~Done~~

Time	Telephone Calls
0830	GG, RD, JEA, REK - Trying to find access points to wells, LM's
1630	JEA - Told her well isn't coming clean, waited for response
1700	JEA - Said to call it a day. Will proceed on 4/8/08.

Weiss Associates

Well Development Form

Project Name: Perry Johnson

Project No.: 379-1824-15-3

Initials: JMD

Date: 4/7/08

PM: JEA

Well ID: MW-09/B14	Casing Diameter (in.): 2"
Well Development Method: Surge/Bailer	Well Depth (ft btoc): 64.52
Depth to Water before Development: 20.35	Screened Interval (ft btoc): 53-63'
Top of Casing Elevation: Standpipe is 23.5" Above bgs N/A	Sand Pack Interval (ft btoc):

Time	DTW (ft btoc)	pH	Temp. (°C)	Cond. (µS/cm)	Turb. (NTU)	Flow Rate	Gallons Purged	Comments
1338	20.35	Began surging			—	—	—	surged for 10 min
— casing bent, had to work surge block through								
1400	23.62	7.87	17.7	749	>1000	Bailer	8	very silty/Grey
1425	24.31	7.70	17.0	788us	>1000		16	" "
1449	24.01	7.64	17.2	770us	>1000		24	" "
1450	— Surged for 10 min							
1520	24.70	7.60	17.4	767	>1000		32	" "
1537	25.68	7.60	17.4	787	>1000		40	" "
1550	25.90	7.54	17.4	785	>1000		48	" "
1550	— Surged for 10 min							
1615	24.08	7.57	17.7	757	>1000		56	" "
1630	24.38	7.56	17.6	760	>1000		64	" "
1650	24.67	7.66	17.3	755	>1000		72	" "
1705	24.50	7.69	17.2	740	>1000		80	" "
— Stopping for the day per JEA								

Total Pumping Time:	Well Depth after Development: 65.53
Total Gallons Purged: 80	Water Injected (Y/N, volume): N
Average Pumping Rate:	Well Development Observer (Y/N, name):

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

FIELD ACTIVITY LOG

Weiss Associates

Project Name: Perry Johnson/Cloverdale Date: 4/8/08 Page 1 of

Project #: 379-1824-15-3 Project Manager: JEA

Vehicle (Field Use): Weiss X Personal Rental

Odometer in: Odometer out: Mileage: X

Name: JMD

Total Hours Billed: 12 Other:

Time	Activity Description
0688	Load equip.
0630	Met w/ Dave from TA. Setup for day
0745	Began surging MW-3 again
0800	Began bailing MW-3
0820	Switched to Grundfos, set flow to 0.25gpm to attempt allowing the well to keep up.
0930	Well dry. Moving on to MW-2, Decon all equip.
1025	Arrived @ MW-2. Had to wait for pesticide crew to clear roadway. Setup
1030	Began surge and development.
1100	Well MW-2 Dry. Will return. To MW-8 + setup
1135	Begin surge + bail
1215	Lunch, will return to MW-8, allowing recharge
1245	Back to MW-8.
1330	Completed development on MW-8, moved to MW-1. Turned off electric fence and collapsed fencing. Decon all equip.
1420	Began surging + bailing MW-1
1645	Stopped @ 20 casing volumes. Per JEA. Packed up reconected fencing, Decon equip.
1730	Depart site
1745	unload equip.
1800	Done
1830	PW + phone meetings
1900	Done

Time	Telephone Calls
1100	JEA - She said TA will do air lift on MW-9
1830	JEA - Planning for drums
	Dave w/TA - Planning for drum delivery

Weiss Associates

Well Development Form

Project Name: Perry Johnson

Project No.: 379-1824-15-3

Initials: JMQ

Date: 4/7/08

PM: JEA

Well ID: MW-02/B-05	Casing Diameter (in.): 2"
Well Development Method: Surge Block, Bailer	Well Depth (ft btoc): 42.76
Depth to Water before Development: 7.57	Screened Interval (ft btoc): 30'-40'
Standpipe is 33" above gs Top of Casing Elevation: N/A	Sand Pack Interval (ft btoc): 28'-42'

Time	DTW (ft btoc)	pH	Temp. (°C)	Cond. (µS/cm)	Turb. (NTU)	Flow Rate	Gallons Purged	Comments
1110	7.57	Began surging						surged for 10 min
1125	—	9.17	16.9	1490 uS	>1000	Bailer	1	initial
1133	34.20	9.43	16.2	1459	>1000		6	slowed down to allow recd
1140	40.09	8.87	17.1	1476	>1000		9	well dry/will return
— Returned 4/8/08 —								
1030	9.14	— Began Surge for 10 min						
1045	26.72	8.25	16.7	1223	>1000	Bailer	12	Tan, clearing
1055	40.01	8.06	17.2	1170	>1000	"	18	Brown, sheen
1057	Well dry - Will Return							

Total Pumping Time:	Well Depth after Development: 42.79
Total Gallons Purged: 18	Water Injected (Y/N, volume): N
Average Pumping Rate:	Well Development Observer (Y/N, name):

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

Weiss Associates

Well Development Form

Project Name: Perry Johnson

Project No.: 379-1824-15-3

Initials: JMP

Date: 4/7/08-4/8

PM: JEA

Well ID: MW-3/B7 ~~MW-01~~/B-03	Casing Diameter (in.): 2"
Well Development Method: Surge + Bail + pump	Well Depth (ft btoc): 52.80
Depth to Water before Development: 19.12	Screened Interval (ft btoc): 40'
Top of Casing Elevation: N/A casing standpipe is 29"	Sand Pack Interval (ft btoc): 38'

Time	DTW (ft btoc)	pH	Temp. (°C)	Cond. (µS/cm)	Turb. (NTU)	Flow Rate	Gallons Purged	Comments
1004	19.12	Surged for 10 min prior to purge					0	1 min per ft of screen
1015	34.32	7.56	17.4	2.61ms	>1000	—	[illegible]	well drawing down
1028	38.81	7.63	17.6	2.47 ms	>1000	—	6	well dry/will return
—	4/8/08	Returned to well					—	—
0748	19.86	— Began surge for 10 min						—
0810	41.48	7.63	15.8	1560 us	>1000	—	12	Turbid
0820	42.06	7.69	16.6	1369 us	>1000	0.25 gpm	18	" " switched to pu
0845	44.81	7.68	14.9	1059 us	533	0.25	24	Clearing, Tan
— Surged for 10 Min —								
0915	46.28	7.68	17.7	1320 us	>1000	0.25 gpm	30	Turbid
0930	DRY	7.50	18.2	1943 us	>1000	0.5 gpm	36	" " well dry
— Will Return later, Well Dry —								

Total Pumping Time:	Well Depth after Development: 52.93
Total Gallons Purged: 36	Water Injected (Y/N, volume): N
Average Pumping Rate:	Well Development Observer (Y/N, name):

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

Weiss Associates

Well Development Form

Project Name: Perry Johnson

Project No.: 379-1824-15-3

Initials: JMD

Date: 4/8/08

PM: JEA

Well ID: MW-1 ~~MW-03/B-03~~	Casing Diameter (in.): 2"
Well Development Method: Surge/Bailer	Well Depth (ft btoc): 21.43
Depth to Water before Development: 5.28	Screened Interval (ft btoc): 10'-20'
Top of Casing Elevation: Standpipe is 27.5" above gs N/A	Sand Pack Interval (ft btoc):

Time	DTW (ft btoc)	pH	Temp. (°C)	Cond. (µS/cm)	Turb. (NTU)	Flow Rate	Gallons Purged	Comments
1420	- Begin Surging for 10 min							Soft bottom
1435	8.52	8.75	16.2	706	>1000		3	very silty, olive
1440	8.34	8.29	15.9	697	>1000		6	" sheen "
1445	6.98	8.41	15.8	659	>1000		9	silty, olive, sheen
- Surge for 10 min								
1500	9.64	8.20	16.2	638	>1000		12	silty, olive, sheen
1504	9.47	8.08	15.9	624	>1000		15	" "
1508	8.98	8.00	15.8	617	>1000		18	" "
- Surge for 10 min								
1521	7.96	7.94	16.0	634	>1000		21	olive, silty
1524	7.78	7.91	15.9	621	>1000		24	" "
1527	6.12	8.01	15.2	619	>1000		27	Brown, silty
- Surge for 10 min								
1543	7.82	7.90	15.9	637	>1000		30	olive, silty
1550	8.06	7.88	15.4	625	>1000		36	switched to every 2 volns
1557	8.11	7.80	15.4	620	>1000		42	olive, silty
1614	8.01	7.81	15.4	629	>1000		48	Surged for 10 min
1622	8.09	7.88	15.3	619	>1000		54	olive, silty

Total Pumping Time:	Well Depth after Development: 22.00
Total Gallons Purged: 54	Water Injected (Y/N, volume): N
Average Pumping Rate:	Well Development Observer (Y/N, name):

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

Weiss Associates

Well Development Form

Project Name: Perry Johnson

Project No.: 379-1824-15-3

Initials: JMD

Date: 4/8/08

PM: JEA

Well ID: MW-08/B-12	Casing Diameter (in.): 2"
Well Development Method: Surge, Bailer	Well Depth (ft btoc): 32.89
Depth to Water before Development: 22.84	Screened Interval (ft btoc): 20'-30'
Top of Casing Elevation: Standpipe is above gs N/A	Sand Pack Interval (ft btoc):

Time	DTW (ft btoc)	pH	Temp. (°C)	Cond. (µS/cm)	Turb. (NTU)	Flow Rate	Gallons Purged	Comments
1135	22.84	- Began	Surge for	10 min				— soft bottom
1150	28.49	12.12	18.5	2.70ms	411	1gpm	2	clearing fast/sheen
1152	29.83	12.18	18.0	2.72ms	219		4	Tan
1155	29.99	12.23	17.7	2.62ms	206		6	Drawdown
- Surged well for 10 min —								
1210	30.16	12.18	17.9	2.54ms	252		8	
1215	30.36	12.19	18.0	1976us	270		10	
— Taking break to allow recharge —								
1315	28.86	12.16	17.8	1708us	185		12	
- Surged well for 10 min —								
1320	28.98	12.16	18.0	1720	149		14	
1324	30.03	12.14	17.6	1623	148		16	
- Done per JEA —								

Total Pumping Time:	Well Depth after Development: 32.75
Total Gallons Purged: 16	Water Injected (Y/N, volume): N
Average Pumping Rate:	Well Development Observer (Y/N, name):

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

FIELD ACTIVITY LOG

Weiss Associates

Project Name: Perry Johnson /Cloverdale Date: 4/9/08 Page 1 of

Project #: 379-1824-15-3 Project Manager: JEA

Vehicle (Field Use): Weiss X Personal Rental

Odometer in: Odometer out: Mileage: X

Name: JMD

Total Hours Billed: 13 Other:

Time	Activity Description
0600	Load truck
0630	Meet w/ Dave, setup & decon
0715	To MW-7
0900	Began surging + developing MW-7
1015	Completed 10 casing volumes. Well not clearing, moving on
1030	setup @ MW-6
1035	Began surging + developing MW-6
1300	Completed 10 casing volumes on MW-6
1305	Lunch
1345	Back to site, setup on MW-4
1418	Began surge and development of MW-4
1800	Completed 10 casing volumes on MW-4, Packed up, decon
1830	Depart site + unload equip.
1900	PW.
1930	Done

Time	Telephone Calls

Weiss Associates

Well Development Form

Project Name: Perry Johnson

Project No.: 379-1824-15-3

Initials: JMP

Date: 4/9/08

PM: JEA

Well ID: MW-07/B-10	Casing Diameter (in.): 2"
Well Development Method: Surge/Bailer	Well Depth (ft btoc): 31.12
Depth to Water before Development: 18.98	Screened Interval (ft btoc): 25-35'
Top of Casing Elevation: N/A standpipe is 39" above gs	Sand Pack Interval (ft btoc): 22-36

Time	DTW (ft btoc)	pH	Temp. (°C)	Cond. (µS/cm)	Turb. (NTU)	Flow Rate	Gallons Purged	Comments
0810	— Began surging for 10 min —							
0840	20.94	7.72	15.8	714	>1000		3	Brown, very silty
0847	20.57	7.46	16.6	609	>1000		6	" "
0854	20.68	7.35	16.5	547	>1000		9	surged for 10 min
0913	20.36	7.29	16.4	571	>1000		12	Brown, very silty
0920	20.39	7.32	16.5	543	>1000		15	" "
0926	20.42	7.25	16.6	503	>1000		18	Surged for 10 min
0943	20.46	7.17	16.7	504	>1000		24	Brown, very silty
0950	20.49	7.20	16.6	440	>1000		27	" "
1009	20.47	7.10	16.9	439	>1000		30	Surged for 10 min
— Well not getting any better — Stopping development								

Total Pumping Time:	Well Depth after Development: 38.47
Total Gallons Purged: 30	Water Injected (Y/N, volume): N
Average Pumping Rate:	Well Development Observer (Y/N, name):

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

Weiss Associates

Well Development Form

Project Name: Perry Johnson

Project No.: 379-1824-15-3

Initials: JMD

Date: 4/9/08

PM: JEA

Well ID: MW-06/B-08B	Casing Diameter (in.): 4"
Well Development Method: Surge/Bailer	Well Depth (ft btoc): 23.36
Depth to Water before Development: 10.87	Screened Interval (ft btoc): 10-20
Top of Casing Elevation: N/A Standpipe is 38" above gs	Sand Pack Interval (ft btoc): 8-21

Time	DTW (ft btoc)	pH	Temp. (°C)	Cond. (µS/cm)	Turb. (NTU)	Flow Rate	Gallons Purged	Comments
1035	— Begin Surging for 10 min —							
1049	17.91	8.00	16.9	319	>1000		8	Brown, very silty
1059	18.32	7.60	16.4	329	>1000		16	" " drawdown
1109	20.75	7.53	16.2	339	>1000		24	" "
—	Surged for 10 min —							
1125	19.22	7.43	17.0	238	>1000		32	light Brown, clearing
1135	20.86	7.24	16.5	269	>1000		40	light Brown, turbid
1145	22.50	7.33	16.1	227	>1000		50	" "
—	Surged for 10 min							
1215	20.03	7.18	17.0	227	>1000		58	" "
1225	20.98	7.28	16.3	234	>1000		66	" "
1235	21.09	7.22	16.6	252	>1000		74	" "
— Surged for 10 min								
1255	21.00	7.20	16.5	248	>1000		82	

Total Pumping Time:	Well Depth after Development: 23.51
Total Gallons Purged: 82	Water Injected (Y/N, volume): N
Average Pumping Rate:	Well Development Observer (Y/N, name):

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

Weiss Associates

Well Development Form

Project Name: Perry Johnson

Project No.: 379-1824-15-3

Initials: JMD

Date: 4/9/08

PM: JEA

Well ID: MW-04/ B08	Casing Diameter (in.): 4
Well Development Method: Surge/Bailer/Pump	Well Depth (ft btoc): 68.81
Depth to Water before Development: 19.70	Screened Interval (ft btoc): 55-65
Standpipe is 36" above gs Top of Casing Elevation: N/A	Sand Pack Interval (ft btoc): 52-66

Time	DTW (ft btoc)	pH	Temp. (°C)	Cond. (µS/cm)	Turb. (NTU)	Flow Rate	Gallons Purged	Comments
1418	Began Surging for 10 min							
1458	30.05	8.01	18.9	558	>1000	Bailer	32	olive brown, silty
1518	30.64	7.65	19.0	470	>1000	2gpm	64	switched to pump
1530	31.01	7.53	19.2	472	>1000	" "	96	olive brown, turbid
–	Surge for 10 min							
1559	29.58	7.61	18.7	451	>1000	" "	128	" "
1612	31.39	7.51	18.8	453	>1000	2.5	160	clearing
1627	31.92	7.50	18.9	454	>1000	2.5	192	olive tan, turbid
–	Surge for 10 min							
1656	32.01	7.64	19.0	448	>1000	2.5	224	" "
1708	32.40	7.53	19.0	446	>1000	" "	256	" "
1731	32.98	7.59	18.1	451	>1000	" "	288	" "
–	Surge for 10 min							
1800	29.14	7.62	18.6	469	>1000	" "	320	" "

Total Pumping Time:	Well Depth after Development: 68.74
Total Gallons Purged: 320	Water Injected (Y/N, volume): N
Average Pumping Rate: 2.5gpm	Well Development Observer (Y/N, name):

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

FIELD ACTIVITY LOG

Weiss Associates

Project Name: Perry Johnson/Cloverdale Date: 4/10/08 Page 1 of 1

Project #: 379-1824-15-3 Project Manager: JEA

Vehicle (Field Use): Weiss ✓ Personal ___ Rental ___

Odometer in: ___ Odometer out: ___ Mileage: ∅

Name: JMD

Total Hours Billed: 10.75 Other: ___

Time	Activity Description
0600	Mob equip.
0630	Met w/ Dave from TA, prep for day
0700	To MW-5. Fixed 3" Grundfos pump
0810	Began surge on MW-5
0820	Began development of MW-5
0930	Found one drum that leaked, pumped water
~~103~~	out into another drum and marked it as bad
1030	Pump failed, pulled + repaired
1200 ~~105~~	Lunch
1230	Back to MW-5, surged for 10 min + developed
1430	Completed Development of MW-5, Packed up
1530	PW
1630	Done w/ Development
1715	Worked on Mob for Sampling

Time	Telephone Calls

Weiss Associates

Well Development Form

Project Name: Perry Johnson

Project No.: 379-1824-15-3

Initials: JMD

Date: 4/10/08

PM: JEA

Well ID: MW-05/ B08A	Casing Diameter (in.): 4"
Well Development Method: Surge/ Pump	Well Depth (ft btoc): 93.22
Depth to Water before Development: 18.62	Screened Interval (ft btoc):
Top of Casing Elevation: N/A	Sand Pack Interval (ft btoc):

Time	DTW (ft btoc)	pH	Temp. (°C)	Cond. (µS/cm)	Turb. (NTU)	Flow Rate	Gallons Purged	Comments
0809	— Began	Surge	for	10	min	—		—
0855	44.13	8.65	19.5	578	>1000	4gpm	49	Brown, turbid, Sodor
0910	57.70	8.55	19.5	549	>1000	" "	98	Sheen " "
0923	65.71	8.52	19.7	552	>1000	" "	147	" "
— Surge	for	10	min	—			~~196~~	—
1006	57.57	8.49	19.6	546	>1000	" "	196	" "
1019	67.00	8.56	19.9	556	>1000	" "	245	" "
1040	75.07	8.53	19.8	549	>1000	" "	294	Pump failure, repaired
05 —	Surge	for	10	min	—			
1250	48.64	8.65	19.7	562	>1000	" "	343	Brown, turbid, Strong Odor
1303	58.29	8.59	19.9	564	>1000	" "	392	" "
1317	68.81	8.60	20.0	564	>1000	" "	441	" "
—	Surge	for	10	min	—			—
1420	50.20	8.60	20.1	559	>1000	" "	490	" "

Total Pumping Time:	Well Depth after Development: 93.81
Total Gallons Purged: 490	Water Injected (Y/N, volume): N
Average Pumping Rate: 4 gpm	Well Development Observer (Y/N, name):

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

FIELD ACTIVITY LOG

Weiss Associates

Project Name: Perry Johnson/Cloverdale Date: 4/11/08 Page 1 of 1

Project #: 379-1824-153 Project Manager: JGA

Name: JMD

Total Hours Billed: 10 Other:

Vehicle (Field Use): Weiss ☒ Personal ___ Rental ___

Odometer in: ___ Odometer out: ___ Mileage: X

Time	Activity Description
0600	Packed up for day
0645	Checked out of hotel
0715	Met w/ Chuck Bartleson from Tyri's Corp. Went around site to find access points for Artesian Spring + River.
0930	@ river, setup for sampling.
0945	Collected sample from river, labled 0408-10
1015	To Artesian spring.
1045	@ Artesian spring, setup for sampling
1100	Collected samples from Artesian Spring.
1130	Pack up for site departure, got gas.
1200	Depart site.
1300	@ Analytical Sciences lab for drop-off.
1315	Depart for E-ville shop.
1400	@ E-ville. Dropped off remaining samples + COC's w/ Gini.
1430	Depart for MV.
1545	@ shop. DemOb
1630	Done

Time	Telephone Calls
0930	GG- Questions about sampling protocol.

WATER SAMPLING DATA SHEET

Weiss Associates

PROJECT NAM Perry Johnson	**Sample Location:** River	**Sample ID:** 0408-10 River	
PROJECT NO: 379--1824-15-3	**Sampled By:** JMD	**Sample Date:** April 10, 2008	
		Sample Time: 0945	

WEATHER ☒ Sunny ☐ Cloudy ☐ Rainy ☐ Foggy ☐ Windy Temp: 70

SAMPLE TYPE ☒ Original ☐ Duplicate ☐ Trip Blank ☐ Equip. Blank ☐ Other:

SAMPLE SOUI ☐ Monitoring Well ☐ Extraction Well ☐ Piezometer ☐ System* ☒ Other: River

CALIBRATION

Meter Type	Time	ID Number	Manufacturer	Calibration Performed and Results		
pH (initial)	0845	110777	Oakton	☒ 4 4.00	☒ 7 7.06	☒ 10 10.18
pH (final)						
Conductivity				1413		
Turbidity						
Other: DO				100%		

☐ Teflon ☐ Stainless ☐ Brass

TOTALIZER Start: gal. Rate: gpm Time:

End: gal. Rate: gpm Time:

PURGE VOLUMES & WATER QUALITY PARAMETER MEASUREMENTS

Time	Volume Purged	pH	Temp. °C	Ec µS/cm	Turbidity NTU	DO mg/L	ORP mV
0945	—	8.09	12.6	230 us	6.09	15.59	—
Stabilization Goals:		± 0.1	± 0.3 °C	± 3%	± 10%	± 10%	
Precision:		0.10	1.0 °C	10 µS/cm	0.1 NTU		

Odor: ☒ None ☐ Gasoline ☐ Diesel ☐ Solvent ☐ Sulfur ☐ Metallic

~~Duplicate~~ ☐ Other:

Solids: ☒ None ☐ Trace ☐ Small Quantity ☐ Mod. Quantity ☐ Large Quantity

~~Duplicate~~ ☐ Silt ☐ Sand ☐ Gravel ☐ Organic Material ☐ Other:

☐ Separate Phase Hydrocarbons ☐ Sheen ☐ Measurable Amount: mm

SAMPLE LOG

Sample ID	Cont. Type	# of Containers	Volume (mL)	Preservative	Filtered (Y/N)	Other
0408-10	Poly	1	500	HNO_3	Y	
" "	Poly	2	500	None	N	
" "	Jar Plastic	1	1000		N	
" "	VOA	4	40	None	N	
" "						
" "						

Final Check: VOAs free of air bubbles? ☒ Yes ☐ No ☐ N/A

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

* If sample source is anything other than treatment system sample port, Page 2 of the Water Sampling Data Sheet must be completed.

WATER SAMPLING DATA SHEET

Weiss Associates

PROJECT NAM Perry Johnson	**Sample Location:** River	**Sample ID:**	0408-10
PROJECT NO: 379--1824-15-3	**Sampled By:** JMD	**Sample Date:**	April 10, 2008
		Sample Time:	0945

SAMPLE SOUI ☐ Monitoring Well ☐ Extraction Well ☐ Piezometer ☐ System* ☒ Other: River

WELL MEASUREMENTS		Measurements	Well Conditions	
Water Level Meter No.:			locked?	Yes ☐ No ☐
Depth to Water	DTW	ft.	casing	OK ☐ Not OK ☐
Depth to Product	DTP	ft.	plugs	OK ☐ Not OK ☐
Product Thickness	PT	ft.	seal	OK ☐ Not OK ☐
Specified Well Depth	SWD	ft.	vault	OK ☐ Not OK ☐
Measured Well Depth	MWD	ft.	Comments:	
Well Diameter	D	inches		

PURGE CALCULATIONS	Formula	Value	Actual gal. Purged:
Standing Water Height	SWH = MWD - DTW	ft.	
Well Casing Volume	WCV = SWH * V_D	gal.	
Well Casing Volumes to be Purged	N		
Total to be Purged	= WCV * N	gal.	☐ Low-flow/micro-purge method

PURGE EQUIPMENT			Dedicated:	☐ Yes	☐ No	
Pump ID#:	☐ Bladder	☐ Submersible	☐ Sump	☐ Peristaltic	☐ Other:	
Tubing:	☐ Disposable	☐ PVC	☐ Polyethylene	☐ Teflon	☐ Silicone	☐ Tygon
Bailer ID#:	☐ Disposable	☐ PVC	☐ Polyethylene	☐ Teflon	☐ Other:	
Sample Port:		☐ PVC	☐ Polyethylene	☐ Teflon	☐ Stainless	☐ Brass
Purge Equipment Decontamination			Decon:	☐ Yes	☐ No	☐ N/A
Method:		☐ Steam	☐ Alconox	☐ DI Water	☐ Other	

PURGE TIME AND WELL RECOVERY		1st Purge	2nd Purge	3rd Purge	4th Purge
Purged Dry? ☐ No ☐ Yes	Start:				
DTW during Pu ft.	Stop:				
SWH during Pu ft.	Elapsed Time:				
MWD - 80%SW ft.	DTW:				
% Recovery at Sample Time: %	Total Purge Volume:			Total Purge Time:	

SAMPLE EQUIPMENT			Dedicated:	☐ Yes	☐ No	
Pump ID#:	☐ Bladder	☐ Submersible	☐ Sump	☐ Peristaltic	☐ Other:	
Tubing:	☐ Disposable	☐ PVC	☐ Polyethylene	☐ Teflon	☐ Silicone	☐ Tygon
Bailer ID#:	☐ Disposable	☐ PVC	☐ Polyethylene	☐ Teflon	☐ Other:	
Sample Port:		☐ PVC	☐ Polyethylene	☐ Teflon	☐ Stainless	☐ Brass
Sample Equipment Decontamination			Decon:	☐ Yes	☐ No	☐ N/A
Method:		☐ Steam	☐ Alconox	☐ DI Water	☐ Other	

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

Formulas/Conversions:

cylinder volume = $\pi r^2 h$

r = well radius (ft) ft^3 = 7.48 gallons

h = height of water column (ft)

$V_{2\text{-inch casing}}$ = 0.163 gallons/ft

$V_{3\text{-inch casing}}$ = 0.367 gallons/ft

$V_{4\text{-inch casing}}$ = 0.653 gallons/ft

$V_{6\text{-inch casing}}$ = 1.47 gallons/ft

$V_{8\text{-inch casing}}$ = 2.61 gallons/ft

* If sample source is anything other than treatment system sample port, Page 2 of the Water Sampling Data Sheet must be completed.

WATER SAMPLING DATA SHEET

Weiss Associates

PROJECT NAM Perry Johnson	Sample Location: ~~#REF!~~ Artesian Spring	Sample ID: ~~#REF!~~ 0408-11	
PROJECT NO: 379--1824-15-3	Sampled By: JMD	Sample Date: April 10, 2008	
		Sample Time: 1100	

WEATHER	☒ Sunny	☐ Cloudy	☐ Rainy	☐ Foggy	☐ Windy	Temp: 75
SAMPLE TYPE	☒ Original	☐ Duplicate	☐ Trip Blank	☐ Equip. Blank	☐ Other:	
SAMPLE SOUI	☐ Monitoring Well	☐ Extraction Well	☐ Piezometer	☐ System*	☒ Other: Artesian Spring	

CALIBRATION

Meter Type	Time	ID Number	Manufacturer	Calibration Performed and Results		
pH (initial)	0845	110777	Oakton	☒ 4 4.00	☒ 7 7.06	☒ 10 10.18
pH (final)						
Conductivity				1413		
Turbidity						
Other: DO				100%		

☐ ~~Teflon~~ ☐ Stainless ☐ Brass

TOTALIZER	Start: gal.	Rate: gpm	Time:	
	End: gal.	Rate: gpm	Time:	

PURGE VOLUMES & WATER QUALITY PARAMETER MEASUREMENTS

Time	Volume Purged	pH	Temp. °C	Ec µS/cm	Turbidity NTU	DO mg/L	ORP mV
1100	—	7.65	15.9	325 us	9.04	8.85	—
Stabilization Goals:		± 0.1	± 0.3 °C	± 3%	± 10%	± 10%	
Precision:		0.10	1.0 °C	10 µS/cm	0.1 NTU		

Odor:	☒ None	☐ Gasoline	☐ Diesel	☐ Solvent	☐ Sulfur	☐ Metallic
Duplicate	☐ Other:					
Solids:	☒ None	☐ Trace	☐ Small Quantity	☐ Mod. Quantity	☐ Large Quantity	
Duplicate	☐ Silt	☐ Sand	☐ Gravel	☐ Organic Material		☐ Other:
	☐ Separate Phase Hydrocarbons		☐ Sheen	☐ Measurable Amount:		mm

SAMPLE LOG

Sample ID	Cont. Type	# of Containers	Volume (mL)	Preservative	Filtered (Y/N)	Other
0408-11	Poly	1	500	HNO_3	Y	
" "	Poly	2	500	None	N	
" "	Plastic Jar	1	100	$Na_2S_2O_3$	N	
" "	VOA	4	40	None	N	

Final Check: VOAs free of air bubbles? ☒ Yes ☐ No ☐ N/A

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

* If sample source is anything other than treatment system sample port, Page 2 of the Water Sampling Data Sheet must be completed.

WATER SAMPLING DATA SHEET

Weiss Associates

PROJECT NAM Perry Johnson	Sample Location: Artesian Spring #REF!	Sample ID: ~~#REF!~~ 0408-11	
PROJECT NO: 379--1824-15-3	Sampled By: JMD	Sample Date: April 1[illegible], 2008	
		Sample Time: 1100	

SAMPLE SOUI ☐ Monitoring Well ☐ Extraction Well ☐ Piezometer ☐ System* ☒ Other: Artesian Spring

WELL MEASUREMENTS		Measurements	Well Conditions	
Water Level Meter No.:			locked?	Yes ☐ No ☐
Depth to Water	DTW	ft.	casing	OK ☐ Not OK ☐
Depth to Product	DTP	ft.	plugs	OK ☐ Not OK ☐
Product Thickness	PT	ft.	seal	OK ☐ Not OK ☐
Specified Well Depth	SWD	ft.	vault	OK ☐ Not OK ☐
Measured Well Depth	MWD	ft.	Comments:	
Well Diameter	D	inches		

PURGE CALCULATIONS	Formula	Value	Actual gal. Purged:
Standing Water Height	SWH = MWD - DTW	ft.	
Well Casing Volume	WCV = SWH * V_D	gal.	
Well Casing Volumes to be Purged	N		
Total to be Purged	= WCV * N	gal.	☐ Low-flow/micro-purge method

PURGE EQUIPMENT			Dedicated:	☐ Yes	☐ No	
Pump ID#:	☐ Bladder	☐ Submersible	☐ Sump	☐ Peristaltic	☐ Other:	
Tubing:	☐ Disposable	☐ PVC	☐ Polyethylene	☐ Teflon	☐ Silicone	☐ Tygon
Bailer ID#:	☐ Disposable	☐ PVC	☐ Polyethylene	☐ Teflon	☐ Other:	
Sample Port:		☐ PVC	☐ Polyethylene	☐ Teflon	☐ Stainless	☐ Brass
Purge Equipment Decontamination			Decon:	☐ Yes	☐ No	☐ N/A
Method:		☐ Steam	☐ Alconox	☐ DI Water	☐ Other	

PURGE TIME AND WELL RECOVERY			1st Purge	2nd Purge	3rd Purge	4th Purge
Purged Dry?	☐ No ☐ Yes	Start:				
DTW during Pu	ft.	Stop:				
SWH during Pu	ft.	Elapsed Time:				
MWD - 80%SW	ft.	DTW:				
% Recovery at Sample Time:	%	Total Purge Volume:		Total Purge Time:		

SAMPLE EQUIPMENT			Dedicated:	☐ Yes	☐ No	
Pump ID#:	☐ Bladder	☐ Submersible	☐ Sump	☐ Peristaltic	☐ Other:	
Tubing:	☐ Disposable	☐ PVC	☐ Polyethylene	☐ Teflon	☐ Silicone	☐ Tygon
Bailer ID#:	☐ Disposable	☐ PVC	☐ Polyethylene	☐ Teflon	☐ Other:	
Sample Port:		☐ PVC	☐ Polyethylene	☐ Teflon	☐ Stainless	☐ Brass
Sample Equipment Decontamination			Decon:	☐ Yes	☐ No	☐ N/A
Method:		☐ Steam	☐ Alconox	☐ DI Water	☐ Other	

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

Formulas/Conversions:

cylinder volume = $\pi r^2 h$

r = well radius (ft) ft^3 = 7.48 gallons

h = height of water column (ft)

$V_{2\text{-inch casing}}$ = 0.163 gallons/ft

$V_{3\text{-inch casing}}$ = 0.367 gallons/ft

$V_{4\text{-inch casing}}$ = 0.653 gallons/ft

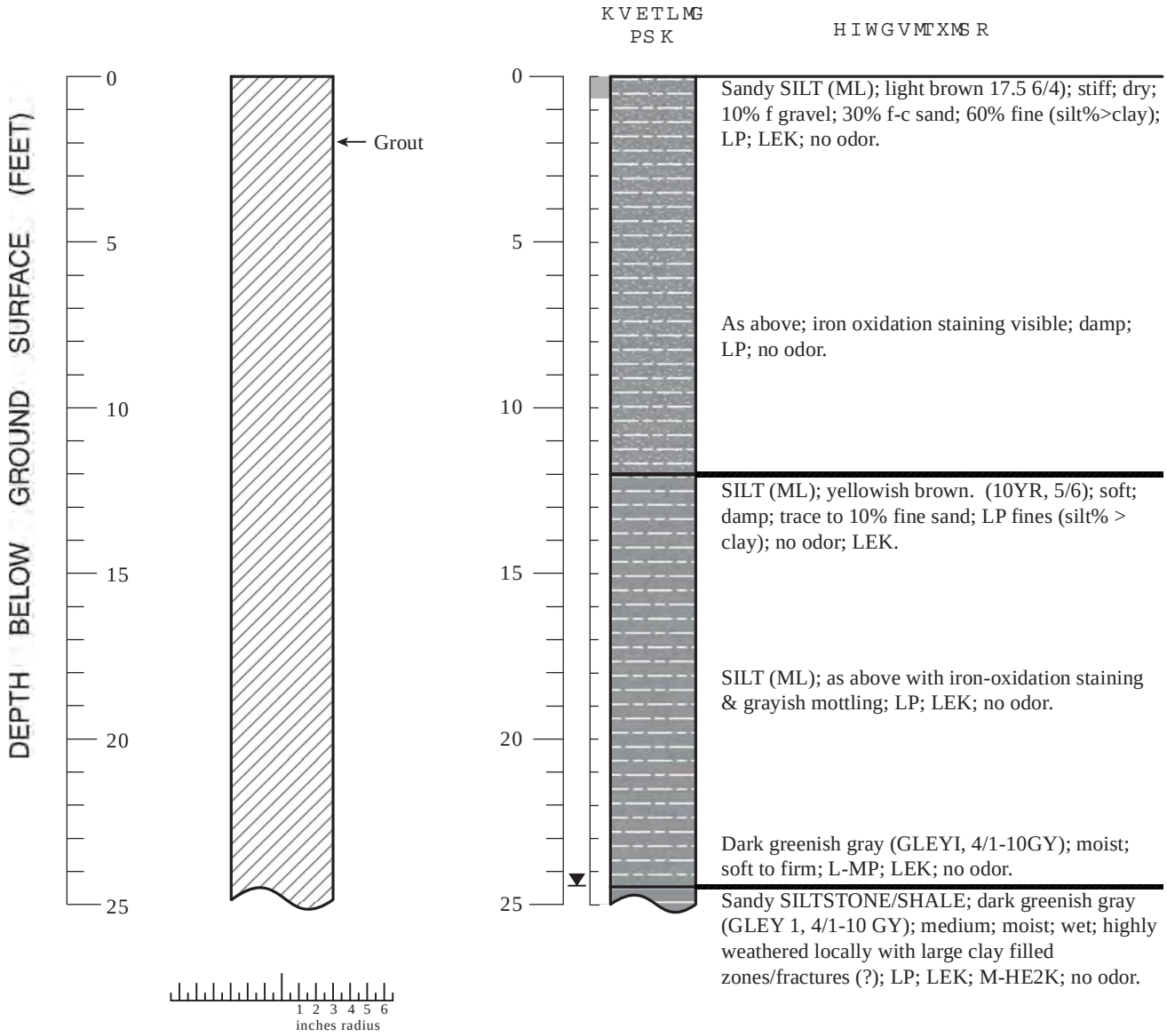
$V_{6\text{-inch casing}}$ = 1.47 gallons/ft

$V_{8\text{-inch casing}}$ = 2.61 gallons/ft

* If sample source is anything other than treatment system sample port, Page 2 of the Water Sampling Data Sheet must be completed.

BORINGS LOGS AND WELL CONSTRUCTION DETAILS

F svmrk $F 14 5



EXPLANATION

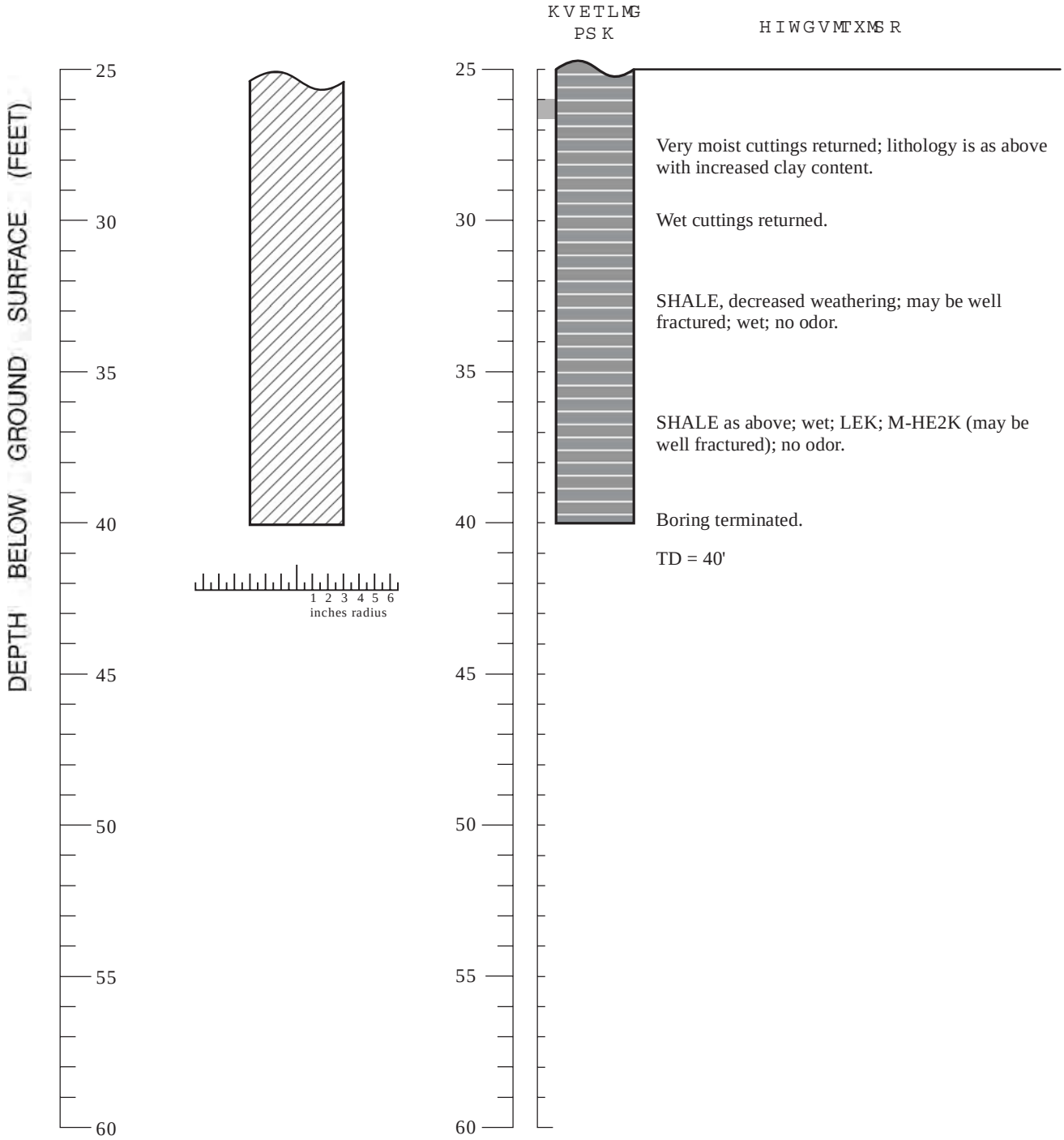
- ▼ Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

Logged By:	Rob Davis, Randy Kirby
Supervisor:	Joyce Adams
Drilling Company:	Westex
License Number:	C57-552198
Driller:	Mark Dockerey
Drilling Method:	Air rotary
Date Drilled:	10/02/07
Well Head Completion:	N/A
Type of Sampler:	Split Spoon
Ground Surface Elevation:	323.9'

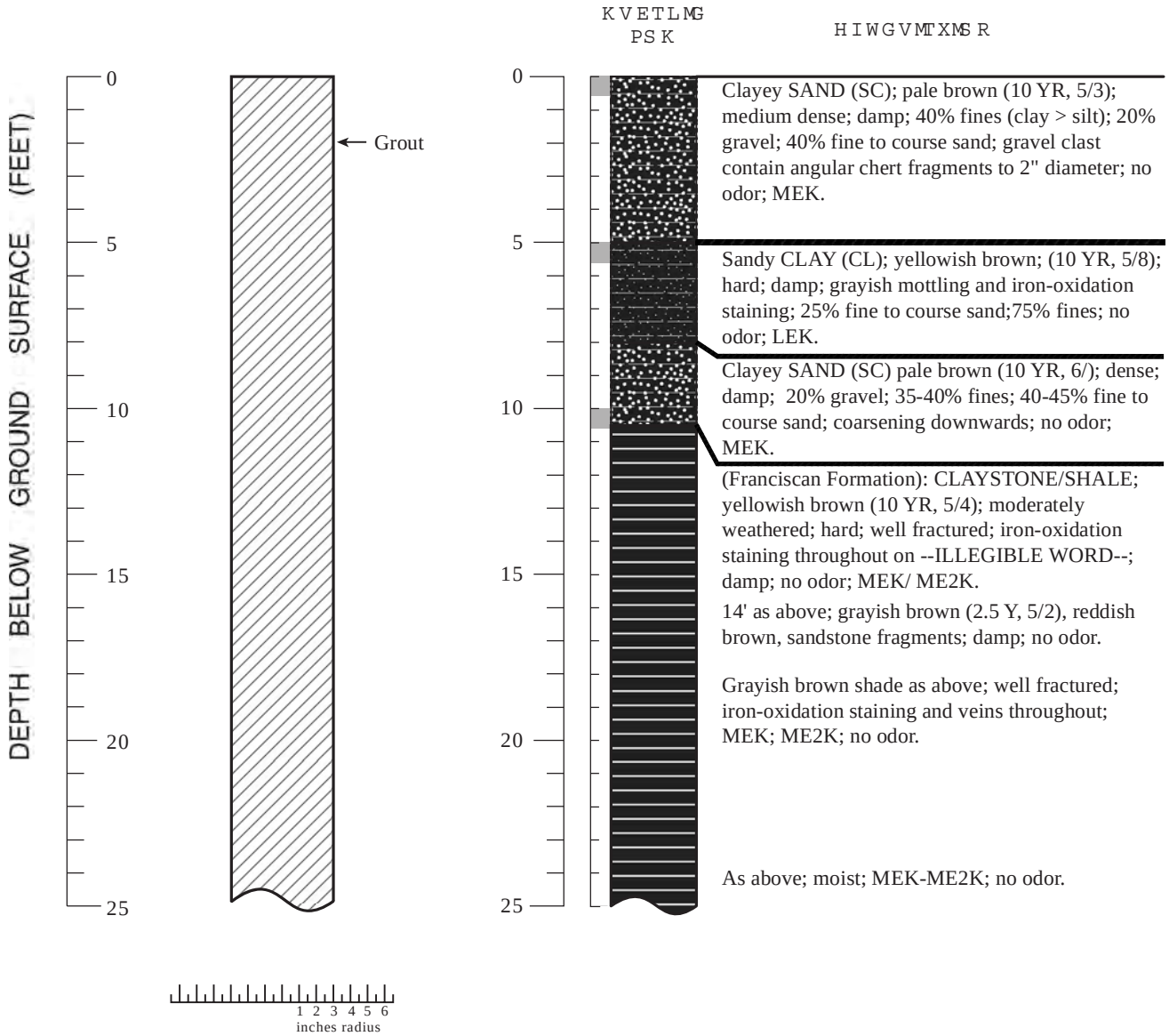
Boring Log - B-01 - Amonos Site, Cloverdale, California

F svmrk$F 145$,gsrx2-



Boring Log - B-01 - Amonos Site, Cloverdale, California

F svmrk $F 146



EXPLANATION

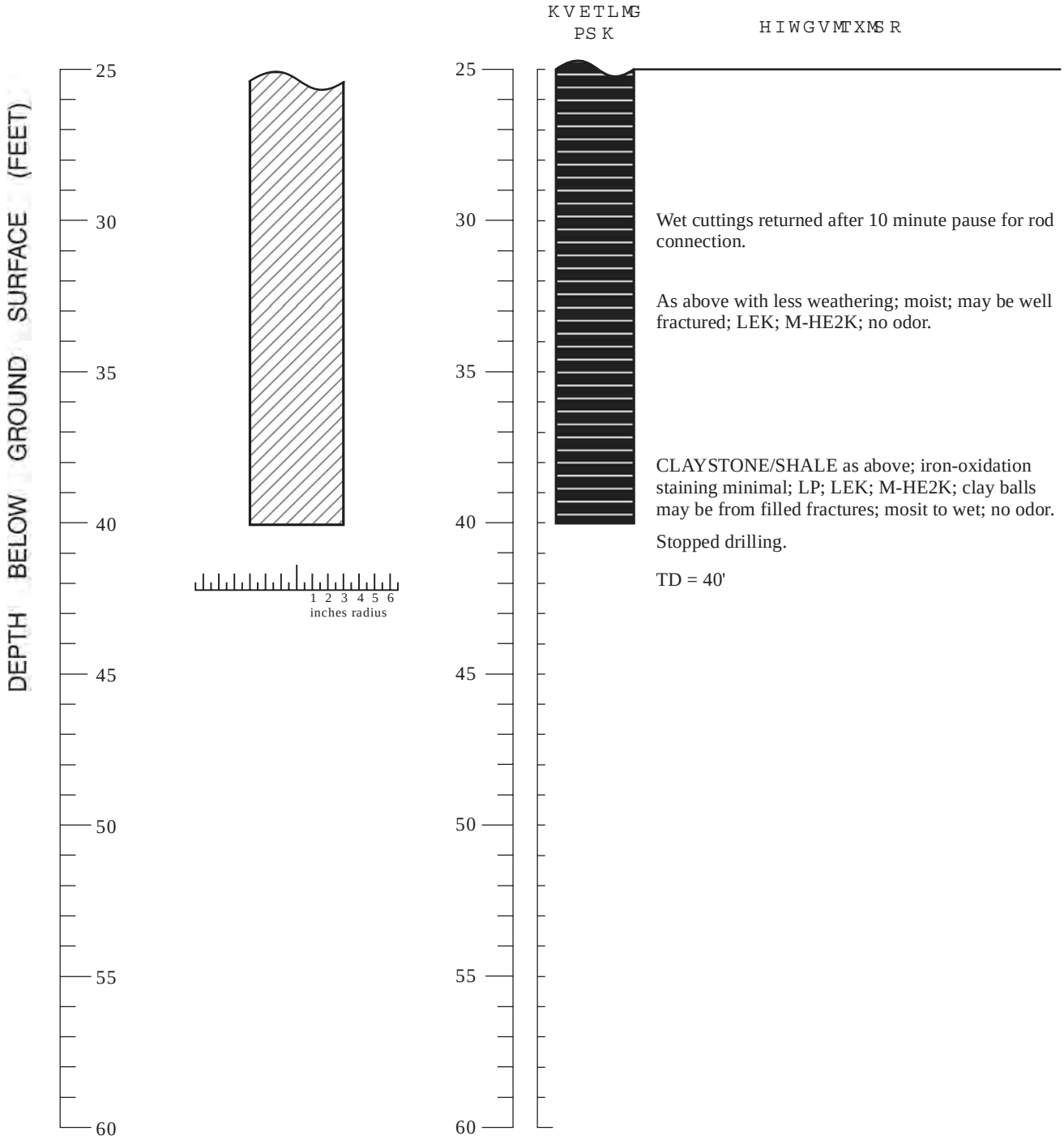
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

Logged By:	Rob Davis, G. Gandhok
Supervisor:	Joyce Adams
Drilling Company:	Westex
License Number:	C57-552198
Driller:	Mark Dockrey
Drilling Method:	Air Rotery
Date Drilled:	09/25/07
Well Head Completion:	N/A
Type of Sampler:	Split Spoon
Ground Surface Elevation:	328.8'

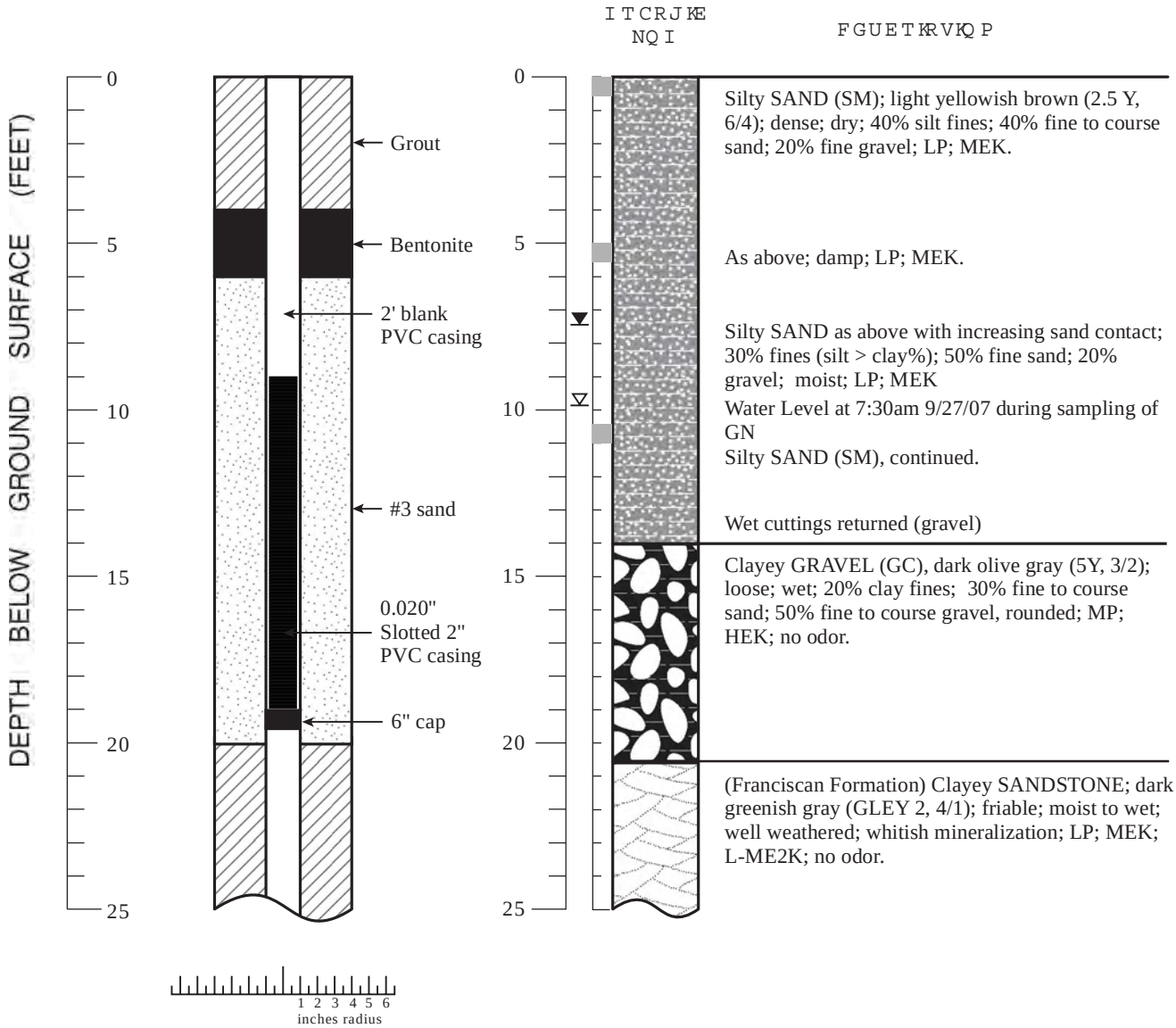
Boring Log - B-02 - Amonos Site, Cloverdale, California

F svmrk$F146$,gsrx2-



Boring Log - B-02 - Amonos Site, Cloverdale, California

Dqtkpi"D/251Y GNN"O Y/23



EXPLANATION

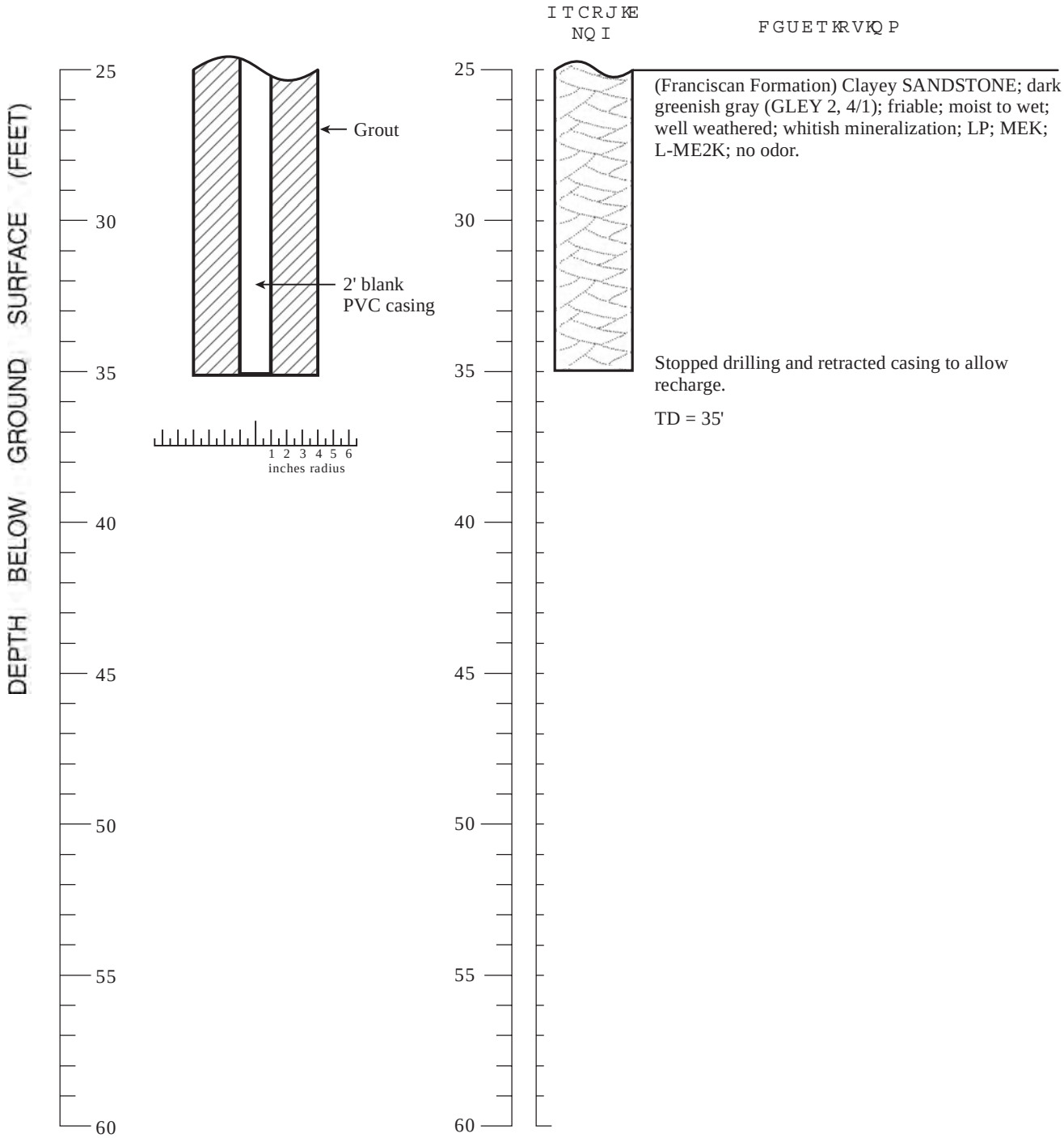
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 8 inches

Logged By:	Rob Davis, Randy Kirby
Supervisor:	Joyce Adams
Drilling Company:	Test America
License Number:	C57-819548
Driller:	Luis Torres
Drilling Method:	Hollow Stem Auger
Date Drilled:	12/17/07
Well Head Completion:	5' Steel Monument / 3- Barriers
Type of Sampler:	N/A
Top of Casing Elevation:	320.69

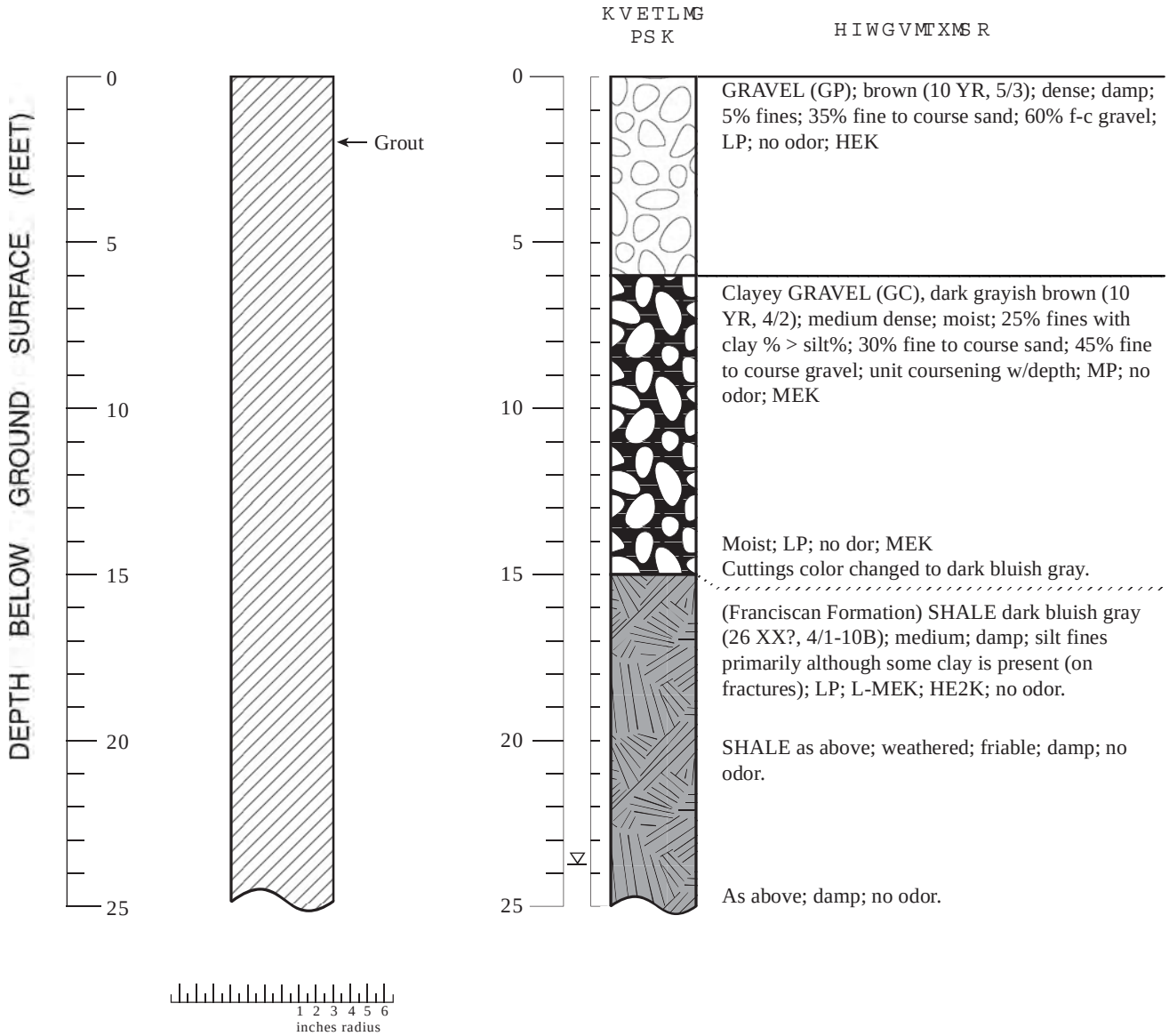
Boring Log/Well Construction Details - B-03/MW-01 - Amonos Site, Cloverdale, California

Dqtkpi"D251Y gnn"O Y /23"*eqpv0+



Boring Log/Well Construction Details - B-03/MW-01 - Amonos Site, Cloverdale, California

F svmrk $F 148



EXPLANATION

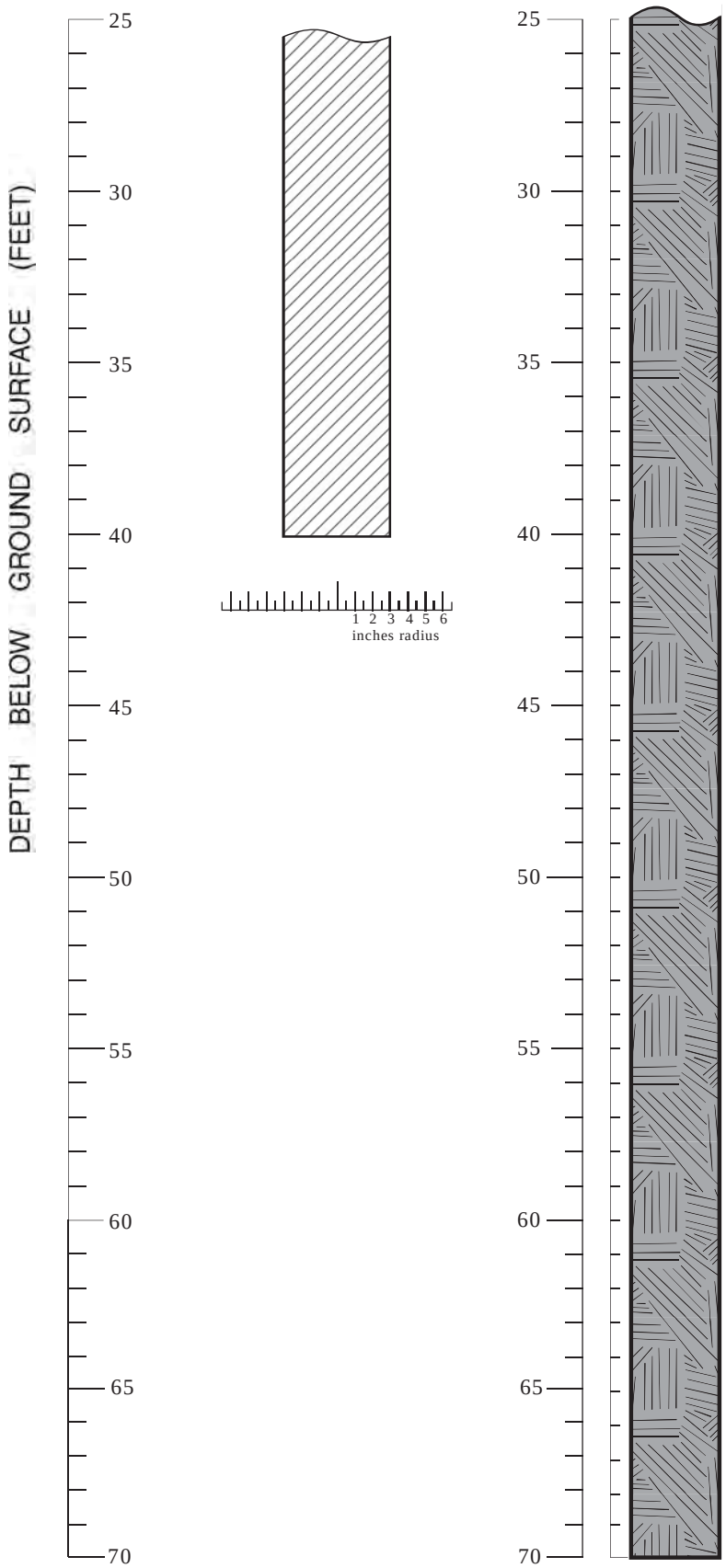
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

Logged By:	Rob Davis, G. Gandhok
Supervisor:	Joyce Adams
Drilling Company:	Westex
License Number:	C57-552198
Driller:	Mark Dockrey
Drilling Method:	Air rotary
Date Drilled:	10/3/07
Well Head Completion:	N/A
Type of Sampler:	Split Spoon
Ground Surface Elevation:	314.3'

Boring Log - B-04 -Amonos Site, Cloverdale, California

F svmrk$F 148$,gsrx2- HIWGVMTXMSR



As above; damp; no odor.

SHALE dark gray to black; trace whitish mineralization observed; damp; LEK; ME2K; no odor.

As above.

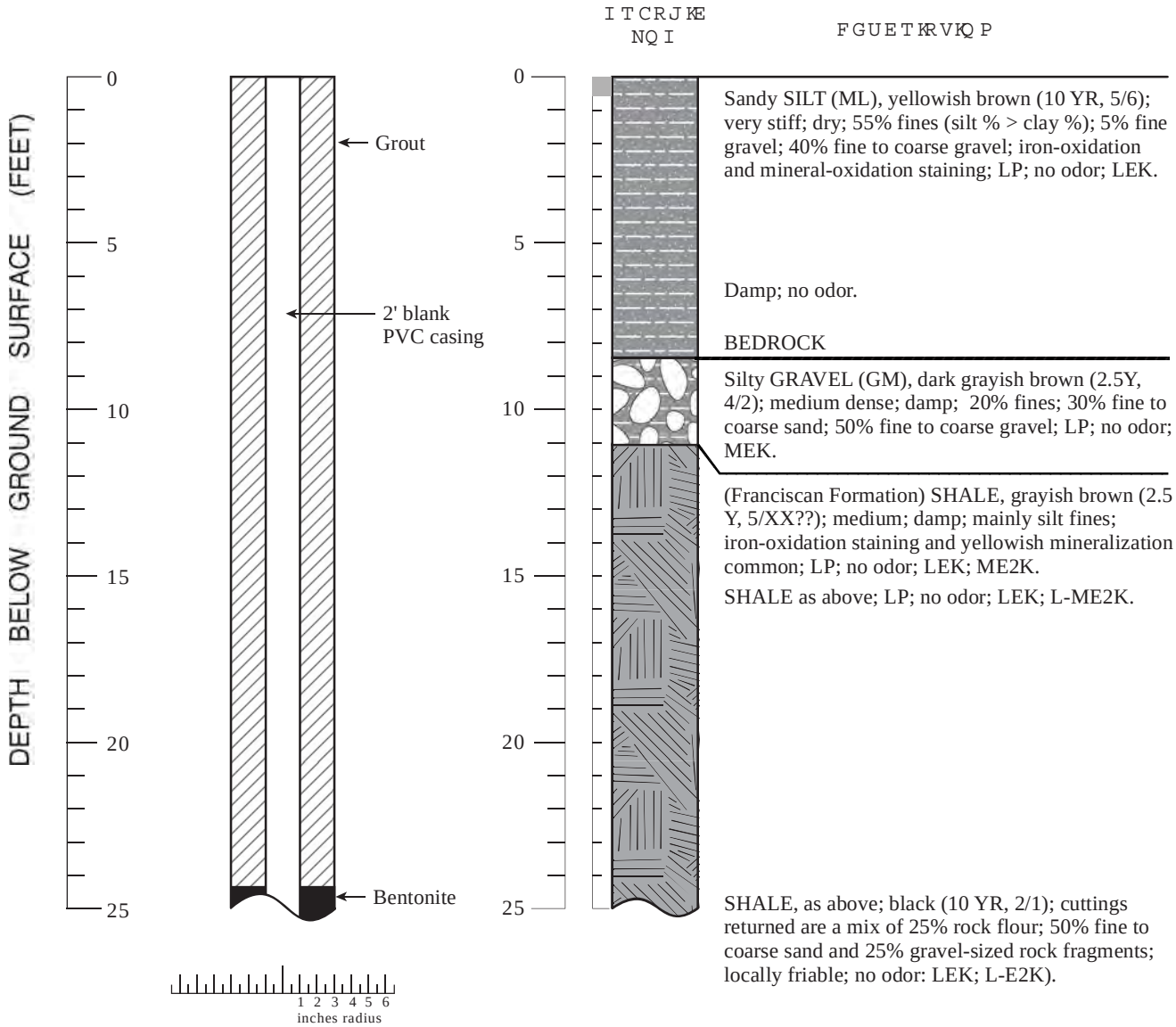
SHALE as above; primarily silt fine; LP; damp; LEK; ME2K (may be well fractured); no odor.

SILTSTONE/SHALE as above.

Stopped drilling.
TD = 70'

Boring Log - B-04 - Amonos Site, Cloverdale, California

Dqtkpi"D/271Y GNN"O Y/24



EXPLANATION

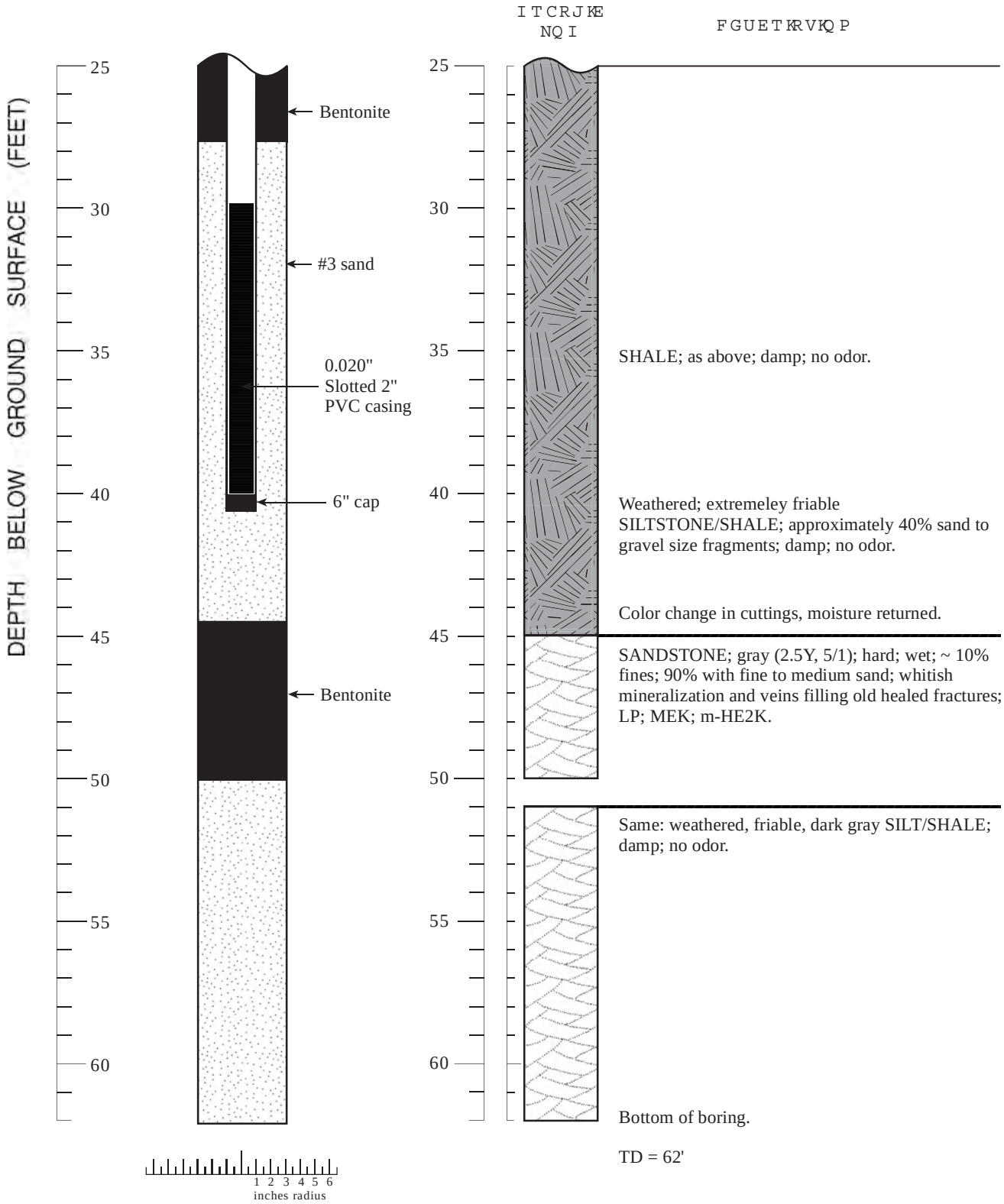
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

Logged By:	Rob Davis, Randy Kirby
Supervisor:	Joyce Adams
Drilling Company:	Test America
License Number:	C57-819548
Driller:	Nick Letsch
Drilling Method:	Air Rotary 6"
Date Drilled:	03/12/08
Well Head Completion:	5' Steel Monument / 3- Barriers
Type of Sampler:	N/A
Top of Casing Elevation:	314.86

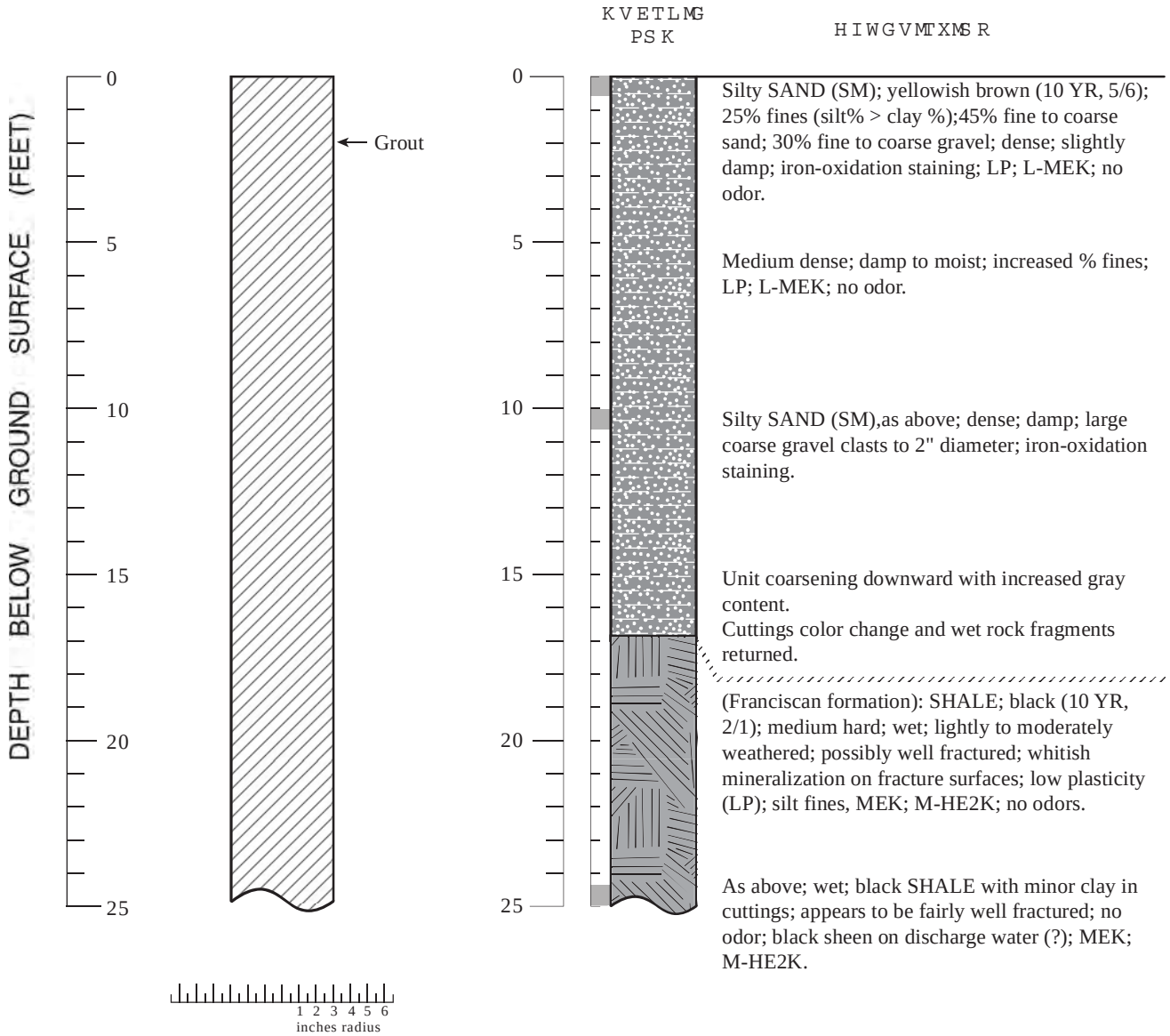
Boring Log/Well Construction Details - B-05/MW-02 - Amonos Site, Cloverdale, California

Dqtkpi"D/271Y GNN"O Y /24"*eqpv0+



Boring Log/Well Construction Details - B-05/MW-02 - Amonos Site, Cloverdale, California

F svmrk $F 14 :



EXPLANATION

- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

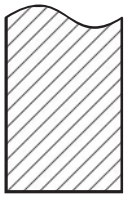
Logged By:	Rob Davis, G. Gandhok
Supervisor:	Joyce Adams
Drilling Company:	Westex
License Number:	C57-552198
Driller:	Mark Dockrey
Drilling Method:	Air Rotery
Date Drilled:	10/04/07
Well Head Completion:	N/A
Type of Sampler:	Split Spoon
Ground Surface Elevation:	309.5'

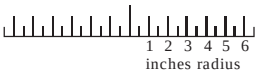
Boring Log - B-06 - Amonos Site, Cloverdale, California

F svmrk$F 14 :$,gsrx2-

DEPTH BELOW GROUND SURFACE (FEET)

25 30 35 40 45 50 55 60





25 30 35 40 45 50 55 60

KVETLMG
PSK

HIWGVMTXMSR

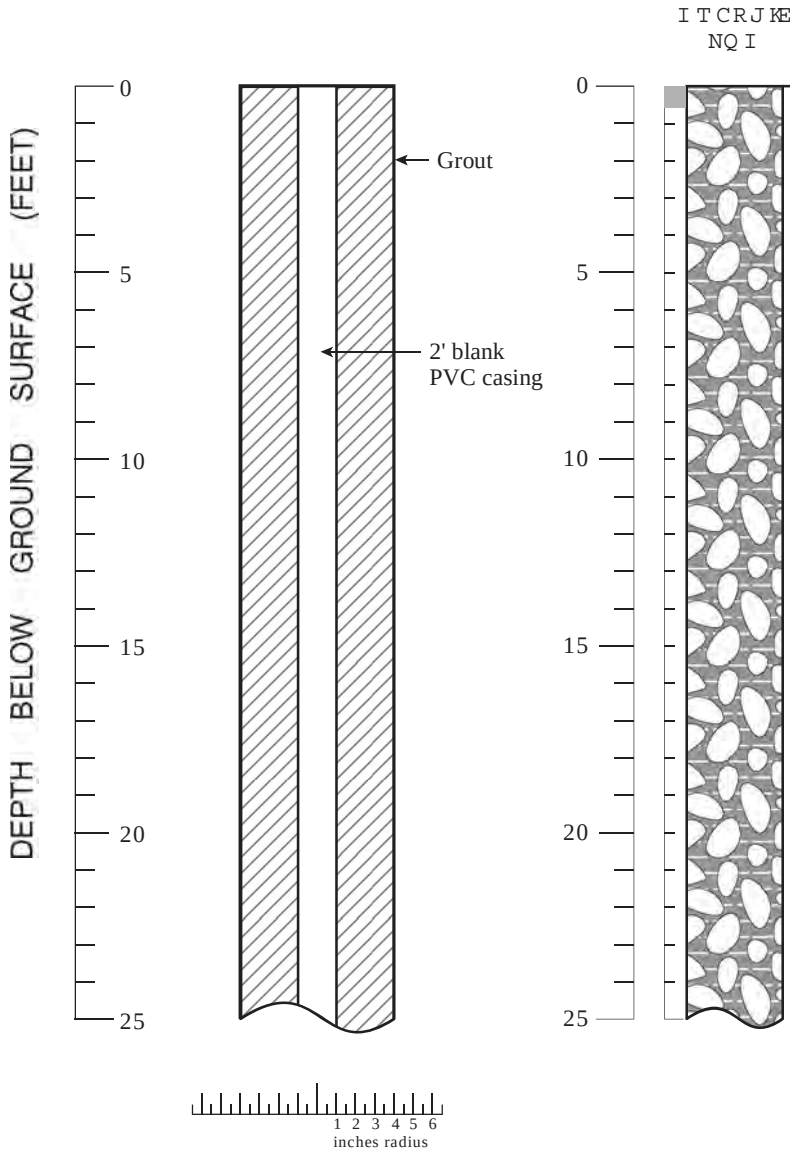
As above; wet; black SHALE with minor clay in cuttings; appears to be fairly well fractured; no odor; black sheen on discharge water (?); MEK; M-HE2K.

Boring terminated 10:40 AM 10/4/07

TD = 30'

Boring Log - B-06 - Amonos Site, Cloverdale, California

Dqtkpi"D/291Y GNN"O Y/25



ITCRJKE NQI	FGUETKRVKQP
0–5	Silty GRAVEL (GM); yellowish brown (10 YR, 5/6); medium dense; damp; 20-25 % fines (silt % > clay %); 35-40% fine to coarse sand; 40% fine to coarse gravel (subround to angular);LP; MEK; no odor.
5–10	Silty GRAVEL as above; damp; MEK; no odor.
10–15	Silty GRAVEL (GM), as above, but now light olive brown (2.5Y, 5/4); 10-15% silt fines; damp; gravel caXX? 50%; 40-45% fine to coarse sand; LP; MEK; no odor.
15–20	As above; Silty Gravel (GM); damp; drills rapidly; M-HEK; no odor.
20–25	As above with increasing % shale clasts; dense; damp; drills rapidly; M-HEK; no odor.

EXPLANATION

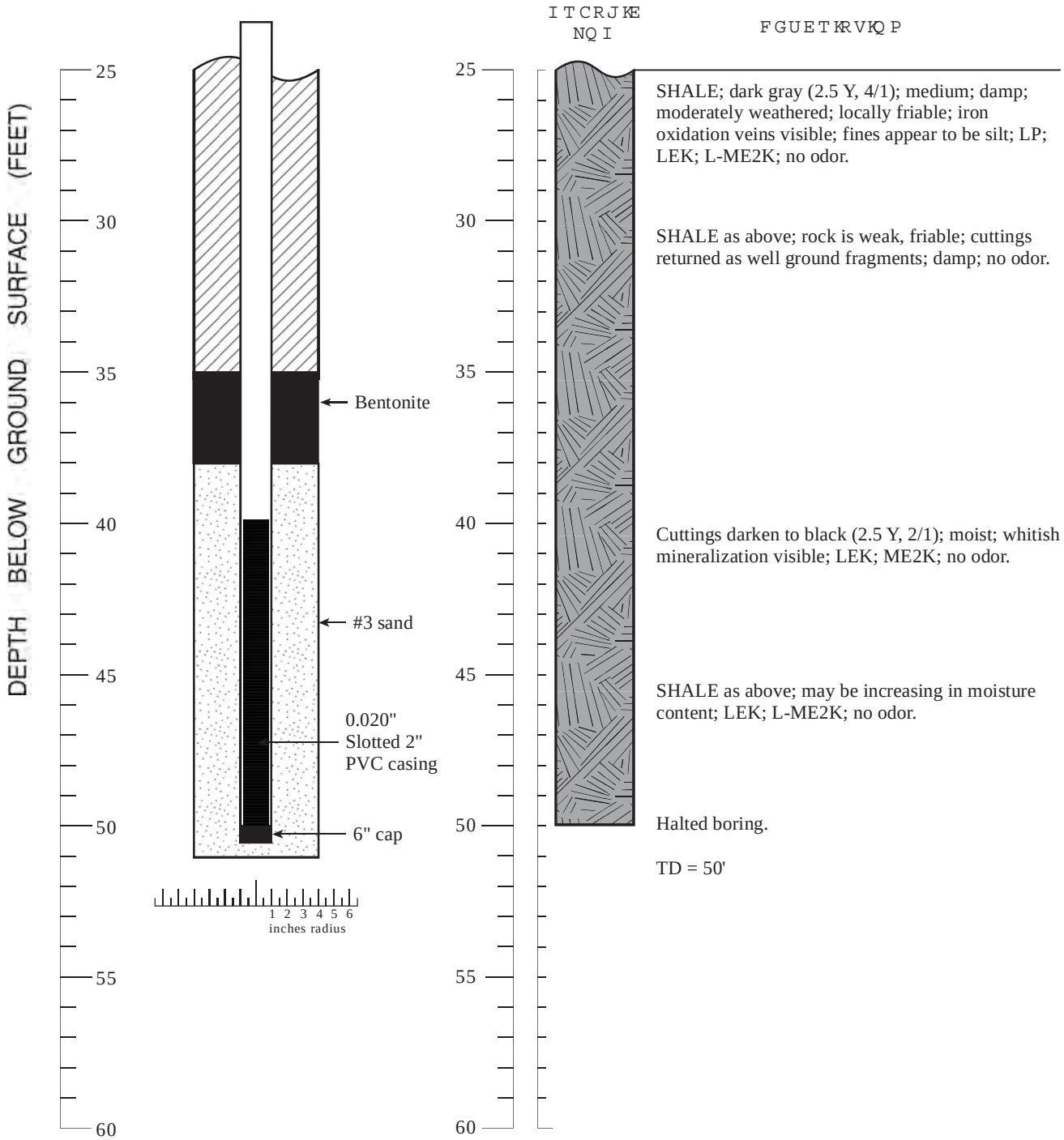
- ▼ Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 8 inches

Logged By:	Rob Davis, Randy Kirby
Supervisor:	Joyce Adams
Drilling Company:	Test America
License Number:	C57-819548
Driller:	Mick Letsch
Drilling Method:	Air Rotary 8"
Date Drilled:	01/15/08
Well Head Completion:	5' Steel Monument / 3- Barriers
Type of Sampler:	N/A
Top of Casing Elevation:	316.88

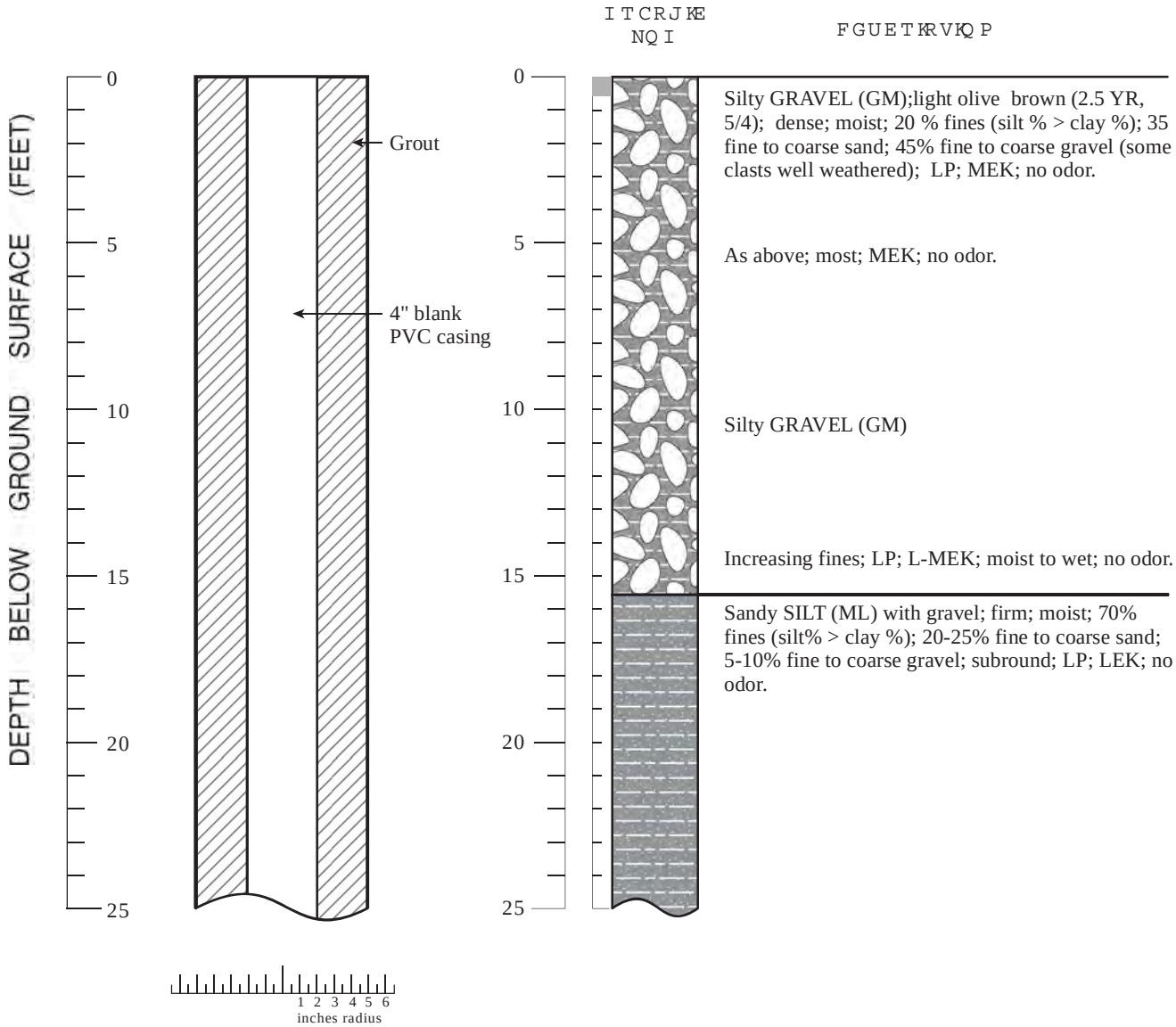
Boring Log/Well Construction Details - B-07/MW-03 - Amonos Site, Cloverdale, California

Dqtkpi"D/291Y GNN"O Y /25"*eqpv0+



Boring Log/Well Construction Details - B-07/MW-03 - Amonos Site, Cloverdale, California

Dqtkpi"D/2:1Y GNN"O Y/26



EXPLANATION

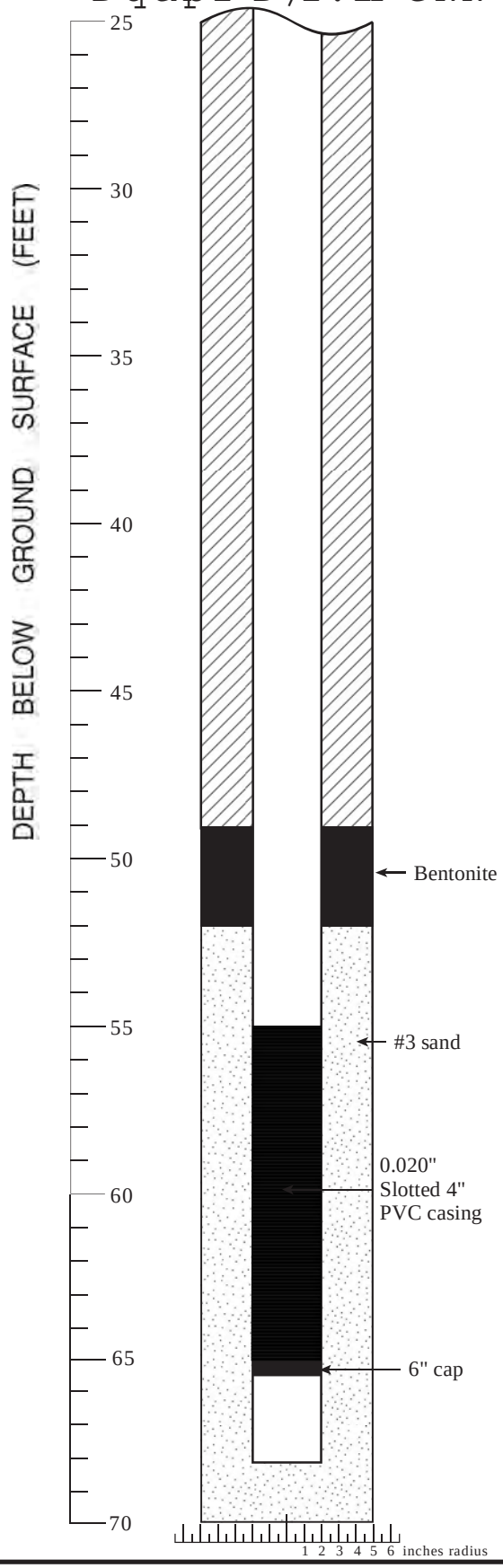
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

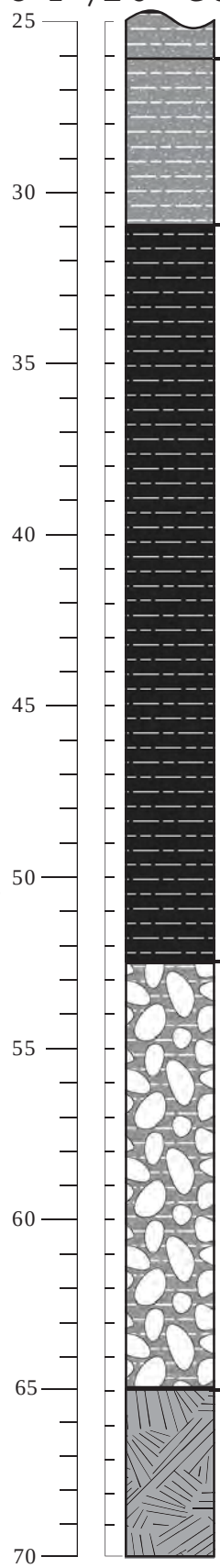
Borehole diameter: 10 inches

Logged By:	Rob Davis, Randy Kirby
Supervisor:	Joyce Adams
Drilling Company:	Test America
License Number:	C57-819548
Driller:	Luis Torres
Drilling Method:	Hollow Stem Auger
Date Drilled:	02/19/08
Well Head Completion:	5' Steel Monument / 3- Barriers
Type of Sampler:	N/A
Top of Casing Elevation:	310.50

Boring Log/Well Construction Details - B-08/MW-04 - Amonos Site, Cloverdale, California

Dqtkpi"D/2:1Y GNN"O Y/26"*eqpv0+ FGUETKRVKQP





Clayey GRAVEL (GC); light olive brown (2.5 Y, 5/3); medium dense to dense; web (making water water); 25% fines (clay % > silt%); 25% fine to coarse sand; 50% fine to coarse gravel; subround; varied lithology (chert, shale, sandstone, etc.); LP; MEK; no odor.

Silty CLAY (CL) olive brown (2.5 Y, 4/3); firm to stiff; wet; LP; fines (clay % > silt %); trace to 10% fine sand; iron-oxidation staining and matting present; LEK; no odor.

Unit coarsens with 5% fine gravel; subround; moist; LEK; no odor.

Silty CLAY as above with trace to 5% fine gravel; 5-10% very fine to medium sand; wet; LEK; no odor.

Silty GRAVEL (GM); dark olive gray (5Y, 4/3)

Cuttings fluid; color is now dark gray; clasts returned are sandstone block shale but XXX??? Are subround; wet; HEK; no odor.

Coarse GRAVEL with many subrounded clasts of various lithologies; HEK; no odor.

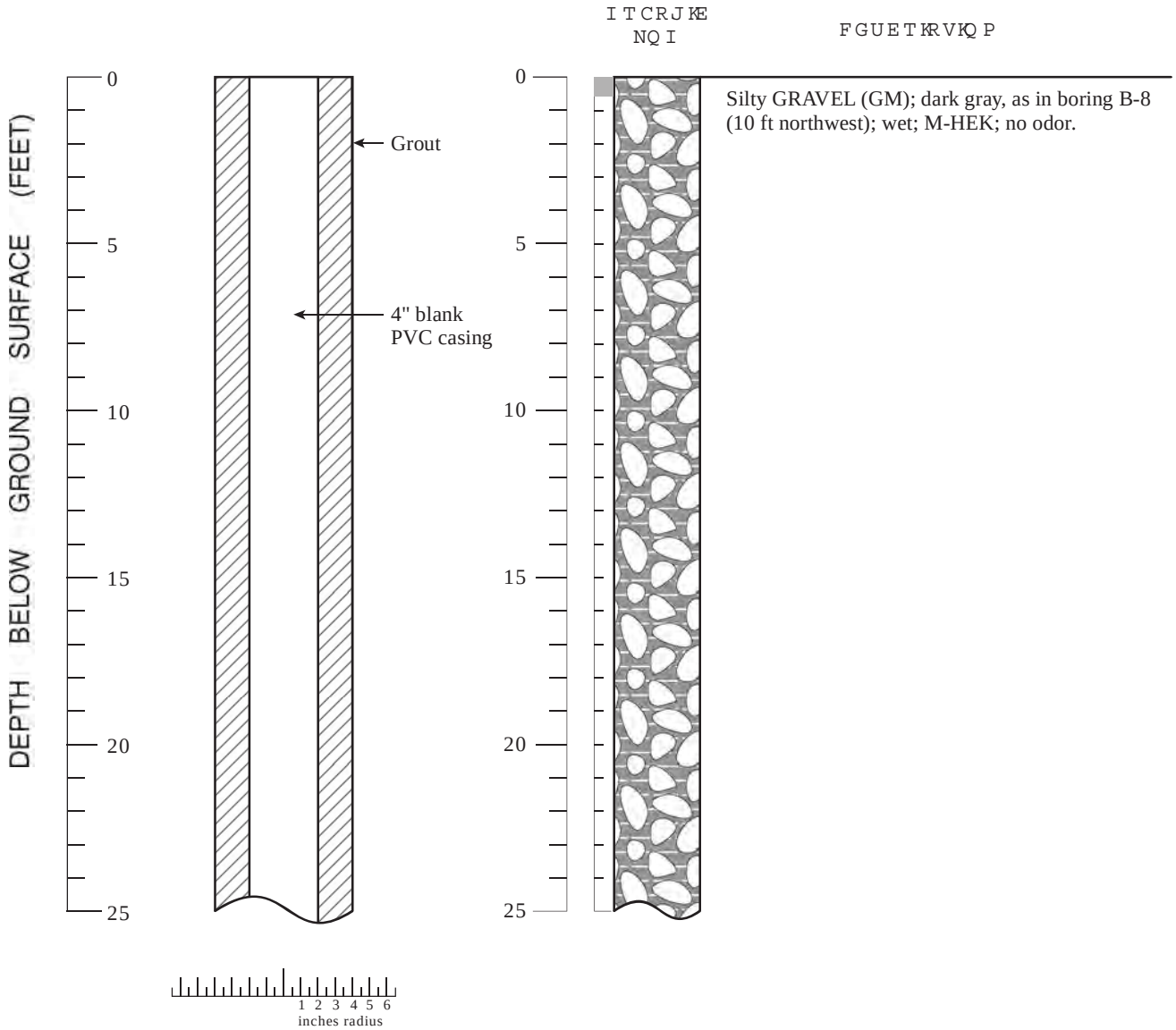
SHALE; black (2.5Y, 2/1); medium; wet; mainly silt fines; whitish mineralization visible on (fractured) surfaces; locally friable; appears to be well fractured from cuttings; LP; LEK; M-HE2K; no odor.

Boring terminated.

TD = 70'

Boring Log/Well Construction Details - B-08/MW-04 - Amonos Site, Cloverdale, California

Dqtkpi"D/2:c1Y GNN"O Y/27



EXPLANATION

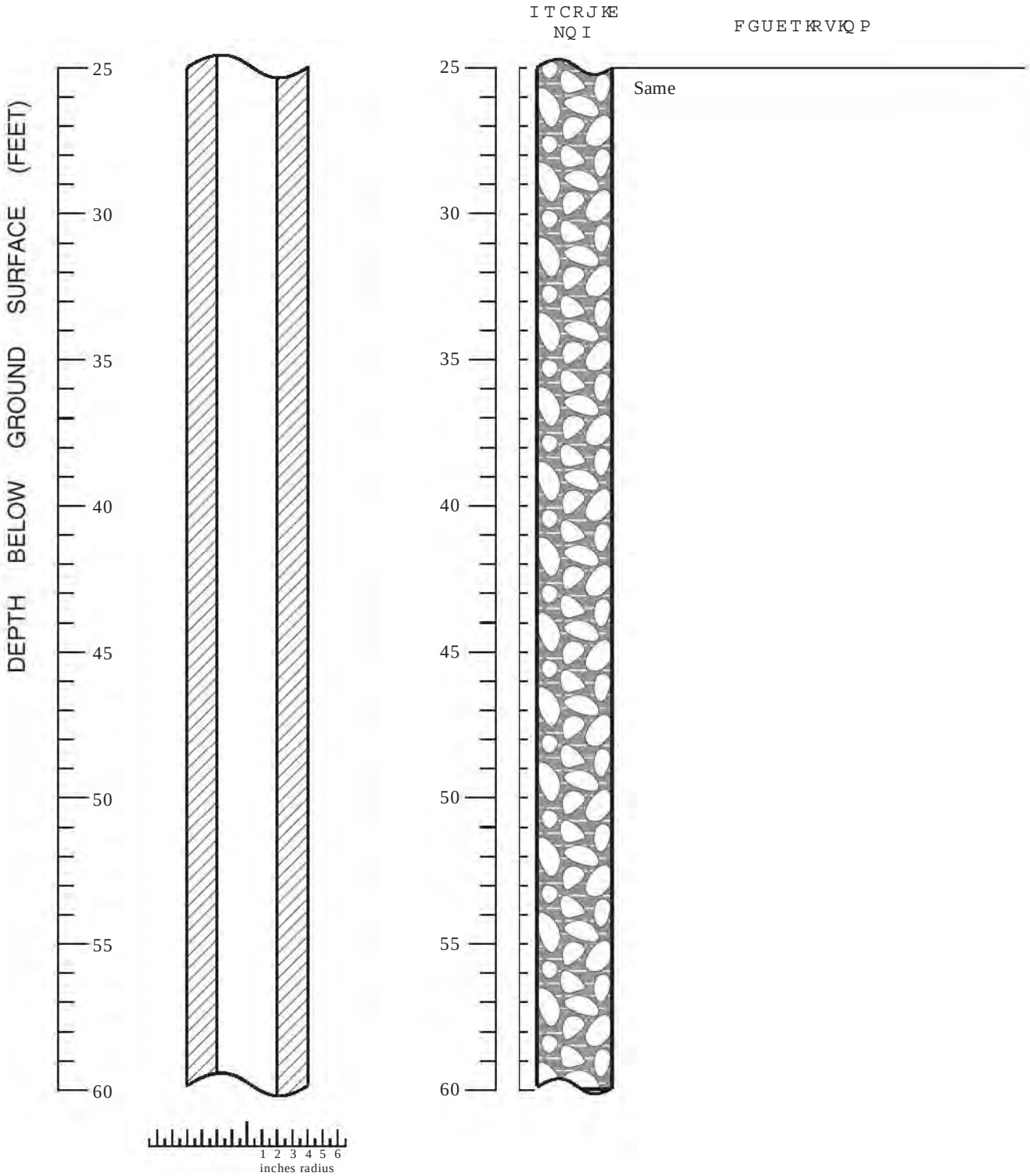
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 8 inches

Logged By:	Rob Davis, Randy Kirby
Supervisor:	Joyce Adams
Drilling Company:	Test America
License Number:	C57-819548
Driller:	Nick Letsch
Drilling Method:	Hollow Stem Auger
Date Drilled:	02/19/08
Well Head Completion:	5' Steel Monument / 3- Barriers
Type of Sampler:	N/A
Top of Casing Elevation:	309.27

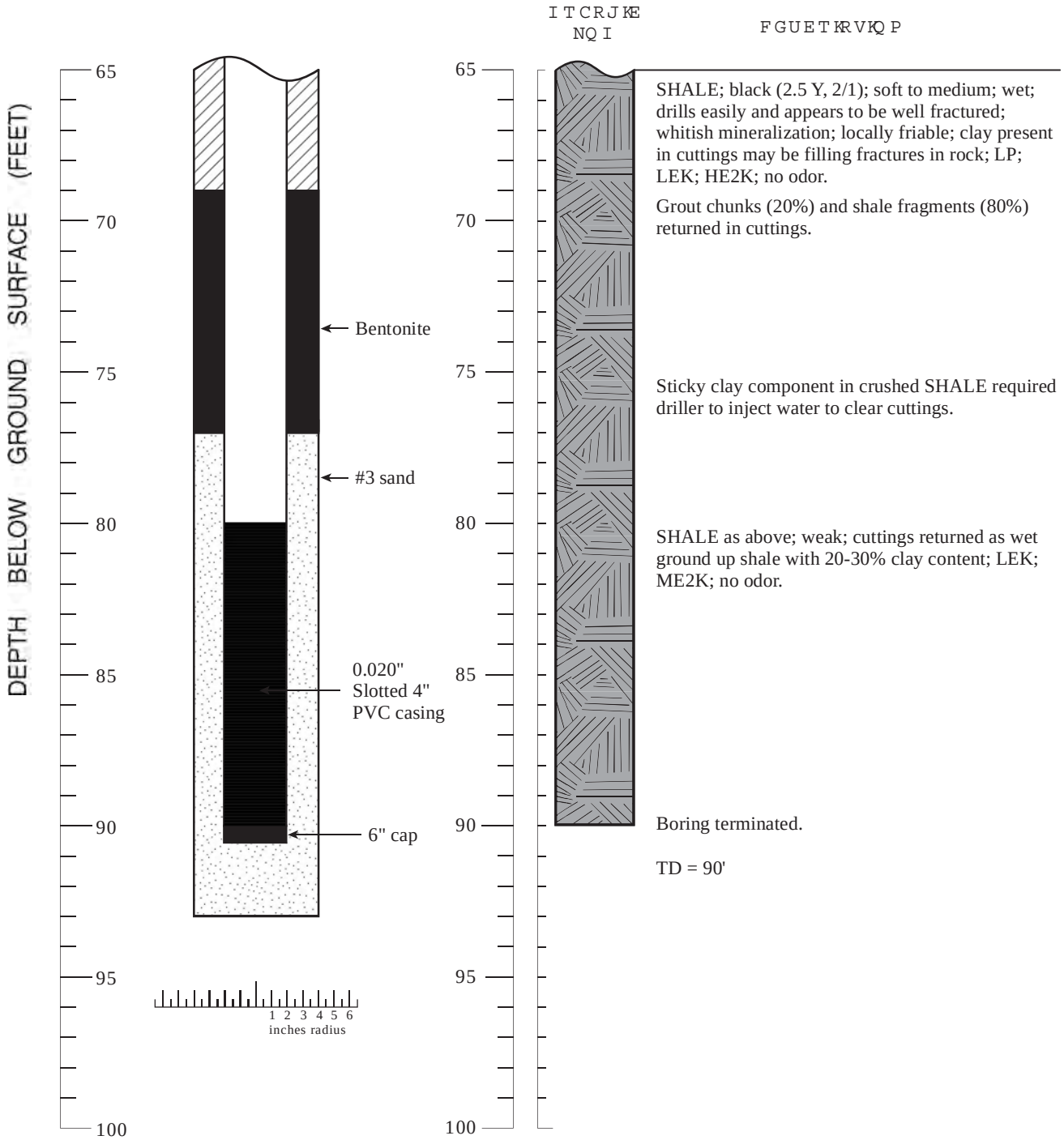
Boring Log/Well Construction Details - B-08a/MW-05 - Amonos Site, Cloverdale, California

Dqtkpi"D/2:c1Y GNN"O Y /27"*eqpv0+



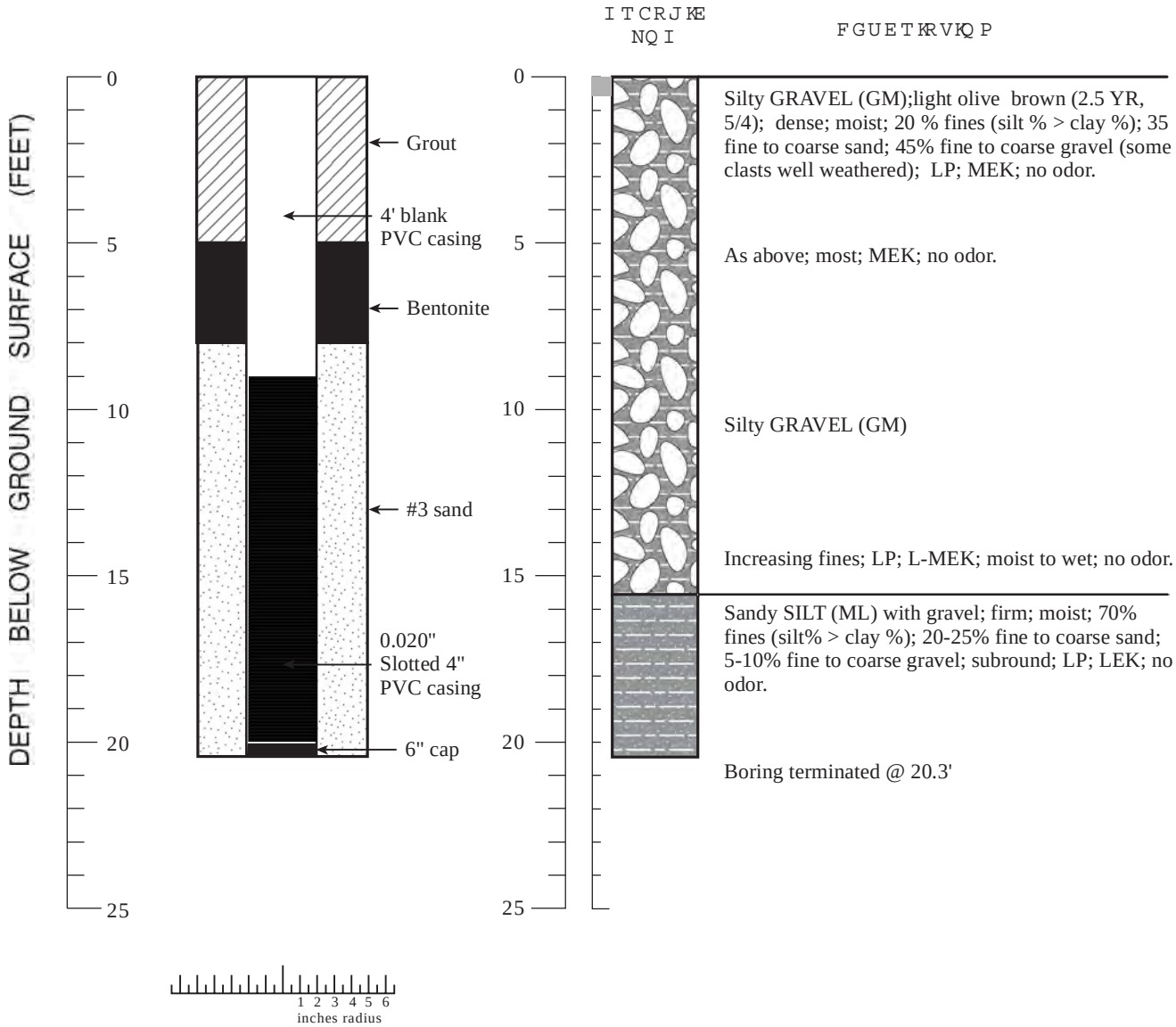
Boring Log/Well Construction Details - B-08a/MW-05 - Amonos Site, Cloverdale, California

Dqtkpi"D/2:c1Y GNN"O Y/27"*eqpv0+



Boring Log/Well Construction Details - B-08a/MW-05 - Amonos Site, Cloverdale, California

Dqtkpi "D/2:d1Y GNN"O Y/28



EXPLANATION

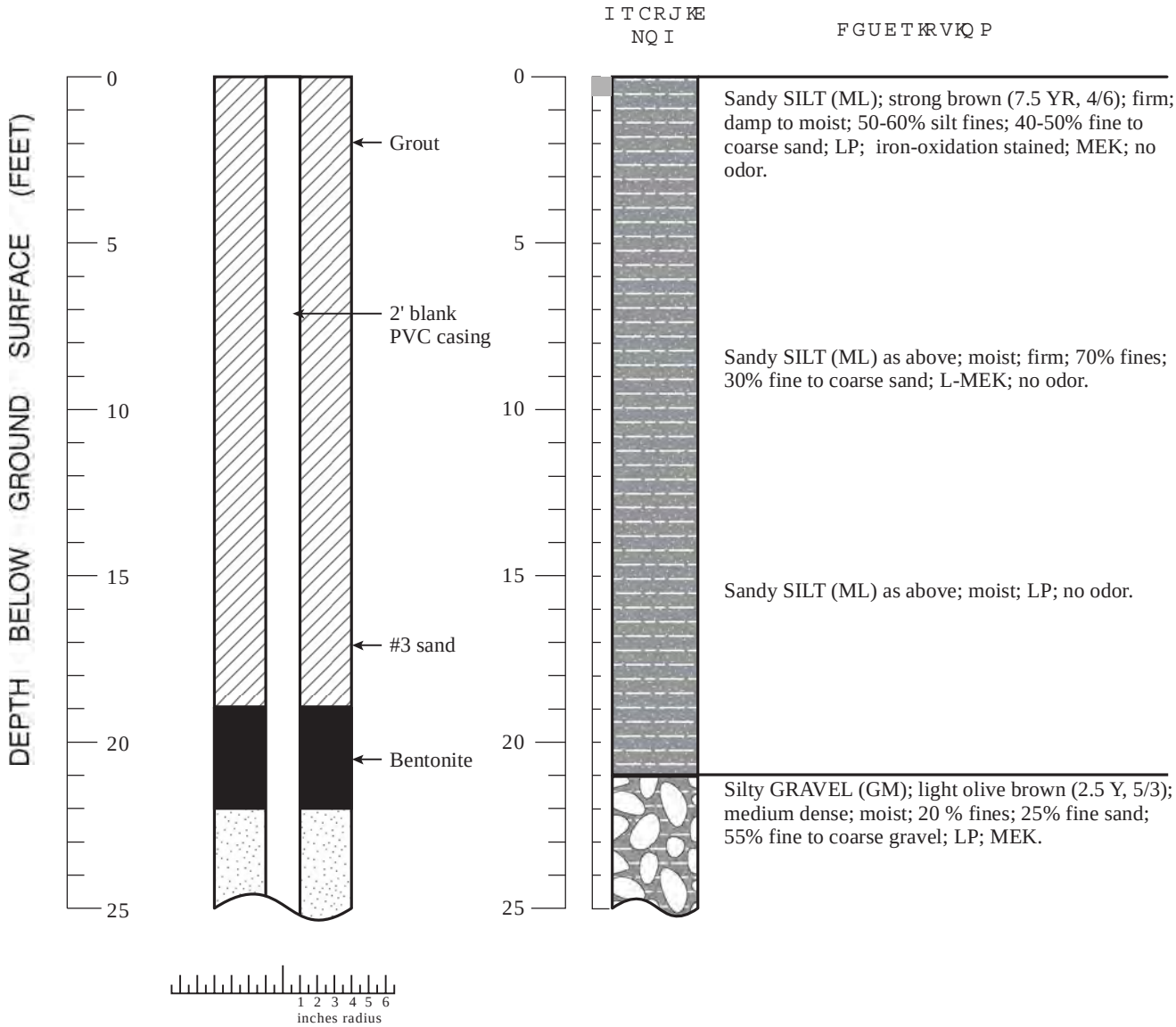
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 10 inches

Logged By:	Rob Davis, Randy Kirby
Supervisor:	Joyce Adams
Drilling Company:	Test America
License Number:	C57-819548
Driller:	Luis, Bobby
Drilling Method:	Hollow Stem Auger
Date Drilled:	02/19/08
Well Head Completion:	5' Steel Monument / 3- Barriers
Type of Sampler:	N/A
Top of Casing Elevation:	311.15

Boring Log/Well Construction Details - B-08b/MW-06 - Amonos Site, Cloverdale, California

Dqtkpi"D/321Y GNN"O Y/29



EXPLANATION

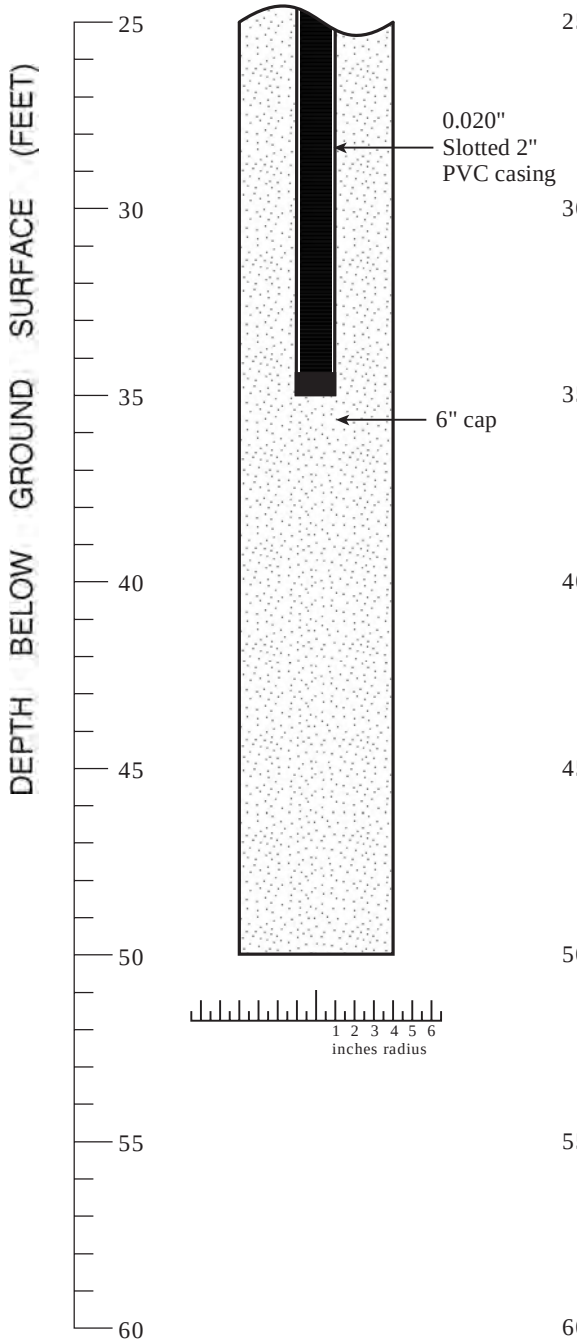
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 8 inches

Logged By:	Rob Davis, G. Gandhok
Supervisor:	Joyce Adams
Drilling Company:	Test America
License Number:	C57-819548
Driller:	Victor
Drilling Method:	Hollow Stem Auger
Date Drilled:	02/20/08
Well Head Completion:	5' Steel Monument / 3- Barriers
Type of Sampler:	N/A
Top of Casing Elevation:	324.10

Boring Log/Well Construction Details - B-10/MW-07 - Amonos Site, Cloverdale, California

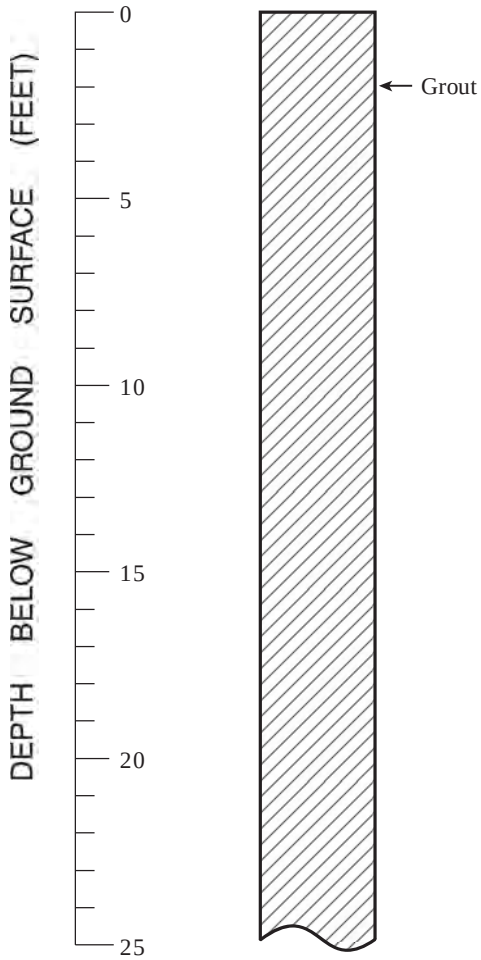
Dqtkpi"D/321Y GNN"O Y /29"*eqpv0+

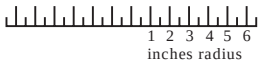


ITCRJKE NQI	FGUETKRVKQP
25–35	As above; Silty GRAVEL with rounding gravel clasts of various lithologies; very moist to wet; MEK; no odor.
35–40	As above; silty GRAVEL (GM) with 20% fines; gravel and coarse sand clasts are still often rounded and are of various lithologies; LP; wet; no odor; M-HEK.
40–50	Clayey SILTSTONE/SHALE; dark greenish gray (GLEY 1, 4/1, 10 GY); 40% mainly clay fines; thin clay lenses may be present; wet; soft/fraible/ very weathered; weathered/sticky nature of rock requires water injection during drilling in order to remove cuttings; MP; LEK; ME2K.
45–50	As above; dark greenish gray Clayey SILTSTONE/SHALE (GLEY 1, 4/1); cuttings return is being ground up/dissolved by drilling and water injection and is returned to surface as clayey sludge; hammer noise continuous to indicate rock; occasional dark reddish brown sandstone fragments returned.
50	Halted boring.
	TD = 50'

Boring Log/Well Construction Details - B-10/MW-07 - Amonos Site, Cloverdale, California

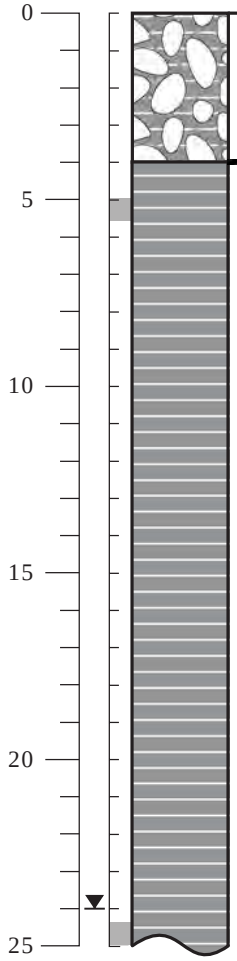
F svmrk $F 155





KVETLMG
PSK

HIWGVMTXMSR



Silty GRAVEL (GM); very pale brown (10 YR, 7/3); medium dense; dry; 30% fines (silt % > clay); 40% fine to coarse sand; 40% fine to coarse gravel (angular); no odor; HEK.

SILTSTONE/SHALE; light yellowish brown 12.5Y, 6/3); hard; dry; weathered moderately; well fractured; iron-oxidation staining on fracture surfaces is pervasisve; mineral-oxidation and mottling; LP; no odor; MEK; ME2K.

SHALE as above with clay coating visible on fracture surfaces; locally friable; no odor; dry.

Olive yellow SHALE, (2.5 Y, 6/6); as above; damp; no odor; LEK; M-HE2K; maybe well fractured; no odor.

SHALE as above; locally friable; damp; no odor.

SHALE, as above; lightly weathered; damp to moist; LEK; ME2K; no odor.

EXPLANATION

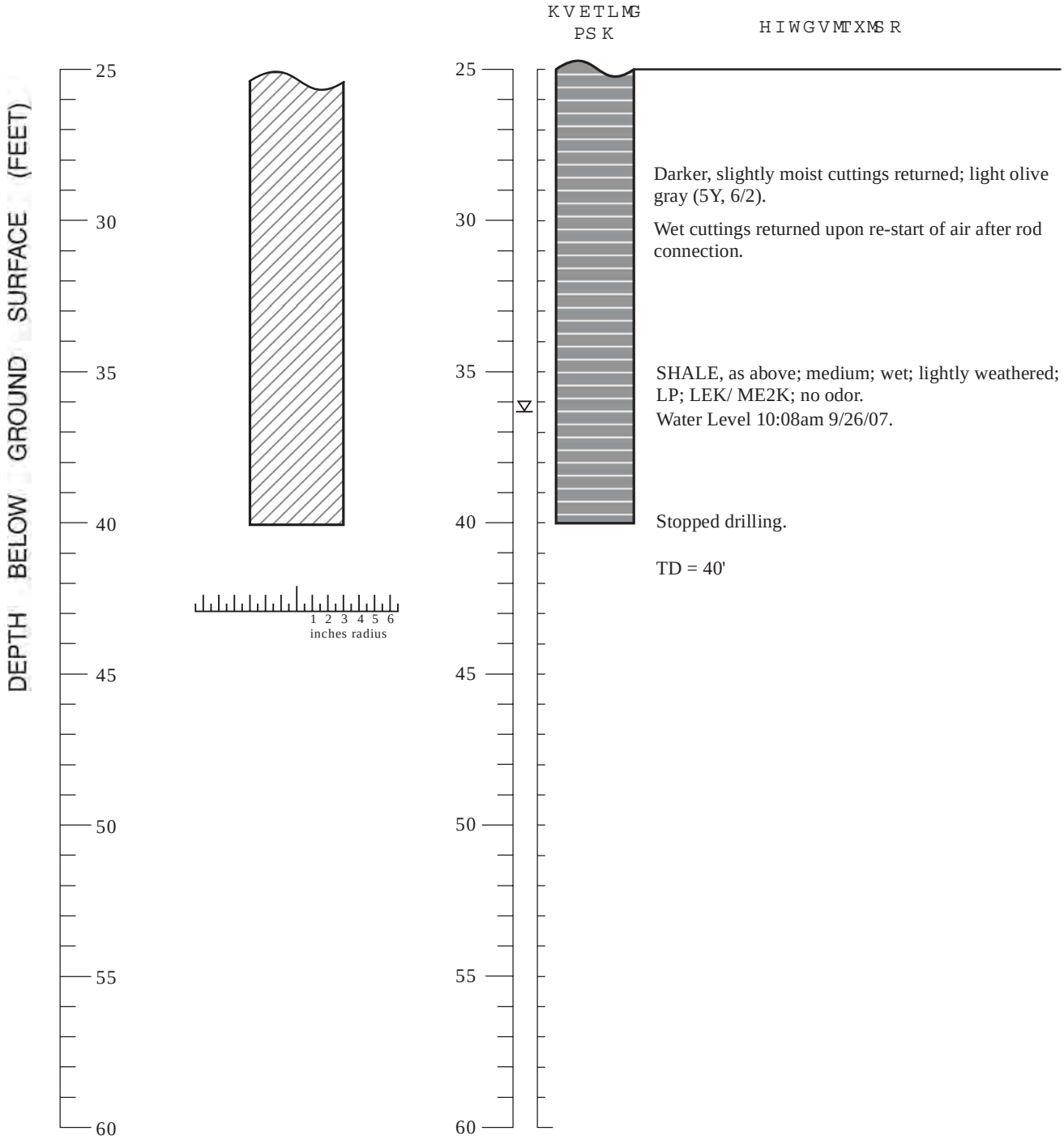
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

Logged By:	Rob Davis, G. Gandhok
Supervisor:	Joyce Adams
Drilling Company:	Westex
License Number:	C57-552198
Driller:	Mark Dockrey
Drilling Method:	Air Rotery
Date Drilled:	09/26/07
Well Head Completion:	N/A
Type of Sampler:	Split Spoon
Ground Surface Elevation:	316.8'

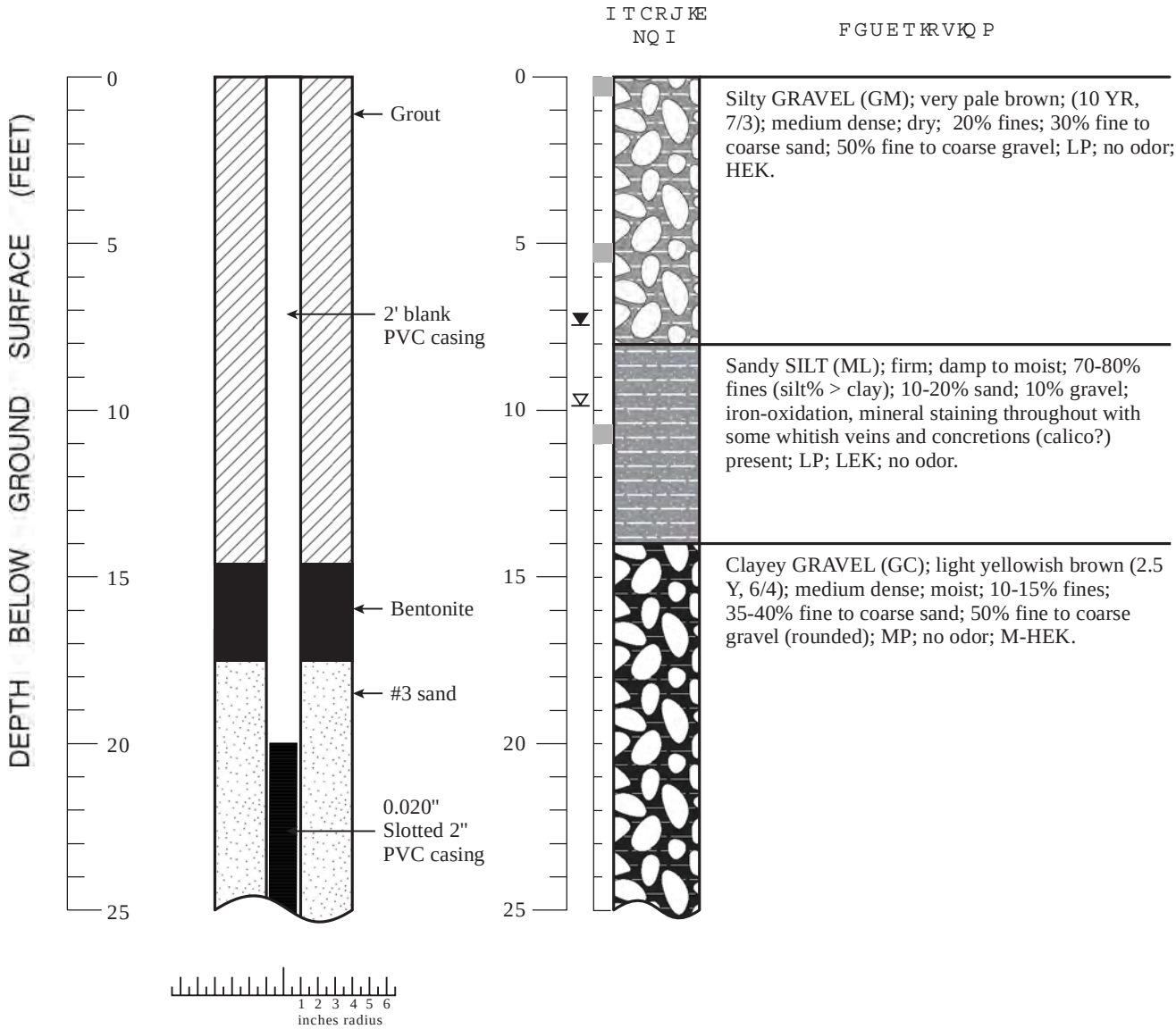
Boring Log - B-11 - Amonos Site, Cloverdale, California

F s v m r k $F 1 5 5 $, g s r x 2 -



Boring Log - B-11 - Amonos Site, Cloverdale, California

Y GNN"D 34 10 Y /2:



EXPLANATION

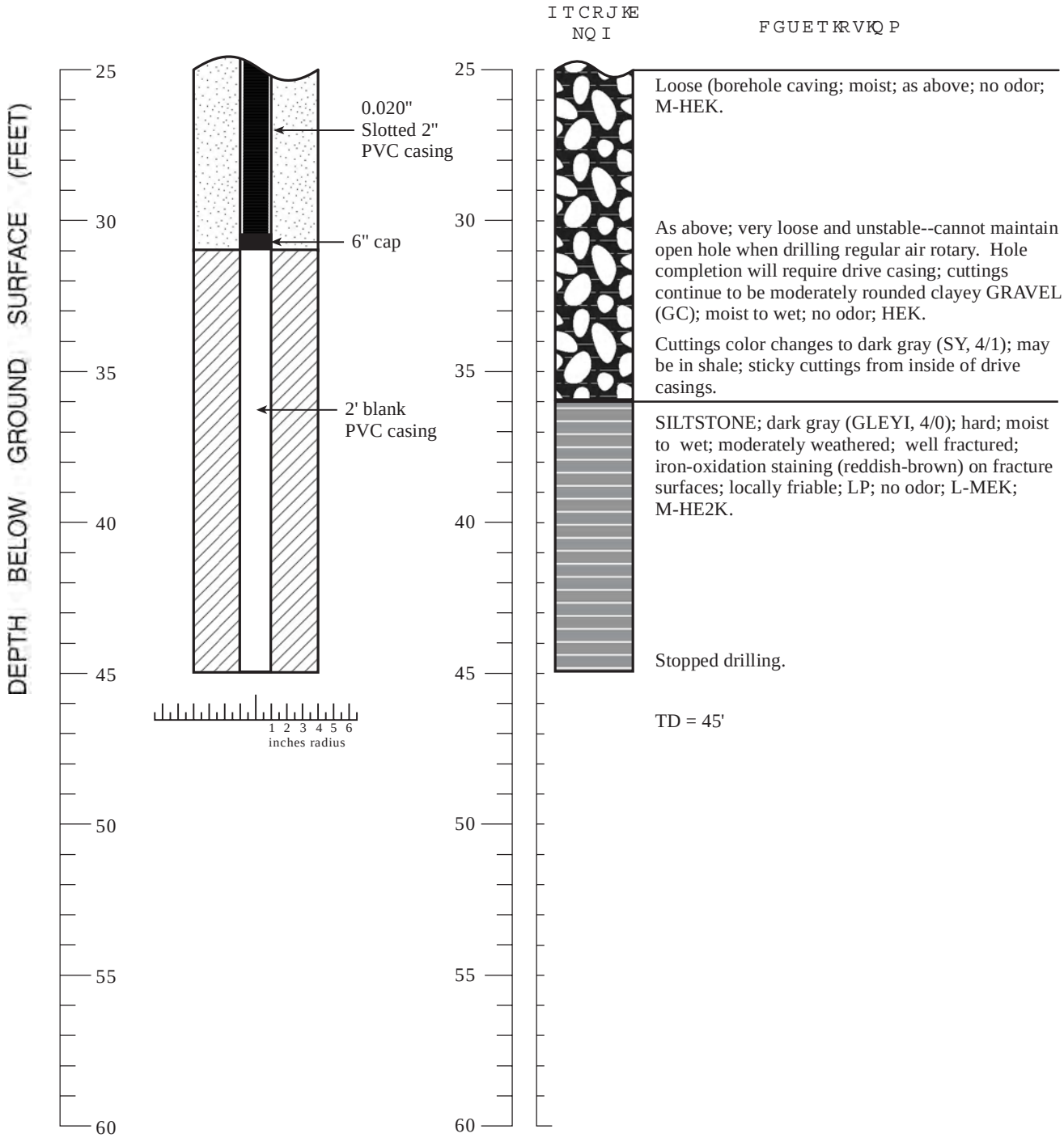
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 8 inches

Logged By:	Rob Davis, Randy Kirby
Supervisor:	Joyce Adams
Drilling Company:	Test America
License Number:	C57-819548
Driller:	Luis Torres
Drilling Method:	Hollow Stem Auger
Date Drilled:	12/17/07
Well Head Completion:	5' Steel Monument / 3- Barriers
Type of Sampler:	N/A
Top of Casing:	328.79

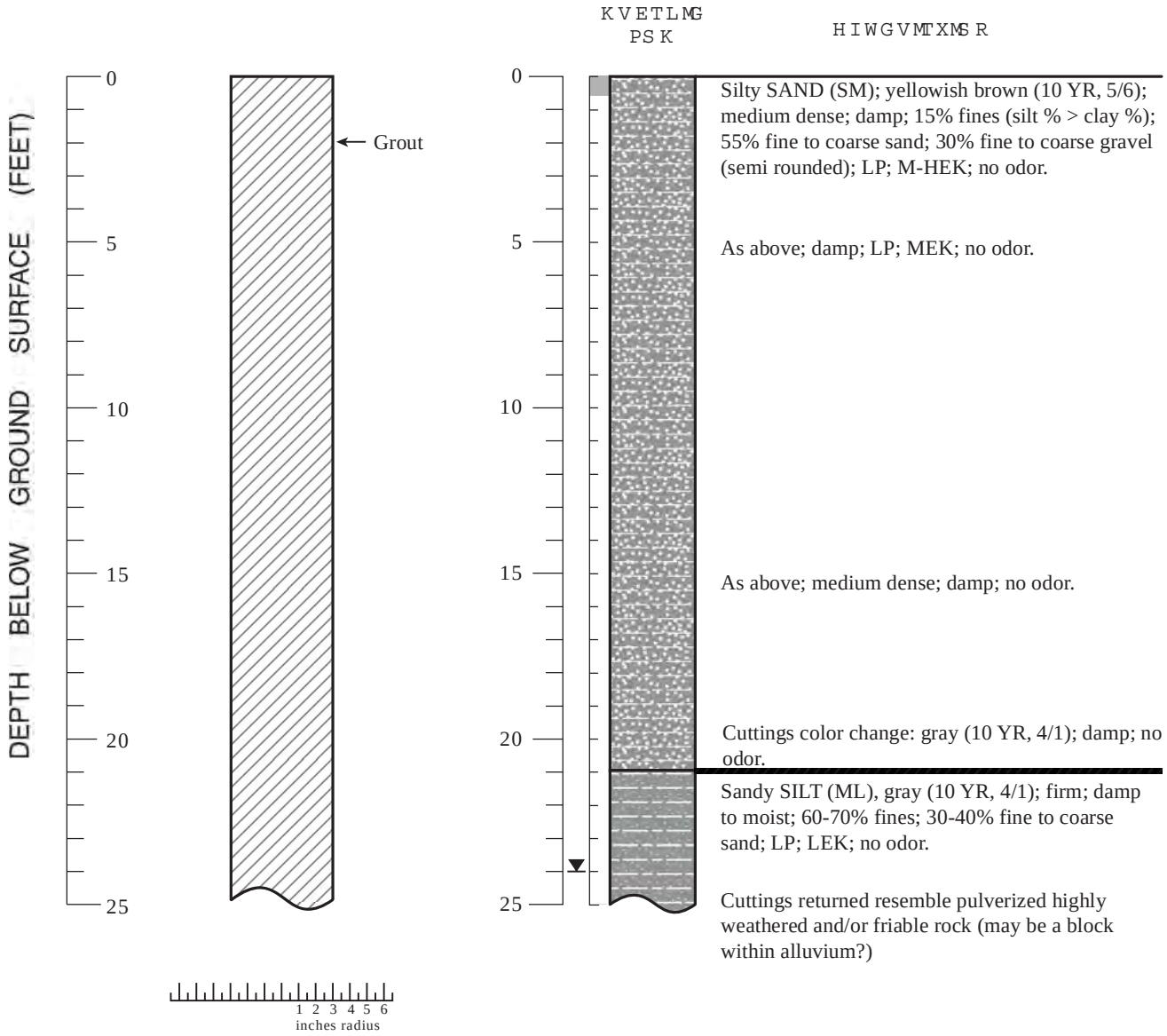
Boring Log/Well Construction Details - B-12/MW-08 - Amonos Site, Cloverdale, California

Y GNN"D 3410 Y /2: """"*eqpv0+



Boring Log/Well Construction Details - B-12/MW-08 - Amonos Site, Cloverdale, California

F svmrk $F 157



EXPLANATION

- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

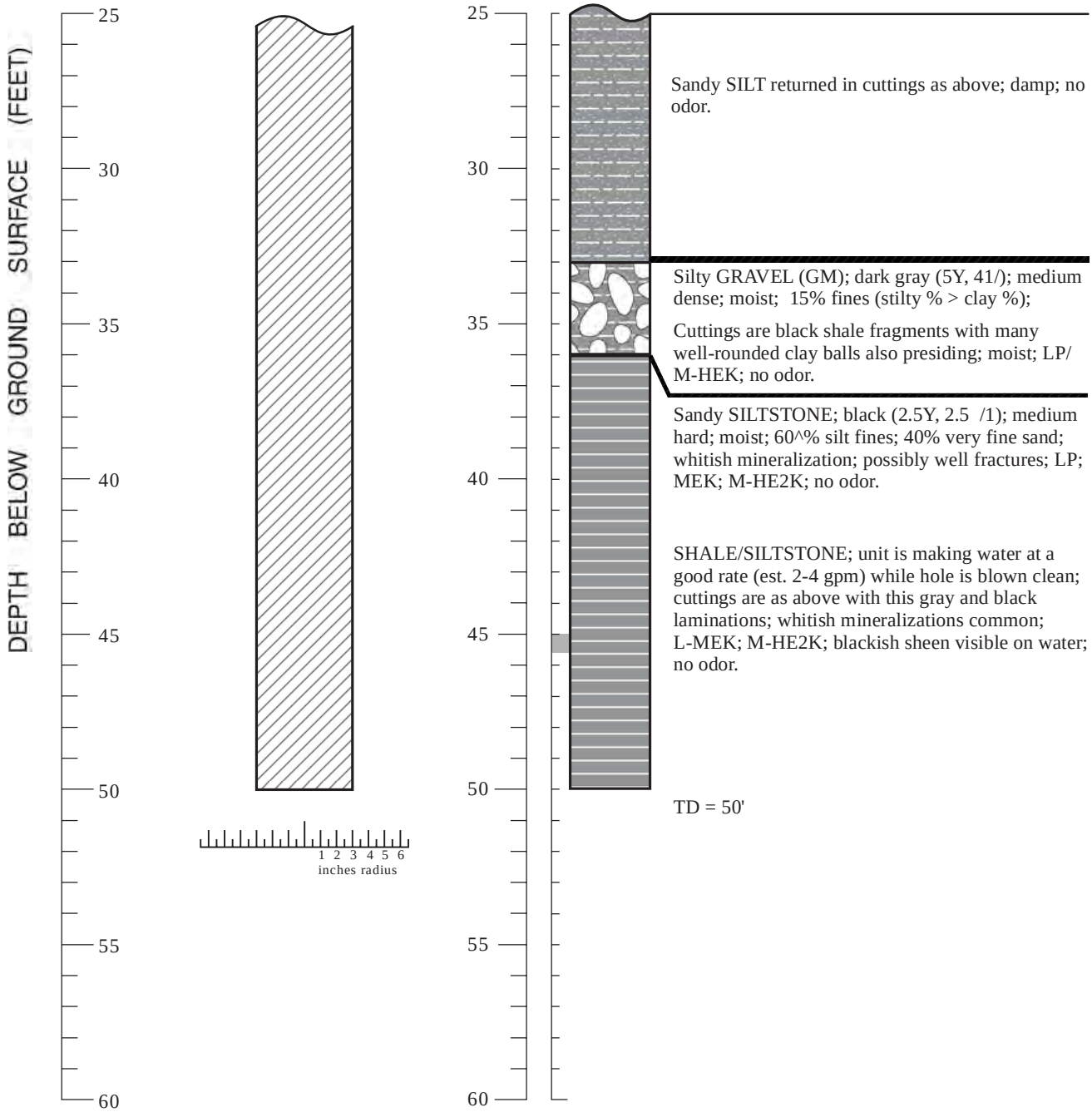
Logged By:	Rob Davis, G. Gandhok
Supervisor:	Joyce Adams
Drilling Company:	Westex
License Number:	C57-552198
Driller:	Mark Dockrey
Drilling Method:	Air Rotery
Date Drilled:	10/04/07
Well Head Completion:	N/A
Type of Sampler:	Split Spoon
Ground Surface Elevation:	323.4'

Boring Log - B-13 - Amonos Site, Cloverdale, California

F s v m r k $F 1 5 7 $, g s r x 2 -

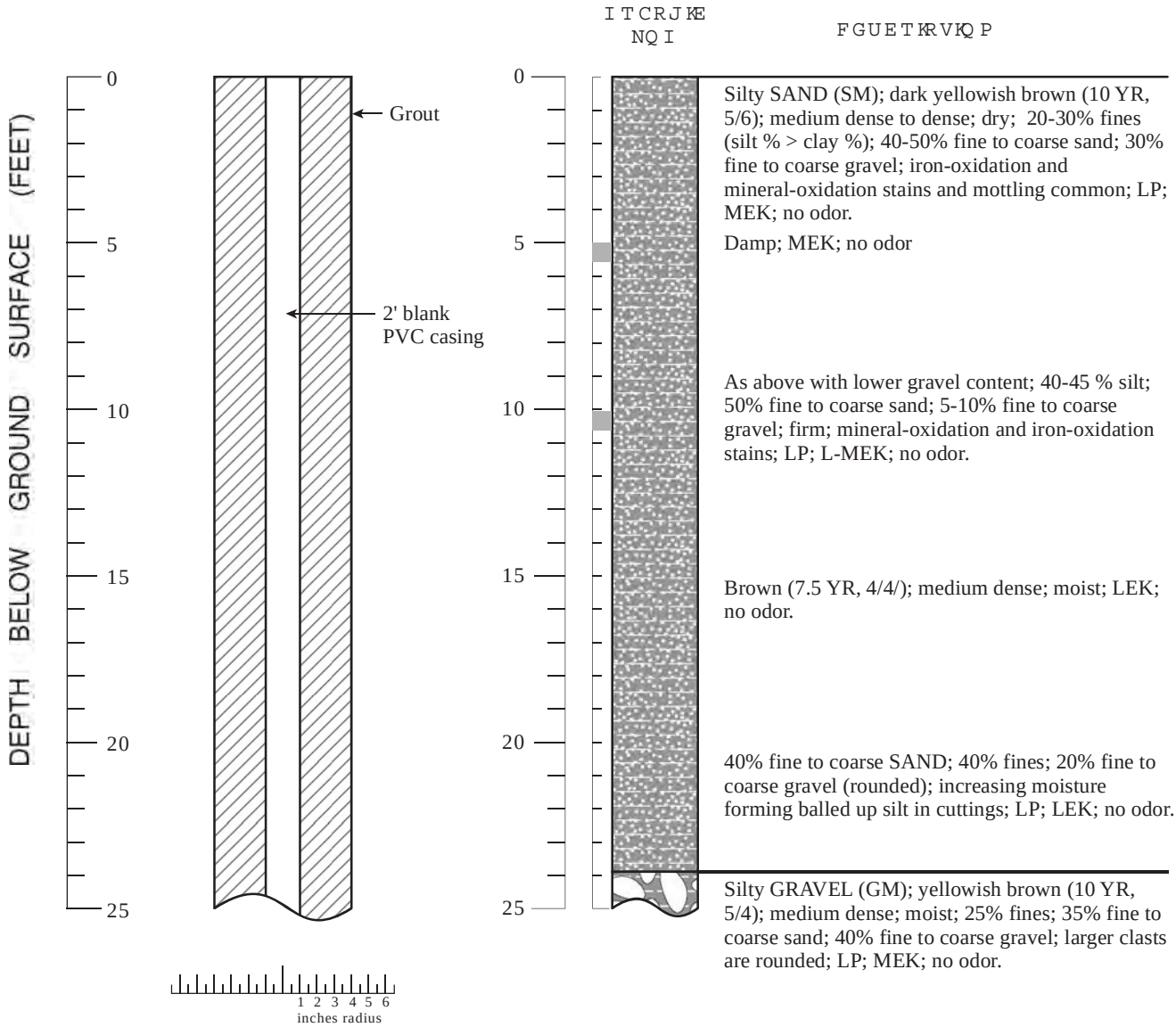
K V E T L M G
P S K

H I W G V M T X M S R



Boring Log - B-13 - Amonos Site, Cloverdale, California

Y GNN"D 36 10 Y /2;



EXPLANATION

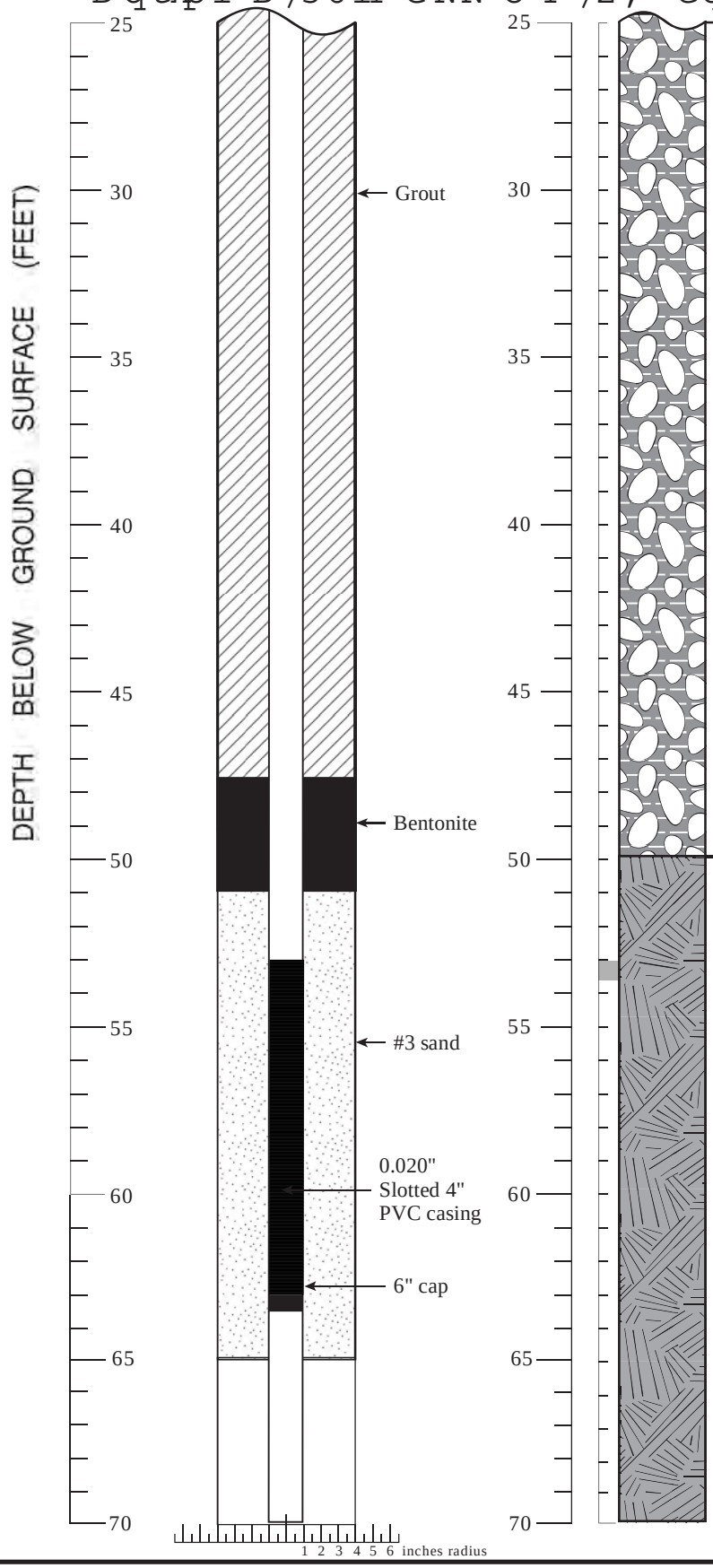
- ▼ Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

Logged By:	Rob Davis, Randy Kirby
Supervisor:	Joyce Adams
Drilling Company:	Test America
License Number:	C57-819548
Driller:	Nick Letsch
Drilling Method:	Air Rotary
Date Drilled:	03/11/08
Well Head Completion:	5' Steel Monument / 3- Barriers
Type of Sampler:	N/A
Top of Casing:	320.57'

Boring Log/Well Construction Details - B-14/MW-09 - Amonos Site, Cloverdale, California

Dqtkpi"D/361Y GNN"O Y /2;"*eqpv0+ FGUETKRVKQP



Same

Moist to wet gravel seam observed in cuttings during advancement of drive casing.

As above; damp to moist; no odor.

Silty GRAVEL (GM) as above; damp to moist; MEK; no odor.

Cuttings color changes to dark grayish brown (2.5Y, 4/2); increasing gravel content; unit coarsening downward; clasts are rounded; LP; M-HEK; no odor.

BEDROCK at 45 feet; fractured dark gray SHALE; Silty GRAVEL as above with lower percentage of sub-rounded gravel clasts; clast litholigy is mostly shale; unit appears to be coursening downward; moist to wet; M-HEK; no odor.

SHALE; dark gray (2.5Y, 4/XX?); medium; wet; well weathered; locally friable; iron-oxidation staining on fracture surfaces; pervasive LP; LEK; HE2K; no odor.

As above with increasing clay content in cuttings; wet; no odor.

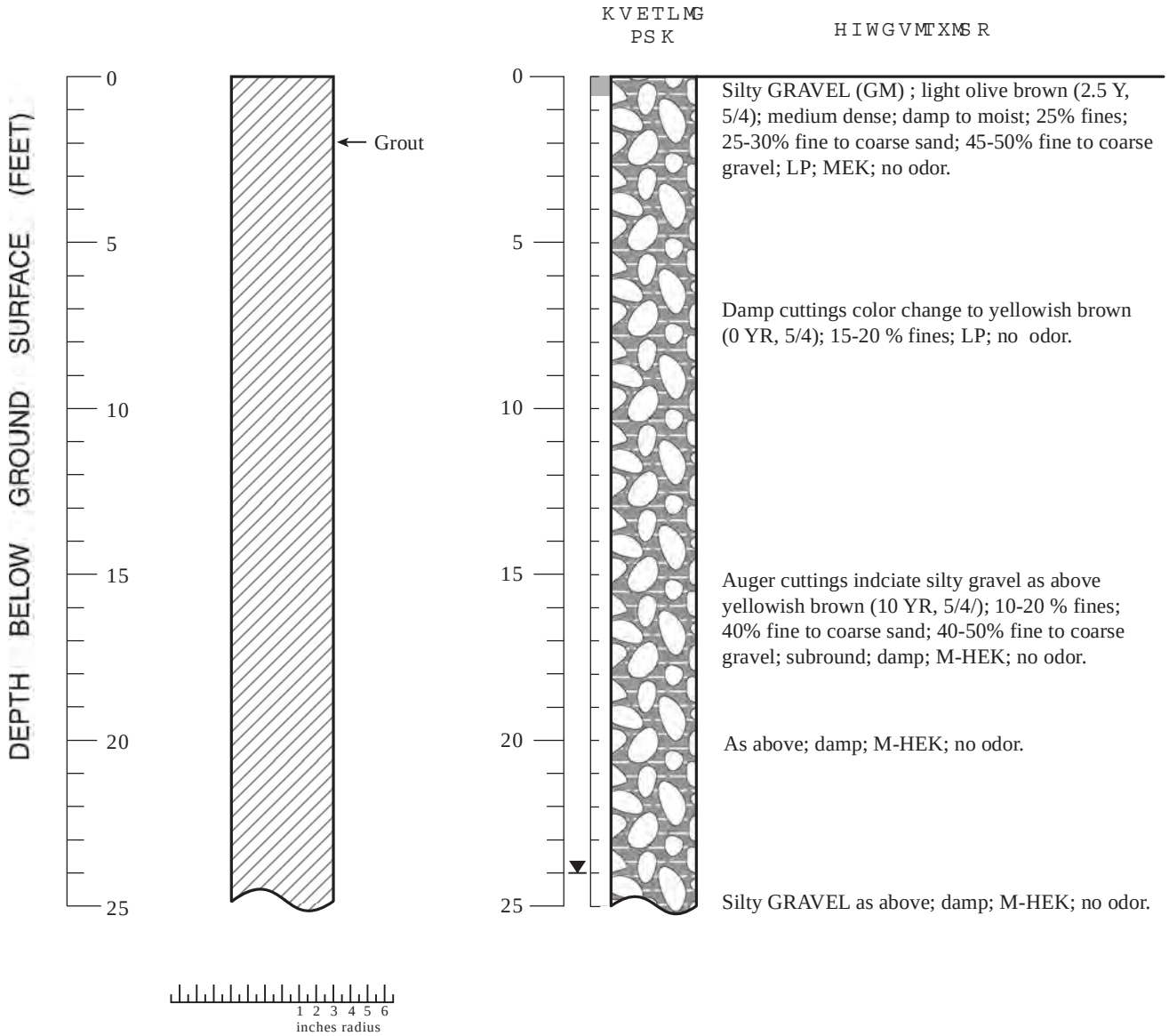
SHALE is black (2.5Y, 2/1); friable cuttings returned as 1/8" fragments with clay balls likely from filled fractures.

As above; black SHALE; wet; may be highly fractured; rock is very brittle; iron-oxidation stainig is not as common as above at 50-60 ft; clay content is as above; LEK; HE2K; no odor.

TD = 70'

Boring Log/Well Construction Details - B-14/MW-09 - Amonos Site Cloverdale, California

F svmrk $F 15 :



EXPLANATION

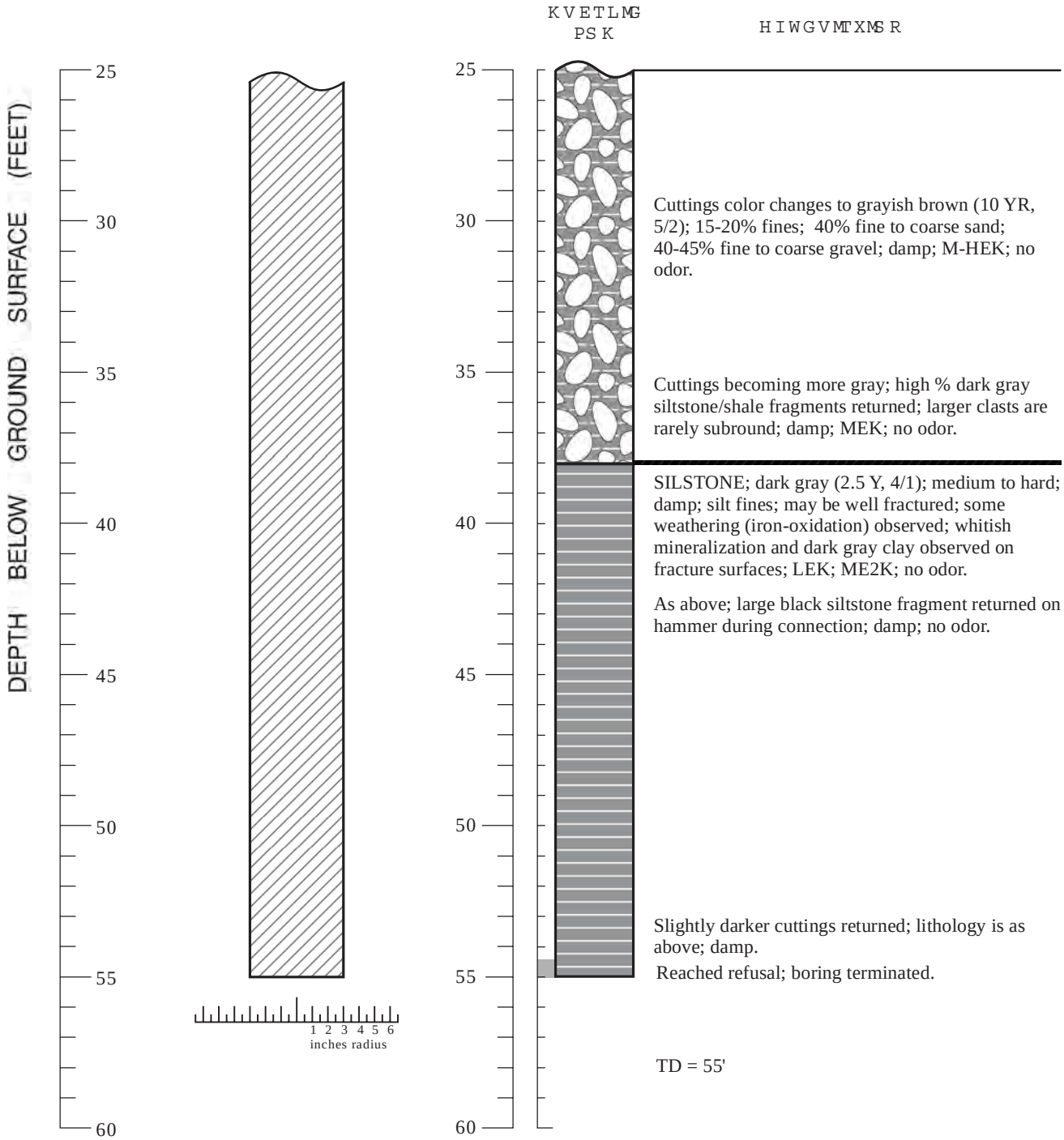
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

Logged By:	Rob Davis, Randy Kirby
Supervisor:	Joyce Adams
Drilling Company:	Westex
License Number:	C57-552198
Driller:	Mark Dockrey
Drilling Method:	Air Rotery
Date Drilled:	10/16/07
Well Head Completion:	N/A
Type of Sampler:	Split Spoon
Ground Surface Elevation:	N/A

Boring Log - B-16 - Amonos Site, Cloverdale, California

F svmrk$F 15 : $,gsrx2-

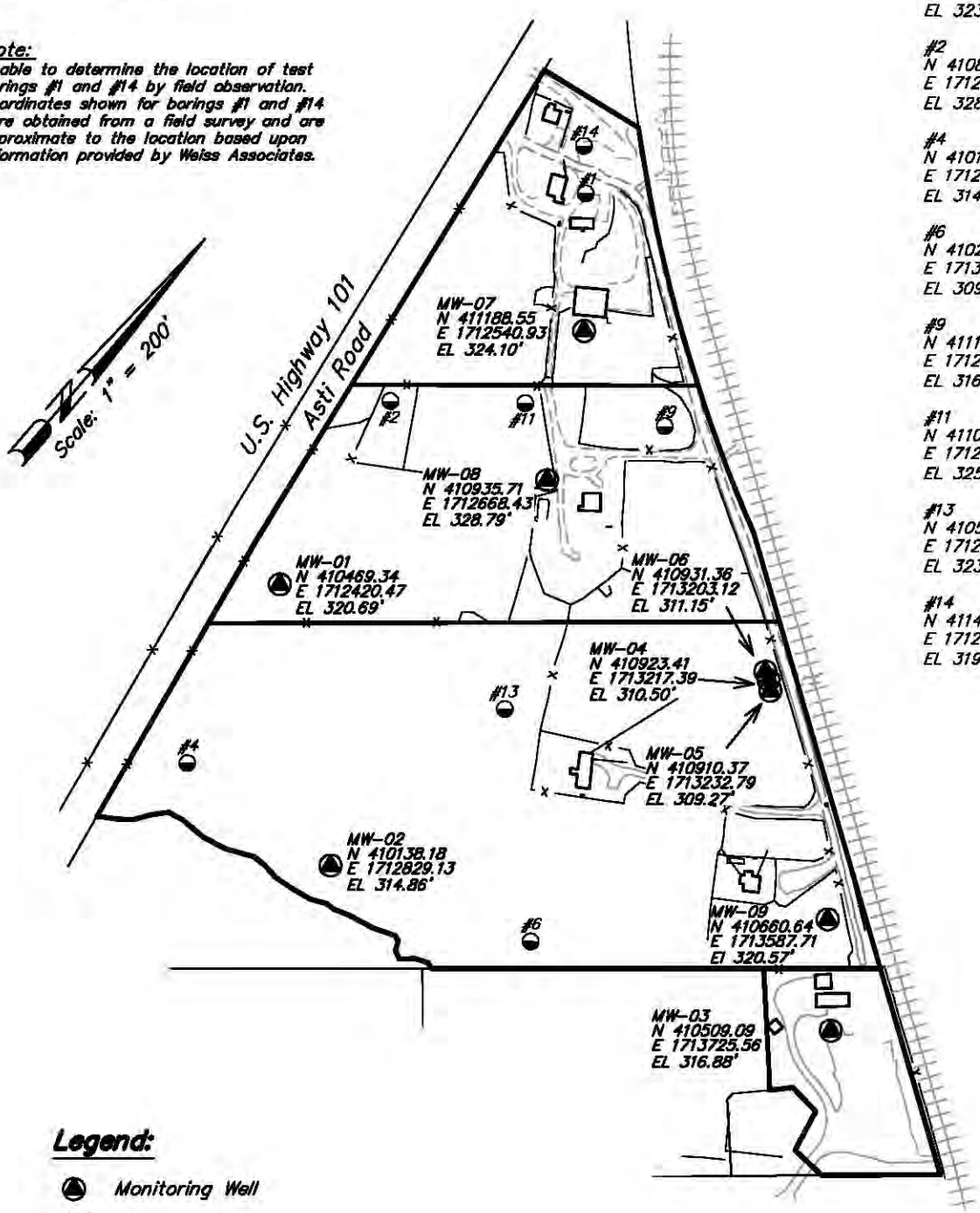


Boring Log - B-16 Amonos Site, Cloverdale, California

SURVEY RESULTS

This EXHIBIT is for graphic purposes only. Any errors or omissions on this exhibit shall not affect the deed description.

Note:
Unable to determine the location of test borings #1 and #14 by field observation. Coordinates shown for borings #1 and #14 were obtained from a field survey and are approximate to the location based upon information provided by Weiss Associates.



Borings

#1
N 411382.1
E 1712377.9
EL 323.9'

#2
N 410857.8
E 1712354.6
EL 328.8'

#4
N 410109.0
E 1712506.5
EL 314.3'

#6
N 410272.9
E 1713199.7
EL 309.5'

#9
N 411152.6
E 1712768.0
EL 316.8'

#11
N 411017.0
E 1712545.6
EL 325.5'

#13
N 410566.0
E 1712884.3
EL 323.4'

#14
N 411446.4
E 1712318.3
EL 319.9'

Legend:

Monitoring Well

#13 Boring

N Northing Coordinate
E Easting Coordinate
EL Elevation

Monitoring Well Exhibit

Aaron R. Smith, PLS 7901
my license expires 12/31/09

PROFESSIONAL LAND SURVEYOR
AARON R SMITH
No. L 7901
EXP. 12/31/09
STATE OF CALIFORNIA

Adobe Associates, Inc.
Civil Engineering, Land Surveying & Land Development Services
1220 N. Dutton Ave
Santa Rosa, CA 95401
707 541 2300
Fax: 707 541 2301

Job No. 07159.03 APN 116-310-020, 035, 039 & 040 June 11, 2008

APPENDIX B

Quality Assurance and Quality Control Summary

APPENDIX B

The quality assurance (QA) objectives for this Phase II Investigation report focused on assessing the appropriateness of data generated during the Phase II activities (precision, accuracy, completeness, comparability, and representative application and use), and evaluating the quality of data collected before the data was used as a basis for analysis. Quality control (QC) procedures included data reduction and validation for field and laboratory activities, and data acceptance criteria were defined and achieved.

Data Validation

As part of the data quality review process, ESA performed a data validation evaluation of the analytical data collected during the Phase II investigation. The following is a summary of the evaluation of analytical data for groundwater and soil samples collected at the Site.

The data were evaluated based on the following parameters:

- data completeness
- sample containers
- sample preservation
- holding times
- blanks

Following review of the data, some of the results were flagged with qualifiers because of exceedances in the QC criteria for the parameters listed in the preceding paragraph.

The following flags denote the following datum qualifiers:

- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- b Sample processed and analyzed outside of hold time.
- * Soil sample collected in a polyethylene container.
- ~ Sample submitted to the laboratory was not cold.

Data Completeness

All analytical reports from the analytical laboratory of Curtis and Tompkins LTD were reviewed for completeness. The review indicates that samples were received under COC protocol and analyzed in accordance with the instructions on the chain-of-custody form or subsequent email communication between Weiss Associates and Curtis and Tompkins, LTD. Thirteen of the fourteen analytical reports reviewed included a laboratory narrative. The narrative and a portion of analytical report 203418 were missing from the analytical reports transmitted to ESA for review.

Sample Containers

The majority of project soil samples were collected using a polyethylene container. Soil samples are typically collected in glass jars or brass sleeves rather than polyethylene due to the potential for polyethylene to introduce organic carbon to the sample and lead to cross contamination. This type of cross contamination could possibly result in elevated concentrations of volatile organic compounds (VOCs) or petroleum hydrocarbons in the submitted soil sample. Soil samples collected in polyethylene containers are qualified with a ”*”. Because these containers were likely not supplied by the laboratory there is a potential for cross contamination of other contaminants such as elevated metals. Data are reviewed in light of these potential issues that would normally result in false positives.

Sample Preservation

Sample preservation includes maintaining samples cold following sample collection, as well as laboratory preservatives for collected groundwater samples such as nitric acid for metals analysis. Samples submitted for laboratory analysis were periodically not received cold. This type of sample handling would have the potential to increase cross contamination from soil samples collected in polyethylene containers, or potentially cause VOCs or total petroleum hydrocarbons in the gasoline range organics (TPH-gro) to volatize and reduce in concentrations. Soil and groundwater samples that were not received cold are qualified with a “~”. Data are reviewed in light of these potential issues, recognizing that samples received cold were found to have non-detect to low concentrations of TPH and generally non-detect concentrations of VOCs, indicating that these volatile substances are likely not a concern at the Amonos site.

Holding Time

All samples were prepared and analyzed within the recommended holding times outlined in the U.S. EPA Guidance except for the following two cases. Data reported for total petroleum hydrocarbons-diesel range organics (TPH-dro) and motor oil-range organics (TPH-moro) with silica gel cleanup for groundwater sample B-08-GW-$^{+}$1.25, and pesticides and polychlorinated biphenyls for groundwater sample for B-12-GW-28 were qualified with a “b” accordingly.

Blanks

No target compounds were detected above the laboratory reporting limits in the laboratory method blanks except for a detection of chromium above the laboratory limit in sample QC408129; samples associated with that laboratory method blank had chromium detections at a level at least 10 times that of the blank and do not require a data qualifier.

No target compounds were detected above the laboratory reporting limits in field trip blanks except for a low detection of acetone in a trip blank collected on October 4, 2007; acetone is a common laboratory contaminant and likely does not represent actual conditions. Neither field nor equipment blanks were collected as part of the Phase II investigation. Methylene chloride was reported by the laboratory in soil sampleB-8-SS-0.0. As noted by the laboratory, methylene chloride is a common laboratory contaminant and likely does not represent actual conditions.

Relative Percent Difference

Both precision and accuracy are evaluated using duplicate pairs. Duplicate results are assessed using the relative percent difference between duplicate measurements. Duplicate and co-located samples and field equipment blanks were not collected as part of the investigation field work. Therefore, these field QC parameters were not evaluated as part of the data validation process.

APPENDIX C

Analytical Laboratory Reports

ANALYTICAL LABORATORY DATA SHEETS AND CHAIN-OF-CUSTODY FORMS

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates	Project : 379-1827-15-02
5801 Christie Avenue	Location : Cloverdale Project
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
B-02-SS-0.0'	197909-001
B-02-SS-35'	197909-002
B-02-GW-30'	197909-003
TRIP BLANK	197909-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/29/2007
Project Manager

Signature: _____ Date: 10/29/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**197909**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**09/27/07**
Samples Received:	**09/27/07**

This hardcopy data package contains sample and QC results for two soil samples and one water sample, requested for the above referenced project on 09/27/07. The samples were received with some broken VOA vials which included the Trip Blank. A Trip Blank was not analyzed.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:
High surrogate recoveries were observed for trifluorotoluene (FID) in the LCS for batch 130089 and the MS/MSD of B-02-SS-35' (lab # 197909-002); the corresponding bromofluorobenzene (FID) surrogate recoveries were within limits. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Soil:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Water:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Soil:
High surrogate recoveries were observed for dibromofluoromethane in B-02-SS-0.0' (lab # 197909-001) and B-02-SS-35' (lab # 197909-002); no target analytes were detected in these samples. No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A) Soil:
Chromium was detected above the RL in the method blank for batch 129961; this analyte was detected in samples at a level at least 10 times that of the blank. No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7470A) Filtrate:
No analytical problems were encountered.

Ion Chromatography (EPA 300.0) Water:
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**197909**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**09/27/07**
Samples Received:	**09/27/07**

Ion Chromatography (EPA 300.0) Soil:
No analytical problems were encountered.

Asbestos PLM (EPA 600/R-93-116):
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-02-GW-30'	Batch#:	130057
Matrix:	Water	Sampled:	09/25/07
Units:	ug/L	Received:	09/27/07
Diln Fac:	1.000		

Type: SAMPLE Analyzed: 10/02/07
Lab ID: 197909-003

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	91	73-134
Bromofluorobenzene (FID)	98	77-140

Type: BLANK Analyzed: 10/01/07
Lab ID: QC408514

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	95	73-134
Bromofluorobenzene (FID)	87	77-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC408516	Batch#:	130057
Matrix:	Water	Analyzed:	10/01/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,895	95	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	102	73-134
Bromofluorobenzene (FID)	98	77-140

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-02-GW-30'	Batch#:	130057
MSS Lab ID:	197909-003	Sampled:	09/25/07
Matrix:	Water	Received:	09/27/07
Units:	ug/L	Analyzed:	10/02/07
Diln Fac:	1.000		

Type: MS Lab ID: QC408517

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	28.91	2,000	1,881	93	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	99	73-134
Bromofluorobenzene (FID)	96	77-140

Type: MSD Lab ID: QC408518

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,866	92	72-120	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	73-134
Bromofluorobenzene (FID)	103	77-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130089
Units:	mg/Kg	Sampled:	09/25/07
Basis:	as received	Received:	09/27/07
Diln Fac:	1.000	Analyzed:	10/02/07

Field ID: B-02-SS-0.0' Lab ID: 197909-001
Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	0.98

Surrogate	%REC	Limits
Trifluorotoluene (FID)	111	71-132
Bromofluorobenzene (FID)	108	69-145

Field ID: B-02-SS-35' Lab ID: 197909-002
Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	0.95

Surrogate	%REC	Limits
Trifluorotoluene (FID)	110	71-132
Bromofluorobenzene (FID)	97	69-145

Type: BLANK Lab ID: QC408650

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	108	71-132
Bromofluorobenzene (FID)	101	69-145

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC408651	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130089
Units:	mg/Kg	Analyzed:	10/02/07

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	10.00	8.767	88	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	143 *	71-132
Bromofluorobenzene (FID)	134	69-145

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-02-SS-35'	Diln Fac:	1.000
MSS Lab ID:	197909-002	Batch#:	130089
Matrix:	Soil	Sampled:	09/25/07
Units:	mg/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	10/02/07

Type: MS Lab ID: QC408685

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.1061	10.00	6.553	64	43-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	139 *	71-132
Bromofluorobenzene (FID)	124	69-145

Type: MSD Lab ID: QC408686

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	9.804	6.662	67	43-120	4	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	147 *	71-132
Bromofluorobenzene (FID)	132	69-145

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-02-GW-30'	Sampled:	09/25/07
Matrix:	Water	Received:	09/27/07
Units:	ug/L	Prepared:	09/29/07
Diln Fac:	1.000	Analyzed:	10/01/07
Batch#:	130023		

Type: SAMPLE Lab ID: 197909-003

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	ND	300	85

Surrogate	%REC	Limits
Hexacosane	97	61-133

Type: BLANK Lab ID: QC408376

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	ND	300	56

Surrogate	%REC	Limits
Hexacosane	101	61-133

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130023
Units:	ug/L	Prepared:	09/29/07
Diln Fac:	1.000	Analyzed:	10/01/07

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC408377

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,170	87	58-128

Surrogate	%REC	Limits
Hexacosane	92	61-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC408378

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,195	88	58-128	1	29

Surrogate	%REC	Limits
Hexacosane	94	61-133

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130125
Units:	mg/Kg	Sampled:	09/25/07
Basis:	as received	Received:	09/27/07
Diln Fac:	1.000	Prepared:	10/03/07

Field ID:	B-02-SS-0.0'	Lab ID:	197909-001
Type:	SAMPLE	Cleanup Method:	EPA 3630C

Analyte	Result	RL	Analyzed
Diesel C10-C24	30 Y	1.0	10/04/07
Diesel C10-C24 (SGCU)	11 Y	1.0	11/01/07
Motor Oil C24-C36	150	5.0	10/04/07
Motor Oil C24-C36 (SGCU)	73	5.0	11/01/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	77	46-128	10/04/07
Hexacosane (SGCU)	77	46-128	11/01/07

Field ID:	B-02-SS-35'	Lab ID:	197909-002
Type:	SAMPLE	Analyzed:	10/04/07

Analyte	Result	RL
Diesel C10-C24	30 Y	1.0
Motor Oil C24-C36	42	5.0

Surrogate	%REC	Limits
Hexacosane	103	46-128

Type:	BLANK	Analyzed:	10/03/07
Lab ID:	QC408801	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Diesel C10-C24 (SGCU)	ND	1.0
Motor Oil C24-C36	ND	5.0
Motor Oil C24-C36 (SGCU)	ND	5.0

Surrogate	%REC	Limits
Hexacosane	106	46-128
Hexacosane (SGCU)	104	46-128

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC408802	Batch#:	130125
Matrix:	Soil	Prepared:	10/03/07
Units:	mg/Kg	Analyzed:	10/03/07
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	49.85	43.20	87	55-131

Surrogate	%REC	Limits
Hexacosane (SGCU)	87	46-128

SGCU= Silica gel cleanup

41.2

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130125
MSS Lab ID:	197913-009	Sampled:	09/26/07
Matrix:	Soil	Received:	09/26/07
Units:	mg/Kg	Prepared:	10/03/07
Basis:	as received	Analyzed:	10/03/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC408803

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	0.2691	49.88	46.86	93	31-150

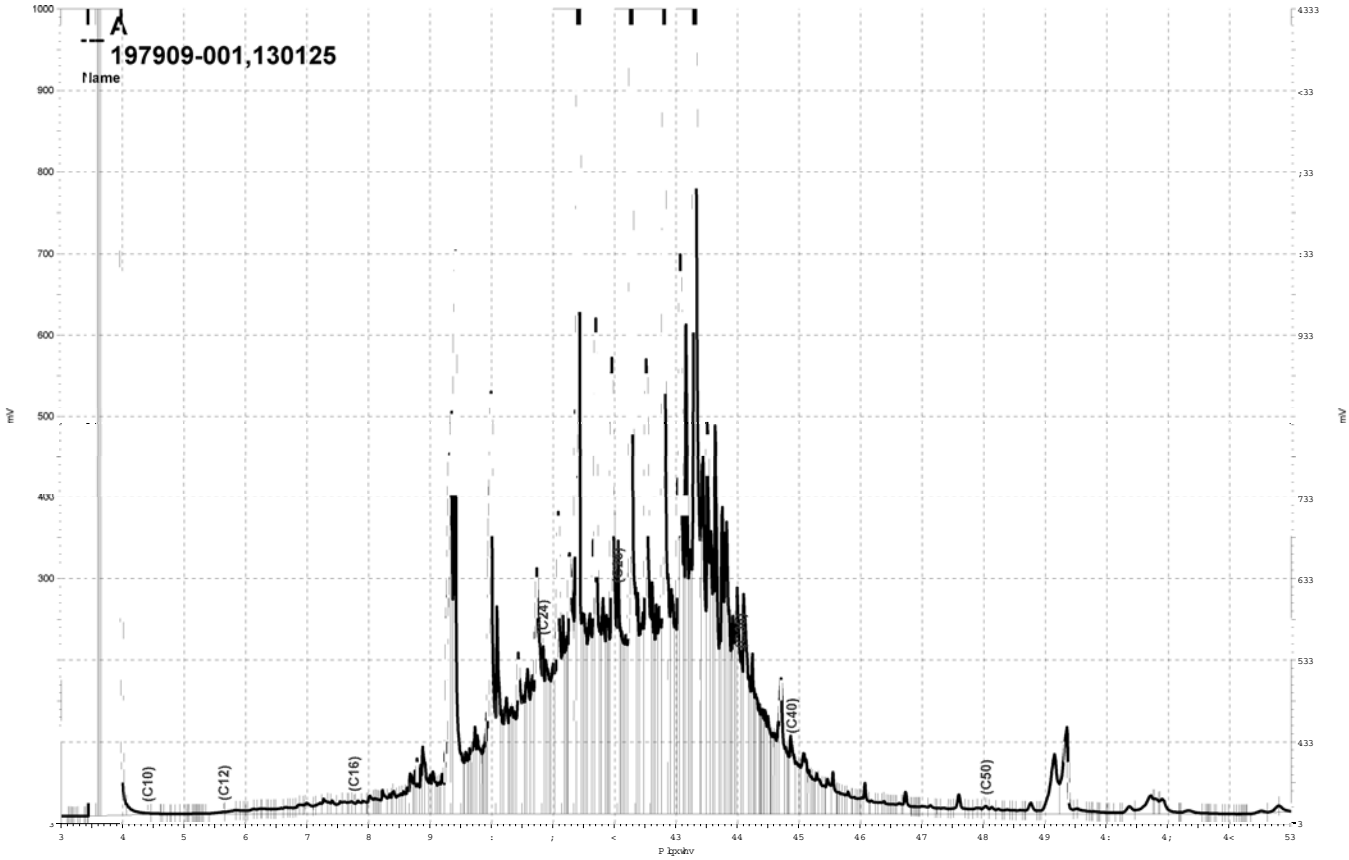
Surrogate	%REC	Limits
Hexacosane (SGCU)	96	46-128

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC408804

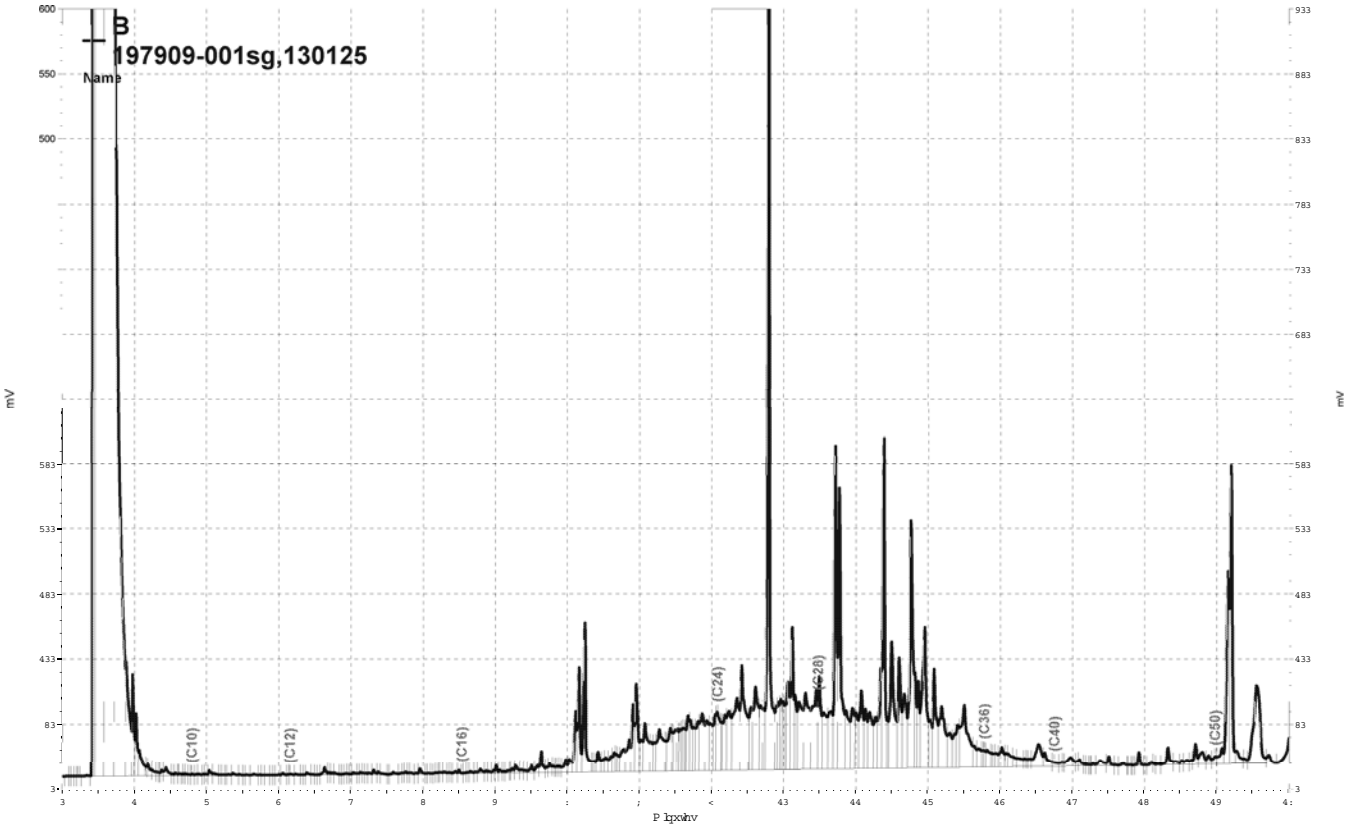
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	49.60	40.43	81	31-150	14	42

Surrogate	%REC	Limits
Hexacosane (SGCU)	85	46-128

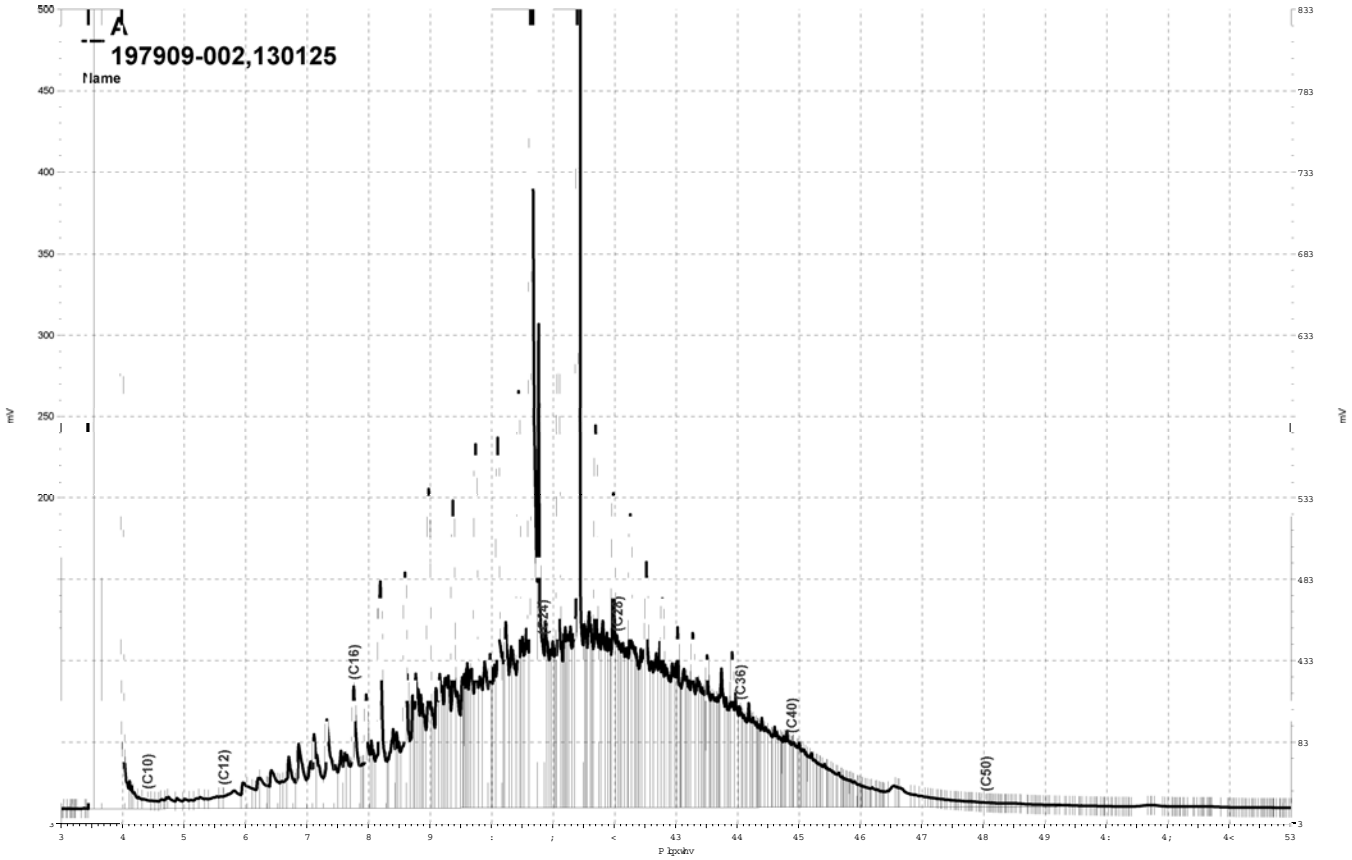
RPD= Relative Percent Difference
SGCU= Silica gel cleanup



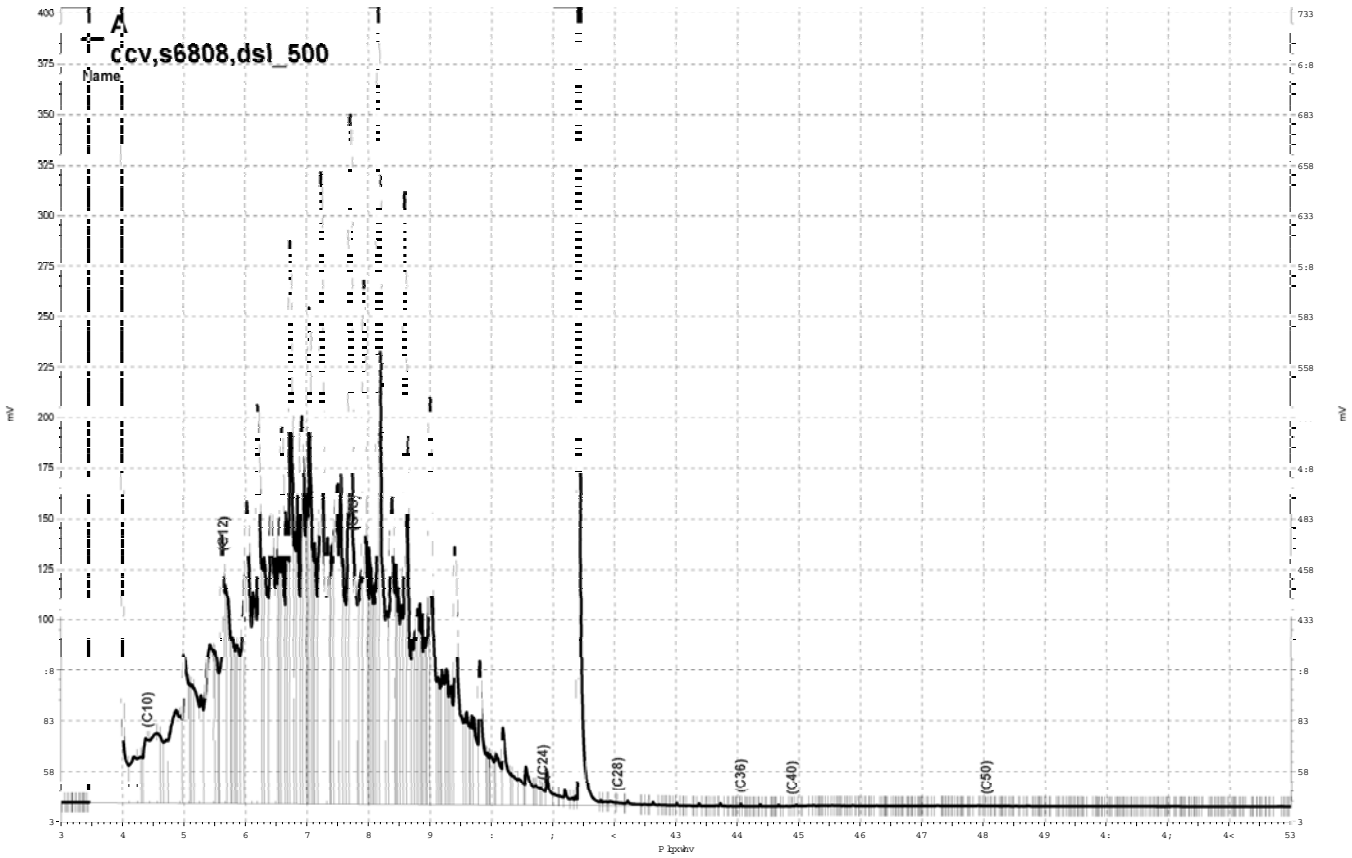
_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5:9d358/D



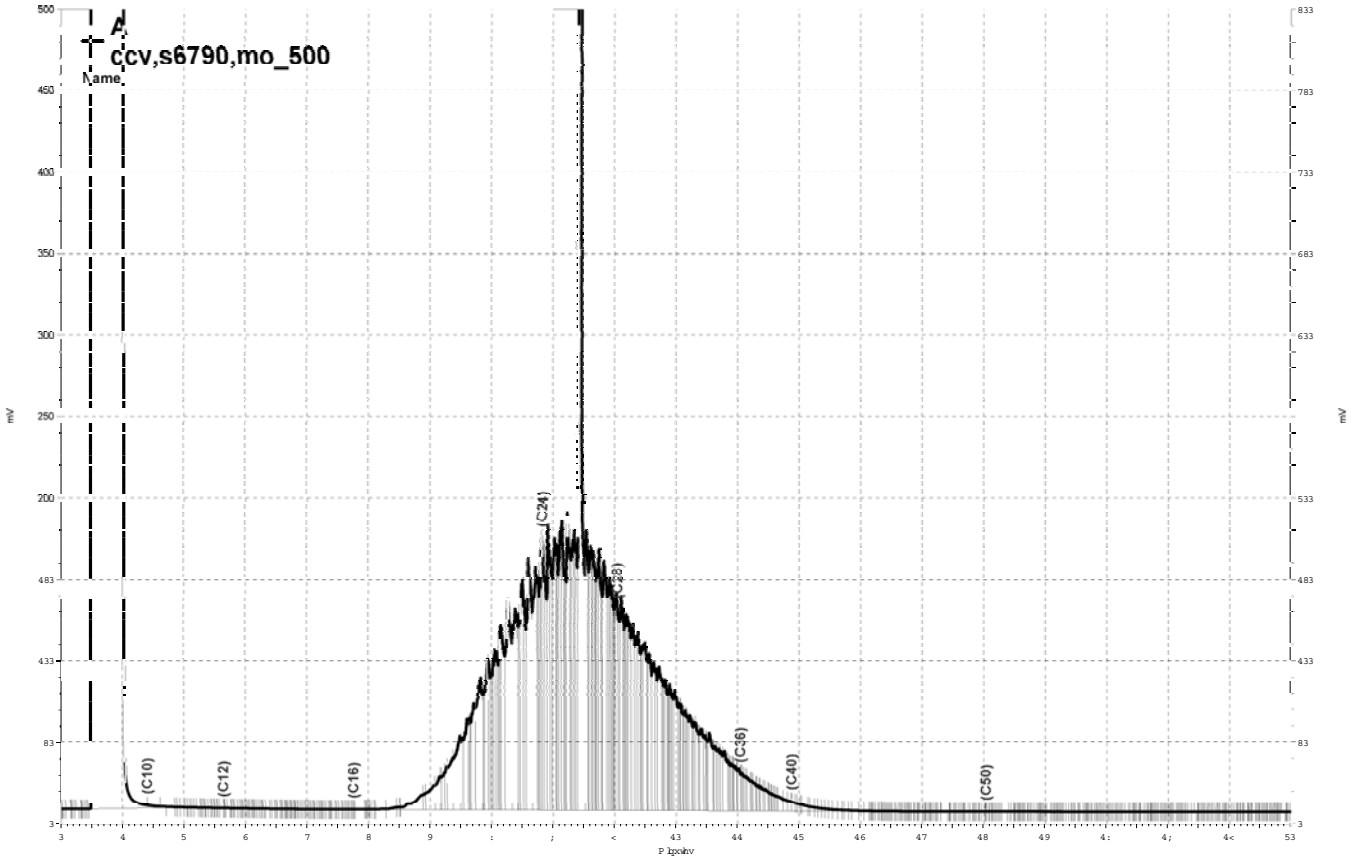
_Olp v_jgulyh_h}fkurp_Surmfw_JF59_Gdwd_638e345/E



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5:9d359/D



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5:9d348/D



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5:9d338/D

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-02-GW-30'	Batch#:	129968
Lab ID:	197909-003	Sampled:	09/25/07
Matrix:	Water	Received:	09/27/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-02-GW-30'	Batch#:	129968
Lab ID:	197909-003	Sampled:	09/25/07
Matrix:	Water	Received:	09/27/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-122
1,2-Dichloroethane-d4	124	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408165	Batch#:	129968
Matrix:	Water	Analyzed:	09/28/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408165	Batch#:	129968
Matrix:	Water	Analyzed:	09/28/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	116	74-137
Toluene-d8	98	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	129968
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Type: BS Lab ID: QC408166

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	27.49	110	80-133
Benzene	25.00	26.11	104	80-120
Trichloroethene	25.00	29.22	117	80-120
Toluene	25.00	26.98	108	80-122
Chlorobenzene	25.00	25.13	101	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	136	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	107	80-120

Type: BSD Lab ID: QC408167

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	25.94	104	80-133	6	20
Benzene	25.00	24.43	98	80-120	7	20
Trichloroethene	25.00	27.41	110	80-120	6	20
Toluene	25.00	25.35	101	80-122	6	20
Chlorobenzene	25.00	24.17	97	80-120	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	132	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	106	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-02-SS-0.0'	Diln Fac:	0.8929
Lab ID:	197909-001	Batch#:	129984
Matrix:	Soil	Sampled:	09/25/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/28/07

Analyte	Result	RL
Freon 12	ND	8.9
Chloromethane	ND	8.9
Vinyl Chloride	ND	8.9
Bromomethane	ND	8.9
Chloroethane	ND	8.9
Trichlorofluoromethane	ND	4.5
Acetone	ND	22
Freon 113	ND	4.5
1,1-Dichloroethene	ND	4.5
Methylene Chloride	ND	18
Carbon Disulfide	ND	4.5
MTBE	ND	4.5
trans-1,2-Dichloroethene	ND	4.5
Vinyl Acetate	ND	45
1,1-Dichloroethane	ND	4.5
2-Butanone	ND	8.9
cis-1,2-Dichloroethene	ND	4.5
2,2-Dichloropropane	ND	4.5
Chloroform	ND	4.5
Bromochloromethane	ND	4.5
1,1,1-Trichloroethane	ND	4.5
1,1-Dichloropropene	ND	4.5
Carbon Tetrachloride	ND	4.5
1,2-Dichloroethane	ND	4.5
Benzene	ND	4.5
Trichloroethene	ND	4.5
1,2-Dichloropropane	ND	4.5
Bromodichloromethane	ND	4.5
Dibromomethane	ND	4.5
4-Methyl-2-Pentanone	ND	8.9
cis-1,3-Dichloropropene	ND	4.5
Toluene	ND	4.5
trans-1,3-Dichloropropene	ND	4.5
1,1,2-Trichloroethane	ND	4.5
2-Hexanone	ND	8.9
1,3-Dichloropropane	ND	4.5
Tetrachloroethene	ND	4.5
Dibromochloromethane	ND	4.5
1,2-Dibromoethane	ND	4.5
Chlorobenzene	ND	4.5
1,1,1,2-Tetrachloroethane	ND	4.5
Ethylbenzene	ND	4.5
m,p-Xylenes	ND	4.5
o-Xylene	ND	4.5
Styrene	ND	4.5
Bromoform	ND	4.5
Isopropylbenzene	ND	4.5
1,1,2,2-Tetrachloroethane	ND	4.5
1,2,3-Trichloropropane	ND	4.5
Propylbenzene	ND	4.5
Bromobenzene	ND	4.5
1,3,5-Trimethylbenzene	ND	4.5
2-Chlorotoluene	ND	4.5

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-02-SS-0.0'	Diln Fac:	0.8929
Lab ID:	197909-001	Batch#:	129984
Matrix:	Soil	Sampled:	09/25/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/28/07

Analyte	Result	RL
4-Chlorotoluene	ND	4.5
tert-Butylbenzene	ND	4.5
1,2,4-Trimethylbenzene	ND	4.5
sec-Butylbenzene	ND	4.5
para-Isopropyl Toluene	ND	4.5
1,3-Dichlorobenzene	ND	4.5
1,4-Dichlorobenzene	ND	4.5
n-Butylbenzene	ND	4.5
1,2-Dichlorobenzene	ND	4.5
1,2-Dibromo-3-Chloropropane	ND	4.5
1,2,4-Trichlorobenzene	ND	4.5
Hexachlorobutadiene	ND	4.5
Naphthalene	ND	4.5
1,2,3-Trichlorobenzene	ND	4.5

Surrogate	%REC	Limits
Dibromofluoromethane	128 *	80-124
1,2-Dichloroethane-d4	114	79-136
Toluene-d8	100	80-120
Bromofluorobenzene	95	80-122

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

16.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-02-SS-35'	Diln Fac:	0.9615
Lab ID:	197909-002	Batch#:	129984
Matrix:	Soil	Sampled:	09/25/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/28/07

Analyte	Result	RL
Freon 12	ND	9.6
Chloromethane	ND	9.6
Vinyl Chloride	ND	9.6
Bromomethane	ND	9.6
Chloroethane	ND	9.6
Trichlorofluoromethane	ND	4.8
Acetone	ND	24
Freon 113	ND	4.8
1,1-Dichloroethene	ND	4.8
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.8
MTBE	ND	4.8
trans-1,2-Dichloroethene	ND	4.8
Vinyl Acetate	ND	48
1,1-Dichloroethane	ND	4.8
2-Butanone	ND	9.6
cis-1,2-Dichloroethene	ND	4.8
2,2-Dichloropropane	ND	4.8
Chloroform	ND	4.8
Bromochloromethane	ND	4.8
1,1,1-Trichloroethane	ND	4.8
1,1-Dichloropropene	ND	4.8
Carbon Tetrachloride	ND	4.8
1,2-Dichloroethane	ND	4.8
Benzene	ND	4.8
Trichloroethene	ND	4.8
1,2-Dichloropropane	ND	4.8
Bromodichloromethane	ND	4.8
Dibromomethane	ND	4.8
4-Methyl-2-Pentanone	ND	9.6
cis-1,3-Dichloropropene	ND	4.8
Toluene	ND	4.8
trans-1,3-Dichloropropene	ND	4.8
1,1,2-Trichloroethane	ND	4.8
2-Hexanone	ND	9.6
1,3-Dichloropropane	ND	4.8
Tetrachloroethene	ND	4.8
Dibromochloromethane	ND	4.8
1,2-Dibromoethane	ND	4.8
Chlorobenzene	ND	4.8
1,1,1,2-Tetrachloroethane	ND	4.8
Ethylbenzene	ND	4.8
m,p-Xylenes	ND	4.8
o-Xylene	ND	4.8
Styrene	ND	4.8
Bromoform	ND	4.8
Isopropylbenzene	ND	4.8
1,1,2,2-Tetrachloroethane	ND	4.8
1,2,3-Trichloropropane	ND	4.8
Propylbenzene	ND	4.8
Bromobenzene	ND	4.8
1,3,5-Trimethylbenzene	ND	4.8
2-Chlorotoluene	ND	4.8

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-02-SS-35'	Diln Fac:	0.9615
Lab ID:	197909-002	Batch#:	129984
Matrix:	Soil	Sampled:	09/25/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/28/07

Analyte	Result	RL
4-Chlorotoluene	ND	4.8
tert-Butylbenzene	ND	4.8
1,2,4-Trimethylbenzene	ND	4.8
sec-Butylbenzene	ND	4.8
para-Isopropyl Toluene	ND	4.8
1,3-Dichlorobenzene	ND	4.8
1,4-Dichlorobenzene	ND	4.8
n-Butylbenzene	ND	4.8
1,2-Dichlorobenzene	ND	4.8
1,2-Dibromo-3-Chloropropane	ND	4.8
1,2,4-Trichlorobenzene	ND	4.8
Hexachlorobutadiene	ND	4.8
Naphthalene	ND	4.8
1,2,3-Trichlorobenzene	ND	4.8

Surrogate	%REC	Limits
Dibromofluoromethane	128 *	80-124
1,2-Dichloroethane-d4	109	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	101	80-122

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC408226	Diln Fac:	1.000
Matrix:	Soil	Batch#:	129984
Units:	ug/Kg	Analyzed:	09/28/07

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	28.63	115	74-131
Benzene	25.00	29.84	119	77-121
Trichloroethene	25.00	28.50	114	77-121
Toluene	25.00	28.16	113	79-122
Chlorobenzene	25.00	27.63	111	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-124
1,2-Dichloroethane-d4	106	79-136
Toluene-d8	102	80-120
Bromofluorobenzene	96	80-122

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC408227	Diln Fac:	1.000
Matrix:	Soil	Batch#:	129984
Units:	ug/Kg	Analyzed:	09/28/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC408227	Diln Fac:	1.000
Matrix:	Soil	Batch#:	129984
Units:	ug/Kg	Analyzed:	09/28/07

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	114	80-124
1,2-Dichloroethane-d4	102	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	97	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	129984
MSS Lab ID:	197913-002	Sampled:	09/26/07
Matrix:	Soil	Received:	09/26/07
Units:	ug/Kg	Analyzed:	09/28/07
Basis:	as received		

Type: MS Diln Fac: 0.8197
Lab ID: QC408271

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.3835	40.98	35.33	86	61-145
Benzene	<0.2673	40.98	31.54	77	57-123
Trichloroethene	<0.3775	40.98	31.62	77	52-141
Toluene	<0.3623	40.98	31.39	77	53-126
Chlorobenzene	<0.2449	40.98	26.46	65	49-121

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-124
1,2-Dichloroethane-d4	91	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	104	80-122

Type: MSD Diln Fac: 0.8929
Lab ID: QC408272

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	44.64	45.38	102	61-145	16	26
Benzene	44.64	39.92	89	57-123	15	25
Trichloroethene	44.64	40.11	90	52-141	15	26
Toluene	44.64	39.42	88	53-126	14	27
Chlorobenzene	44.64	34.55	77	49-121	18	27

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-124
1,2-Dichloroethane-d4	94	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	102	80-122

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	197909	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-02-SS-0.0'	Basis:	as received
Lab ID:	197909-001	Diln Fac:	1.000
Matrix:	Soil	Sampled:	09/25/07
Units:	mg/Kg	Received:	09/27/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	0.50	129961	09/27/07	10/01/07	EPA 3050B	EPA 6010B
Arsenic	5.3	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Barium	160	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Beryllium	0.53	0.10	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Chromium	100	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cobalt	23	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Copper	31	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Lead	5.6	0.21	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Mercury	0.23	0.020	130031	10/01/07	10/01/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Nickel	230	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Selenium	1.2	0.50	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Vanadium	56	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Zinc	42	1.0	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	197909	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-02-SS-35'	Basis:	as received
Lab ID:	197909-002	Diln Fac:	1.000
Matrix:	Soil	Sampled:	09/25/07
Units:	mg/Kg	Received:	09/27/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	0.50	129961	09/27/07	10/01/07	EPA 3050B	EPA 6010B
Arsenic	7.6	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Barium	170	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Beryllium	0.47	0.10	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Chromium	29	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cobalt	12	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Copper	60	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Lead	9.6	0.22	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Mercury	0.15	0.020	130031	10/01/07	10/01/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Nickel	44	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Selenium	0.70	0.50	129961	09/27/07	10/01/07	EPA 3050B	EPA 6010B
Silver	0.33	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Vanadium	44	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Zinc	120	1.0	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408129	Batch#:	129961
Matrix:	Soil	Prepared:	09/27/07
Units:	mg/Kg	Analyzed:	09/29/07
Basis:	as received		

Analyte	Result	RL
Antimony	ND	0.50
Arsenic	ND	0.25
Barium	ND	0.25
Beryllium	ND	0.10
Cadmium	ND	0.25
Chromium	0.48 b	0.25
Cobalt	ND	0.25
Copper	ND	0.25
Lead	ND	0.23
Molybdenum	ND	0.25
Nickel	ND	0.25
Selenium	ND	0.50
Silver	ND	0.25
Thallium	ND	0.50
Vanadium	ND	0.25
Zinc	ND	1.0

b= See narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	129961
Units:	mg/Kg	Prepared:	09/27/07
Basis:	as received	Analyzed:	09/29/07
Diln Fac:	1.000		

Type: BS Lab ID: QC408130

Analyte	Spiked	Result	%REC	Limits
Antimony	100.0	88.63	89	80-120
Arsenic	50.00	45.04	90	80-120
Barium	100.0	87.21	87	80-120
Beryllium	2.500	2.434	97	80-120
Cadmium	10.00	8.934	89	80-120
Chromium	100.0	86.41	86	80-120
Cobalt	25.00	21.07	84	80-120
Copper	12.50	10.60	85	80-120
Lead	100.0	84.89	85	80-120
Molybdenum	20.00	18.12	91	80-120
Nickel	25.00	21.36	85	80-120
Selenium	50.00	43.66	87	80-120
Silver	10.00	8.567	86	80-120
Thallium	50.00	43.21	86	80-120
Vanadium	25.00	21.59	86	80-120
Zinc	25.00	21.98	88	80-120

Type: BSD Lab ID: QC408131

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	100.0	87.37	87	80-120	1	20
Arsenic	50.00	44.38	89	80-120	1	20
Barium	100.0	86.47	86	80-120	1	20
Beryllium	2.500	2.410	96	80-120	1	20
Cadmium	10.00	8.855	89	80-120	1	20
Chromium	100.0	84.87	85	80-120	2	20
Cobalt	25.00	20.86	83	80-120	1	20
Copper	12.50	10.50	84	80-120	1	20
Lead	100.0	83.99	84	80-120	1	20
Molybdenum	20.00	17.83	89	80-120	2	20
Nickel	25.00	21.19	85	80-120	1	20
Selenium	50.00	43.21	86	80-120	1	20
Silver	10.00	8.465	85	80-120	1	20
Thallium	50.00	42.76	86	80-120	1	20
Vanadium	25.00	21.36	85	80-120	1	20
Zinc	25.00	21.77	87	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	129961
MSS Lab ID:	197894-011	Sampled:	09/25/07
Matrix:	Soil	Received:	09/25/07
Units:	mg/Kg	Prepared:	09/27/07
Basis:	as received	Analyzed:	09/29/07
Diln Fac:	1.000		

Type: MS Lab ID: QC408132

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	1.104	93.46	30.72	32	1-122
Arsenic	6.773	46.73	46.53	85	72-120
Barium	168.5	93.46	245.3	82	49-139
Beryllium	0.4134	2.336	2.567	92	80-120
Cadmium	0.06297	9.346	7.885	84	74-120
Chromium	60.67	93.46	135.2	80	65-120
Cobalt	12.99	23.36	31.63	80	60-120
Copper	26.48	11.68	36.94	89	47-146
Lead	11.41	93.46	85.65	79	53-123
Molybdenum	0.1521	18.69	14.37	76	66-120
Nickel	78.68	23.36	96.87	78	43-142
Selenium	<0.07415	46.73	39.52	85	71-120
Silver	0.08443	9.346	8.128	86	66-120
Thallium	0.1285	46.73	36.95	79	62-120
Vanadium	34.45	23.36	53.57	82	52-139
Zinc	63.89	23.36	81.71	76	42-147

Type: MSD Lab ID: QC408133

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	97.09	32.83	33	1-122	3	30
Arsenic	48.54	47.36	84	72-120	2	20
Barium	97.09	246.1	80	49-139	1	23
Beryllium	2.427	2.626	91	80-120	1	20
Cadmium	9.709	8.051	82	74-120	2	20
Chromium	97.09	136.8	78	65-120	1	20
Cobalt	24.27	32.18	79	60-120	1	24
Copper	12.14	36.74	85	47-146	2	21
Lead	97.09	87.29	78	53-123	2	28
Molybdenum	19.42	14.89	76	66-120	0	20
Nickel	24.27	96.29	73	43-142	1	26
Selenium	48.54	41.46	85	71-120	1	20
Silver	9.709	8.296	85	66-120	2	20
Thallium	48.54	38.16	78	62-120	1	20
Vanadium	24.27	54.33	82	52-139	0	20
Zinc	24.27	81.06	71	42-147	2	27

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408403	Batch#:	130031
Matrix:	Soil	Prepared:	10/01/07
Units:	mg/Kg	Analyzed:	10/01/07

Result	RL
ND	0.020

ND= Not Detected
RL= Reporting Limit

32.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130031
Units:	mg/Kg	Prepared:	10/01/07
Basis:	as received	Analyzed:	10/01/07

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC408404	0.5000	0.5180	104	80-120		
BSD	QC408405	0.5000	0.4930	99	80-120	5	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	130031
MSS Lab ID:	197895-055	Sampled:	09/25/07
Matrix:	Soil	Received:	09/25/07
Units:	mg/Kg	Prepared:	10/01/07
Basis:	as received	Analyzed:	10/01/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC408407	0.03185	0.5208	0.5823	106	70-143		
MSD	QC408408		0.4545	0.5100	105	70-143	0	22

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	197909	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-02-GW-30'	Sampled:	09/25/07
Lab ID:	197909-003	Received:	09/27/07
Matrix:	Filtrate	Prepared:	09/28/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Analyte	Result	RL	Batch#	Prep	Analysis
Antimony	ND	10	129973	EPA 3010A	EPA 6010B
Arsenic	ND	6.1	129973	EPA 3010A	EPA 6010B
Barium	200	5.0	129973	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	129973	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	129973	EPA 3010A	EPA 6010B
Chromium	ND	5.0	129973	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	129973	EPA 3010A	EPA 6010B
Copper	ND	5.0	129973	EPA 3010A	EPA 6010B
Lead	ND	3.0	129973	EPA 3010A	EPA 6010B
Mercury	ND	0.20	129985	METHOD	EPA 7470A
Molybdenum	ND	5.0	129973	EPA 3010A	EPA 6010B
Nickel	ND	5.0	129973	EPA 3010A	EPA 6010B
Selenium	ND	10	129973	EPA 3010A	EPA 6010B
Silver	ND	5.0	129973	EPA 3010A	EPA 6010B
Thallium	ND	10	129973	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	129973	EPA 3010A	EPA 6010B
Zinc	ND	20	129973	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408190	Batch#:	129973
Matrix:	Filtrate	Prepared:	09/28/07
Units:	ug/L	Analyzed:	09/28/07

Analyte	Result	RL
Antimony	ND	10
Arsenic	ND	6.1
Barium	ND	5.0
Beryllium	ND	2.0
Cadmium	ND	5.0
Chromium	ND	5.0
Cobalt	ND	5.0
Copper	ND	5.0
Lead	ND	3.0
Molybdenum	ND	5.0
Nickel	ND	5.0
Selenium	ND	10
Silver	ND	5.0
Thallium	ND	10
Vanadium	ND	5.0
Zinc	ND	20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Filtrate	Batch#:	129973
Units:	ug/L	Prepared:	09/28/07
Diln Fac:	1.000		

Type: BS Lab ID: QC408191

Analyte	Spiked	Result	%REC	Limits	Analyzed
Antimony	500.0	540.7	108	80-120	09/28/07
Arsenic	100.0	99.83	100	80-120	10/03/07
Barium	2,000	2,066	103	80-120	09/28/07
Beryllium	50.00	57.71	115	80-120	09/28/07
Cadmium	50.00	59.20	118	80-120	09/28/07
Chromium	200.0	207.5	104	80-120	09/28/07
Cobalt	500.0	517.5	104	80-120	09/28/07
Copper	250.0	237.0	95	80-120	09/28/07
Lead	100.0	103.4	103	80-120	09/28/07
Molybdenum	400.0	421.1	105	80-120	09/28/07
Nickel	500.0	535.9	107	80-120	09/28/07
Selenium	100.0	115.9	116	80-120	09/28/07
Silver	50.00	47.29	95	80-120	09/28/07
Thallium	100.0	102.3	102	80-120	09/28/07
Vanadium	500.0	504.3	101	80-120	09/28/07
Zinc	500.0	584.0	117	80-120	09/28/07

Type: BSD Lab ID: QC408192

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
Antimony	500.0	514.8	103	80-120	5	20	09/28/07
Arsenic	100.0	99.46	99	80-120	0	20	10/03/07
Barium	2,000	2,021	101	80-120	2	20	09/28/07
Beryllium	50.00	56.37	113	80-120	2	20	09/28/07
Cadmium	50.00	54.21	108	80-120	9	20	09/28/07
Chromium	200.0	202.7	101	80-120	2	20	09/28/07
Cobalt	500.0	501.8	100	80-120	3	20	09/28/07
Copper	250.0	240.9	96	80-120	2	20	09/28/07
Lead	100.0	97.94	98	80-120	5	20	09/28/07
Molybdenum	400.0	404.3	101	80-120	4	20	09/28/07
Nickel	500.0	513.7	103	80-120	4	20	09/28/07
Selenium	100.0	103.6	104	80-120	11	20	09/28/07
Silver	50.00	48.06	96	80-120	2	20	09/28/07
Thallium	100.0	106.2	106	80-120	4	20	09/28/07
Vanadium	500.0	501.7	100	80-120	1	20	09/28/07
Zinc	500.0	540.1	108	80-120	8	20	09/28/07

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	B-02-GW-30'	Batch#:	129973
MSS Lab ID:	197909-003	Sampled:	09/25/07
Matrix:	Filtrate	Received:	09/27/07
Units:	ug/L	Prepared:	09/28/07
Diln Fac:	1.000	Analyzed:	09/28/07

Type: MS Lab ID: QC408193

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	4.140	500.0	502.5	100	80-120
Arsenic	<2.042	100.0	113.3	113	80-127
Barium	198.9	2,000	2,103	95	80-120
Beryllium	0.2294	50.00	54.09	108	80-120
Cadmium	<0.1091	50.00	50.17	100	80-120
Chromium	<0.2448	200.0	193.2	97	80-120
Cobalt	<0.3034	500.0	464.0	93	80-120
Copper	2.701	250.0	242.9	96	80-120
Lead	<0.6892	100.0	93.43	93	76-120
Molybdenum	1.197	400.0	392.8	98	80-120
Nickel	1.392	500.0	462.1	92	80-120
Selenium	2.513	100.0	97.80	95	80-128
Silver	<0.7459	50.00	47.92	96	73-122
Thallium	3.418	100.0	101.5	98	78-120
Vanadium	<1.034	500.0	485.6	97	80-120
Zinc	8.891	500.0	495.4	97	80-123

Type: MSD Lab ID: QC408194

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	517.4	103	80-120	3	20
Arsenic	100.0	114.8	115	80-127	1	20
Barium	2,000	2,179	99	80-120	4	20
Beryllium	50.00	55.59	111	80-120	3	20
Cadmium	50.00	51.46	103	80-120	3	20
Chromium	200.0	198.8	99	80-120	3	20
Cobalt	500.0	477.5	95	80-120	3	20
Copper	250.0	250.9	99	80-120	3	20
Lead	100.0	96.31	96	76-120	3	20
Molybdenum	400.0	405.0	101	80-120	3	20
Nickel	500.0	476.6	95	80-120	3	20
Selenium	100.0	102.0	99	80-128	4	20
Silver	50.00	49.19	98	73-122	3	20
Thallium	100.0	106.1	103	78-120	4	20
Vanadium	500.0	498.1	100	80-120	3	20
Zinc	500.0	513.0	101	80-123	3	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	129985
Lab ID:	QC408228	Prepared:	09/28/07
Matrix:	Filtrate	Analyzed:	09/28/07
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	129985
Matrix:	Filtrate	Prepared:	09/28/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC408229	5.000	5.240	105	80-120		
BSD	QC408230	5.000	5.230	105	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	129985
Field ID:	ZZZZZZZZZZ	Sampled:	09/25/07
MSS Lab ID:	197861-002	Received:	09/25/07
Matrix:	Water	Prepared:	09/28/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC408232	0.1290	5.000	5.800	113	79-125		
MSD	QC408233		5.000	5.750	112	79-125	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Field ID:	B-02-GW-30'	Batch#:	129933
Matrix:	Water	Sampled:	09/25/07 11:00
Units:	mg/L	Received:	09/27/07

Type	Lab ID	Result	RL	Analyzed
SAMPLE	197909-003	0.17	0.05	09/27/07 10:38
BLANK	QC408021	ND	0.05	09/27/07 10:20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	B-03-GW-10'	Batch#:	129933
MSS Lab ID:	197910-003	Sampled:	09/25/07 16:30
Matrix:	Water	Received:	09/27/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC408022		1.000	0.9680	97	80-120			1.000	09/27/07 12:27
BSD	QC408023		1.000	0.9534	95	80-120	2	20	1.000	09/27/07 12:45
MS	QC408060	0.8191	2.500	3.186	95	80-120			5.000	09/27/07 13:22
MSD	QC408061		2.500	3.028	88	80-120	5	20	5.000	09/27/07 13:40

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Field ID:	B-02-SS-35'	Batch#:	130091
Matrix:	Soil	Sampled:	09/25/07 10:00
Units:	mg/Kg	Received:	09/27/07
Basis:	as received		

Type	Lab ID	Result	RL	Analyzed
SAMPLE	197909-002	ND	0.5	10/02/07 15:04
BLANK	QC408656	ND	0.5	10/02/07 13:28

ND= Not Detected
RL= Reporting Limit

35.0

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	197909	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Basis:	as received
Matrix:	Soil	Diln Fac:	1.000
Units:	mg/Kg	Batch#:	130091

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
BS	QC408657	10.00	9.704	97	80-120			10/02/07 13:45
BSD	QC408658	10.00	9.781	98	80-120	1	20	10/02/07 14:02

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

197909

Chain of Custody Record

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 9/25/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier: UPS
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☐ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15 - A
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

	Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	Filtered Sample	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
1	B-02-SS-0.0'	9/25/07	8:00	250 ml poly	SO	1		✓	✓	✓	✓		✓		
2	B-02-SS-35'		10:00	250 ml poly	SO	1		✓	✓	✓	✓	✓			
* 3	B-02-GW-30'		11:00	VOA	GW	3		✓							
				VOA		3					✓				
				1L amber		2								hold	Hold
				1L amber		1				✓					
				1L amber		1							hold		Hold
				250 ml poly		1						✓			
				750 ml poly		1	✓		✓						
	Trip Blank			VOA	AQ	1									

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:
one voa broke during shipping
the trip blank also broke during shipping

* Metals container labelled "B-02-GW

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Robert C. [illegible]	Weiss Associates	9/26/07 14:00	Anne Kathain	C&T	9/27/07 10:30 AM
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates 5801 Christie Avenue Emeryville, CA 94608	Project : 379-1827-15-02 Location : Cloverdale Project Level : II

Sample ID	Lab ID
B-03-SS-0.0	197910-001
B-03-SS-25.0	197910-002
B-03-GW-10'	197910-003
B-11-SS-0.0'	197910-004
B-11-SS-35'	197910-005
B-11-GW-24'	197910-006
TRIP BLANK	197910-007
B-12-SS-0.0'	197910-008

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/24/2007
Project Manager

Signature: _____ Date: 10/25/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**197910**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**09/27/07**
Samples Received:	**09/27/07**

This hardcopy data package contains sample and QC results for five soil samples and three water samples, requested for the above referenced project on 09/27/07. The samples were received intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:
High surrogate recoveries were observed for trifluorotoluene (FID) in the LCS/MS/MSD for batch 130030; the corresponding bromofluorobenzene (FID) surrogate recoveries were within limits. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Soil:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Water:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Soil:
High surrogate recoveries were observed for dibromofluoromethane in a number of samples; no target analytes were detected in these samples. No other analytical problems were encountered.

Pesticides (EPA 8081A):
No analytical problems were encountered.

Polychlorinated Biphenyls (PCBs) (EPA 8082):
No analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A) Soil:
Chromium was detected above the RL in the method blank for batch 129961; this analyte was detected in samples at a level at least 10 times that of the blank. No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7470A) Filtrate:
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**197910**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**09/27/07**
Samples Received:	**09/27/07**

Ion Chromatography (EPA 300.0) Water:
No analytical problems were encountered.

Ion Chromatography (EPA 300.0) Soil:
No analytical problems were encountered.

Asbestos PLM (EPA 600/R-93-116):
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130057
Units:	ug/L	Received:	09/27/07
Diln Fac:	1.000		

Field ID:	B-03-GW-10'	Sampled:	09/25/07
Type:	SAMPLE	Analyzed:	10/02/07
Lab ID:	197910-003		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	90	73-134
Bromofluorobenzene (FID)	90	77-140

Field ID:	B-11-GW-24'	Sampled:	09/26/07
Type:	SAMPLE	Analyzed:	10/02/07
Lab ID:	197910-006		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	73-134
Bromofluorobenzene (FID)	100	77-140

Type:	BLANK	Analyzed:	10/01/07
Lab ID:	QC408514		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	95	73-134
Bromofluorobenzene (FID)	87	77-140

ND= Not Detected
RL= Reporting Limit

35.0

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC408516	Batch#:	130057
Matrix:	Water	Analyzed:	10/01/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,895	95	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	102	73-134
Bromofluorobenzene (FID)	98	77-140

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-02-GW-30'	Batch#:	130057
MSS Lab ID:	197909-003	Sampled:	09/25/07
Matrix:	Water	Received:	09/27/07
Units:	ug/L	Analyzed:	10/02/07
Diln Fac:	1.000		

Type: MS Lab ID: QC408517

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	28.91	2,000	1,881	93	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	99	73-134
Bromofluorobenzene (FID)	96	77-140

Type: MSD Lab ID: QC408518

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,866	92	72-120	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	73-134
Bromofluorobenzene (FID)	103	77-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130030
Units:	mg/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	10/02/07
Diln Fac:	1.000		

Field ID: B-03-SS-0.0 Lab ID: 197910-001
Type: SAMPLE Sampled: 09/25/07

Analyte	Result	RL
Gasoline C7-C12	ND	0.97

Surrogate	%REC	Limits
Trifluorotoluene (FID)	99	71-132
Bromofluorobenzene (FID)	92	69-145

Field ID: B-03-SS-25.0 Lab ID: 197910-002
Type: SAMPLE Sampled: 09/25/07

Analyte	Result	RL
Gasoline C7-C12	ND	0.95

Surrogate	%REC	Limits
Trifluorotoluene (FID)	103	71-132
Bromofluorobenzene (FID)	96	69-145

Field ID: B-11-SS-0.0' Lab ID: 197910-004
Type: SAMPLE Sampled: 09/26/07

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	71-132
Bromofluorobenzene (FID)	92	69-145

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130030
Units:	mg/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	10/02/07
Diln Fac:	1.000		

Field ID: B-11-SS-35' Lab ID: 197910-005
Type: SAMPLE Sampled: 09/26/07

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	71-132
Bromofluorobenzene (FID)	94	69-145

Field ID: B-12-SS-0.0' Lab ID: 197910-008
Type: SAMPLE Sampled: 09/26/07

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	71-132
Bromofluorobenzene (FID)	93	69-145

Type: BLANK Lab ID: QC408401

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	107	71-132
Bromofluorobenzene (FID)	105	69-145

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC408402	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130030
Units:	mg/Kg	Analyzed:	10/02/07

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2.000	2.154	108	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	160 *	71-132
Bromofluorobenzene (FID)	110	69-145

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	197981-001	Batch#:	130030
Matrix:	Soil	Sampled:	09/28/07
Units:	mg/Kg	Received:	10/01/07
Basis:	as received	Analyzed:	10/02/07

Type: MS Lab ID: QC408505

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.1129	10.42	7.242	68	43-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	135 *	71-132
Bromofluorobenzene (FID)	105	69-145

Type: MSD Lab ID: QC408506

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.20	7.759	75	43-120	9	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	134 *	71-132
Bromofluorobenzene (FID)	100	69-145

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130023
Units:	ug/L	Received:	09/27/07
Diln Fac:	1.000	Prepared:	09/29/07

Field ID:	B-03-GW-10'	Sampled:	09/25/07
Type:	SAMPLE	Cleanup Method:	EPA 3630C
Lab ID:	197910-003		

Analyte	Result	RL	MDL	Analyzed
Diesel C10-C24	120 H Y	50		10/01/07
Diesel C10-C24 (SGCU)	91 Y	50		11/01/07
Motor Oil C24-C36	180 J	300	85	10/01/07
Motor Oil C24-C36 (SGCU)	140 J	300	130	11/01/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	95	61-133	10/01/07
Hexacosane (SGCU)	105	61-133	11/01/07

Field ID:	B-11-GW-24'	Sampled:	09/26/07
Type:	SAMPLE	Analyzed:	10/01/07
Lab ID:	197910-006		

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	ND	300	85

Surrogate	%REC	Limits
Hexacosane	110	61-133

Type:	BLANK	Analyzed:	10/01/07
Lab ID:	QC408376	Cleanup Method:	EPA 3630C

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Diesel C10-C24 (SGCU)	ND	50	
Motor Oil C24-C36	ND	300	56
Motor Oil C24-C36 (SGCU)	ND	300	56

Surrogate	%REC	Limits
Hexacosane	101	61-133
Hexacosane (SGCU)	93	61-133

H= Heavier hydrocarbons contributed to the quantitation
J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

38.3

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130023
Units:	ug/L	Prepared:	09/29/07
Diln Fac:	1.000	Analyzed:	10/01/07

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC408377

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	2,500	2,170	87	58-128

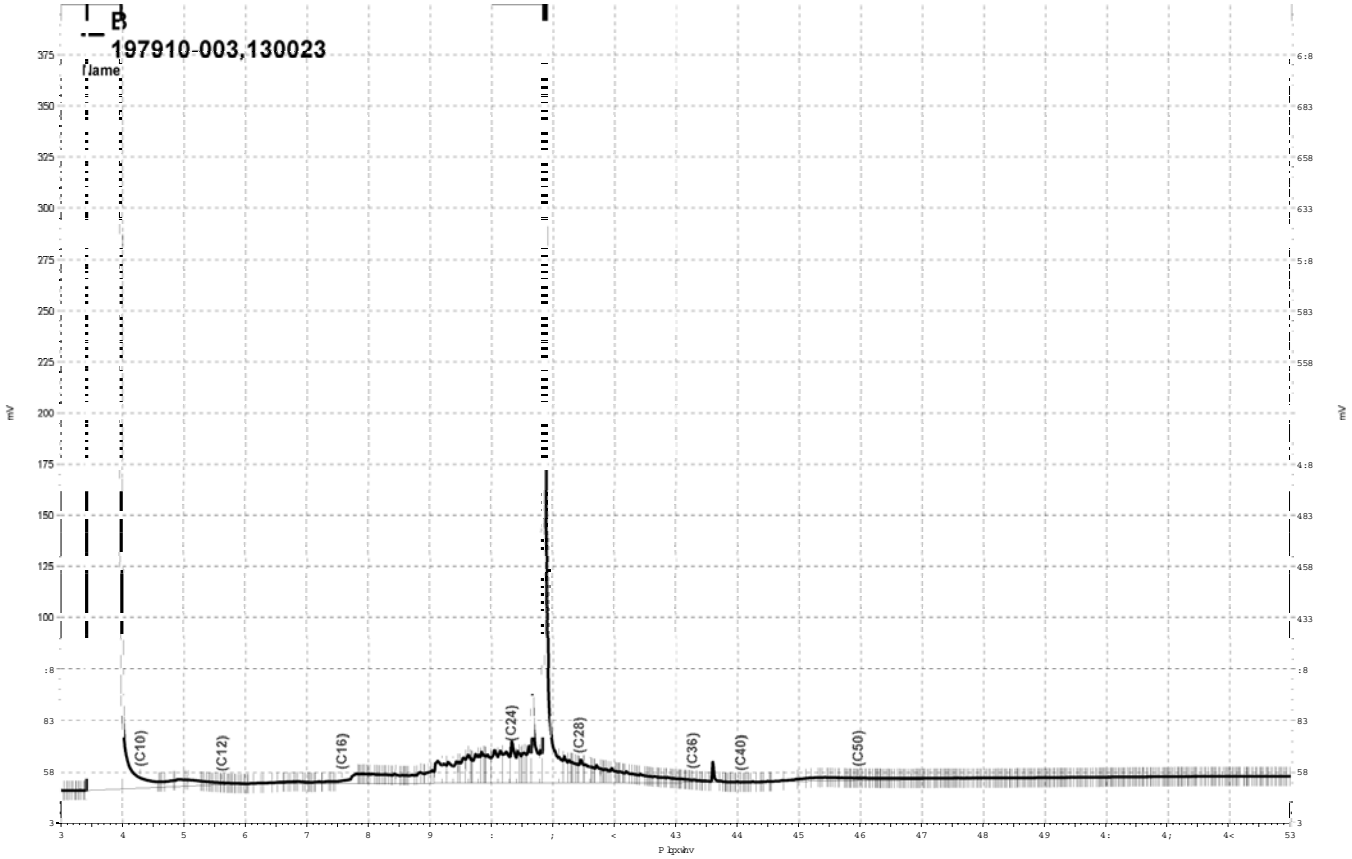
Surrogate	%REC	Limits
Hexacosane (SGCU)	92	61-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC408378

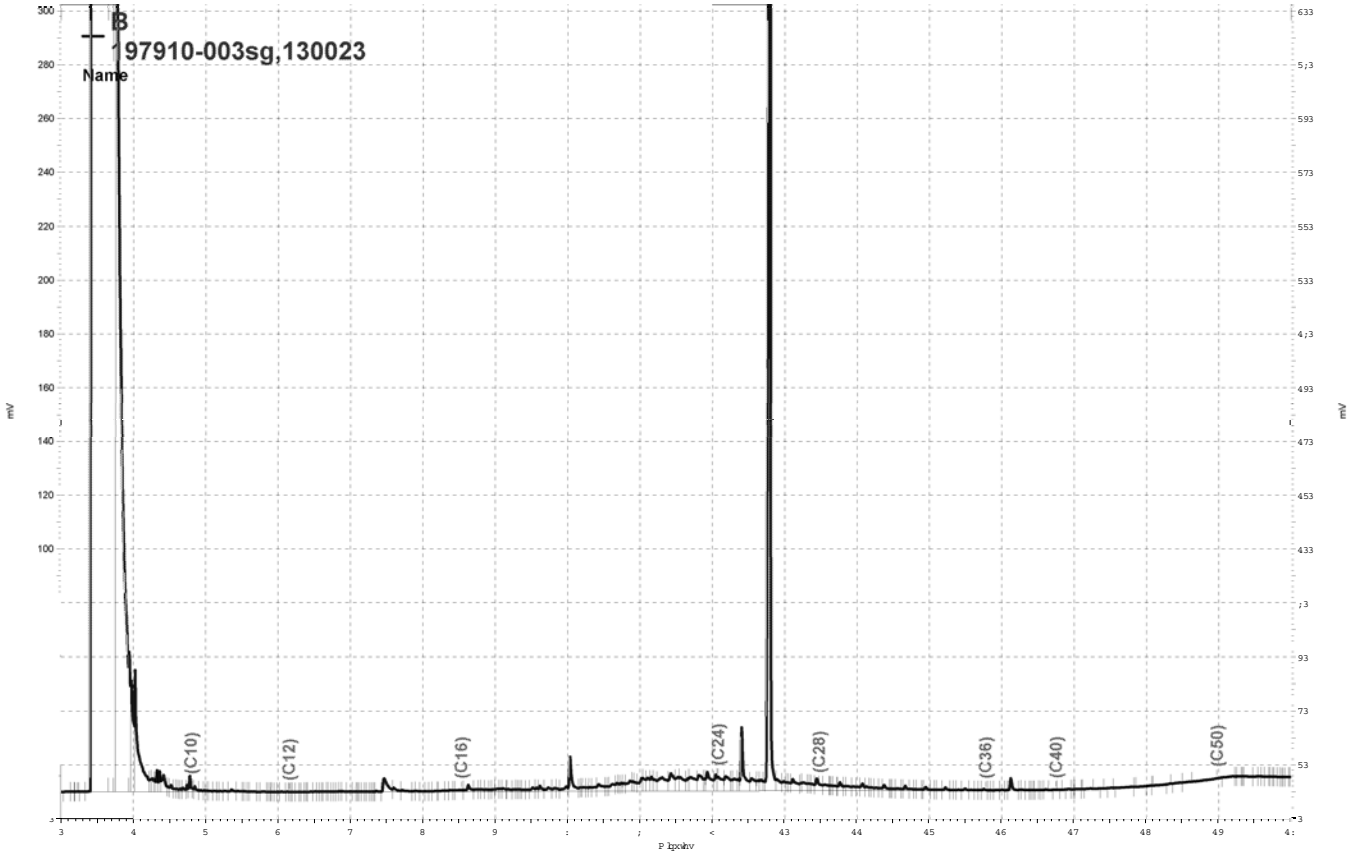
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	2,500	2,195	88	58-128	1	29

Surrogate	%REC	Limits
Hexacosane (SGCU)	94	61-133

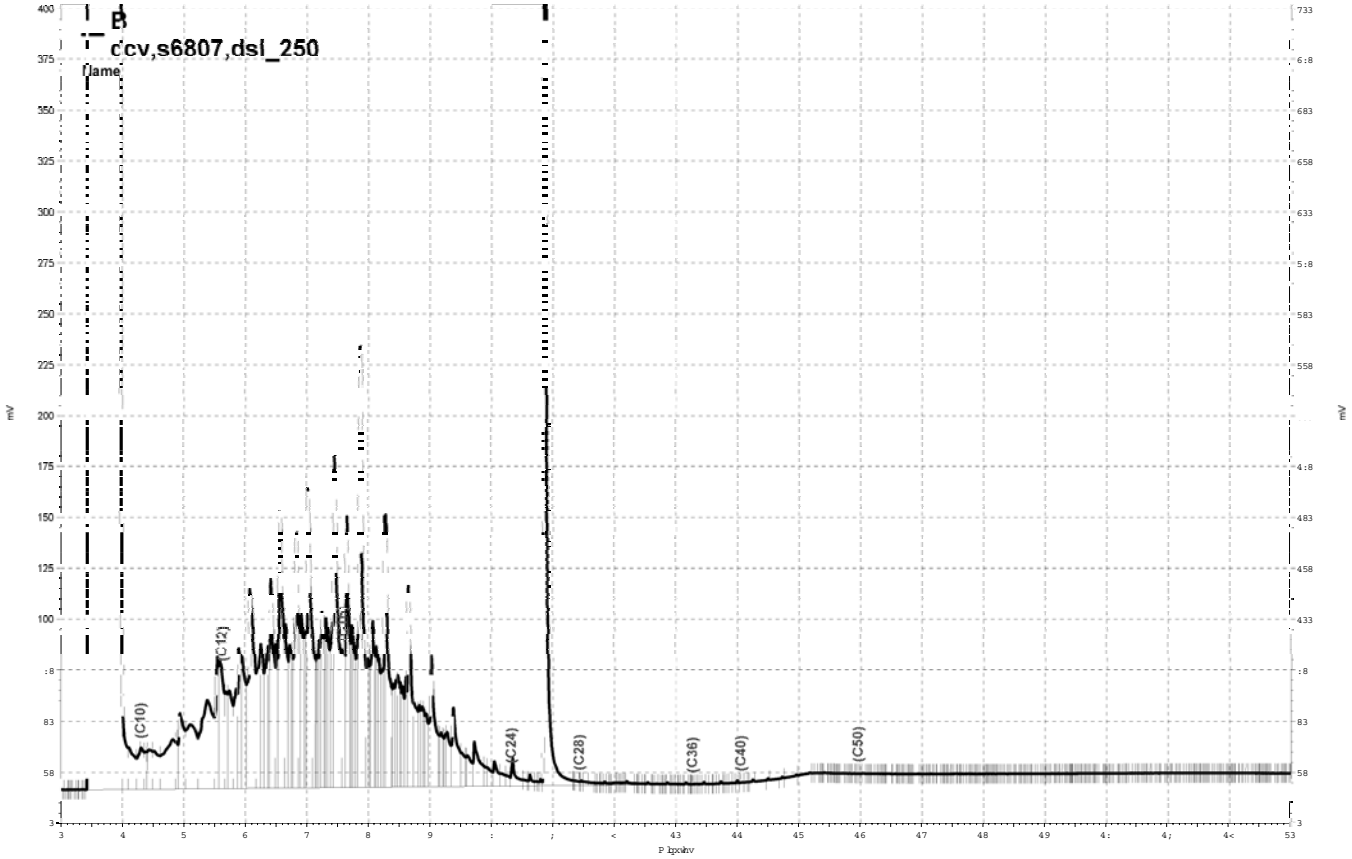
RPD= Relative Percent Difference
SGCU= Silica gel cleanup



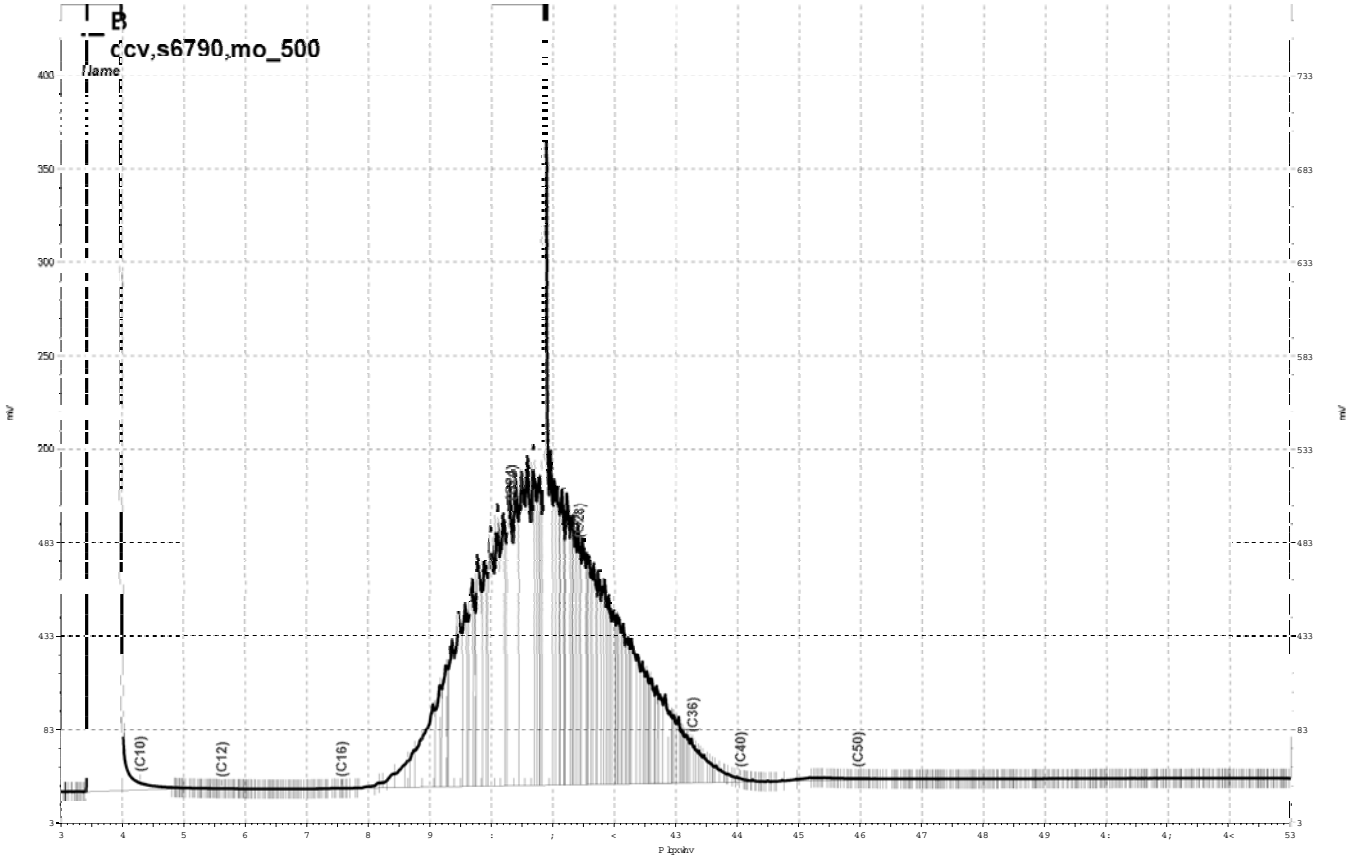
_Olp vjgulyh h}fkurp _Surmfw_J F48E_Gdwd_5:6e358/E



_Olp v jgulyh h}fkurp _Surmfw J F59 Gdwd 638e349/E



_Olp v jgulyh h}fkurp _Surmfw J F48E_Gdwd_5:6e353/E



_Olp vjgulyh h}fkurp _Surmfw JF48E_Gdwd_5:6e354/E

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130026
Units:	mg/Kg	Received:	09/27/07
Basis:	as received	Prepared:	09/30/07
Diln Fac:	1.000		

Field ID: B-03-SS-0.0 Sampled: 09/25/07
Type: SAMPLE Cleanup Method: EPA 3630C
Lab ID: 197910-001

Analyte	Result	RL	Analyzed
Diesel C10-C24	26 H Y	1.0	10/01/07
Diesel C10-C24 (SGCU)	8.3 Y	1.0	11/01/07
Motor Oil C24-C36	150 H L	5.0	10/01/07
Motor Oil C24-C36 (SGCU)	94	5.0	11/01/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	101	46-128	10/01/07
Hexacosane (SGCU)	95	46-128	11/01/07

Field ID: B-03-SS-25.0 Sampled: 09/25/07
Type: SAMPLE Cleanup Method: EPA 3630C
Lab ID: 197910-002

Analyte	Result	RL	Analyzed
Diesel C10-C24	26 H Y	1.0	10/01/07
Diesel C10-C24 (SGCU)	18 Y	1.0	11/01/07
Motor Oil C24-C36	110 H L	5.0	10/01/07
Motor Oil C24-C36 (SGCU)	100	5.0	11/01/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	75	46-128	10/01/07
Hexacosane (SGCU)	76	46-128	11/01/07

Field ID: B-11-SS-0.0' Sampled: 09/26/07
Type: SAMPLE Cleanup Method: EPA 3630C
Lab ID: 197910-004

Analyte	Result	RL	Analyzed
Diesel C10-C24	21 H Y	1.0	10/01/07
Diesel C10-C24 (SGCU)	7.4 Y	1.0	11/02/07
Motor Oil C24-C36	100 H L	5.0	10/01/07
Motor Oil C24-C36 (SGCU)	57	5.0	11/02/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	95	46-128	10/01/07
Hexacosane (SGCU)	86	46-128	11/02/07

H= Heavier hydrocarbons contributed to the quantitation
L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130026
Units:	mg/Kg	Received:	09/27/07
Basis:	as received	Prepared:	09/30/07
Diln Fac:	1.000		

Field ID:	B-11-SS-35'	Sampled:	09/26/07
Type:	SAMPLE	Analyzed:	10/01/07
Lab ID:	197910-005		

Analyte	Result	RL
Diesel C10-C24	15 H Y	1.0
Motor Oil C24-C36	24 H L	5.0

Surrogate	%REC	Limits
Hexacosane	92	46-128

Field ID:	B-12-SS-0.0'	Sampled:	09/26/07
Type:	SAMPLE	Analyzed:	10/01/07
Lab ID:	197910-008		

Analyte	Result	RL
Diesel C10-C24	11 H Y	0.99
Motor Oil C24-C36	66 H L	5.0

Surrogate	%REC	Limits
Hexacosane	96	46-128

Type:	BLANK	Analyzed:	10/01/07
Lab ID:	QC408383	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Diesel C10-C24 (SGCU)	ND	1.0
Motor Oil C24-C36	ND	5.0
Motor Oil C24-C36 (SGCU)	ND	5.0

Surrogate	%REC	Limits
Hexacosane	110	46-128
Hexacosane (SGCU)	99	46-128

H= Heavier hydrocarbons contributed to the quantitation
L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC408384	Batch#:	130026
Matrix:	Soil	Prepared:	09/30/07
Units:	mg/Kg	Analyzed:	10/01/07
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	50.14	44.01	88	55-131

Surrogate	%REC	Limits
Hexacosane (SGCU)	88	46-128

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130026
MSS Lab ID:	197966-001	Sampled:	09/27/07
Matrix:	Soil	Received:	09/28/07
Units:	mg/Kg	Prepared:	09/30/07
Basis:	as received	Analyzed:	10/01/07
Diln Fac:	1.000		

Type: MS Lab ID: QC408385

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	28.12	50.13	84.32	112	31-150

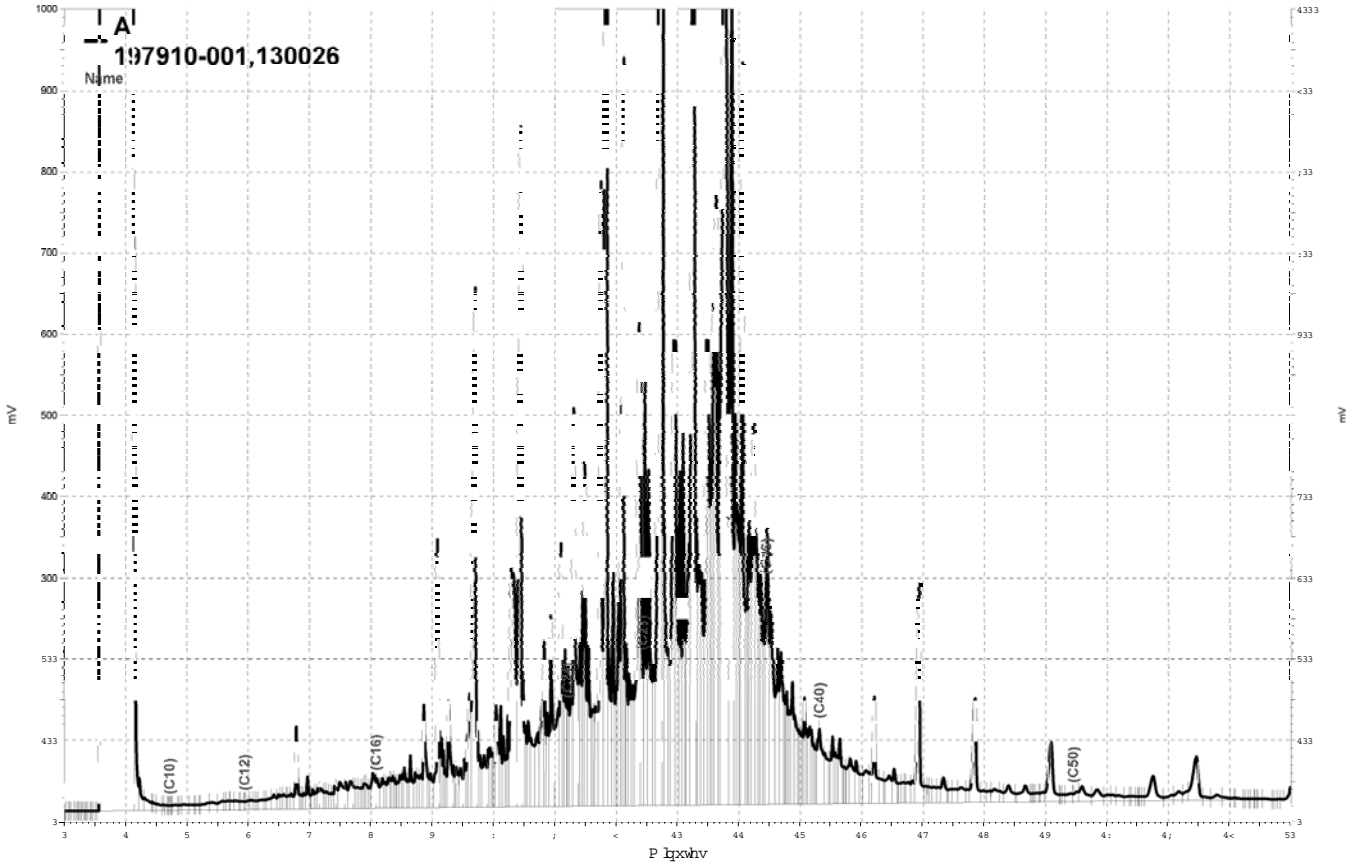
Surrogate	%REC	Limits
Hexacosane	91	46-128

Type: MSD Lab ID: QC408386

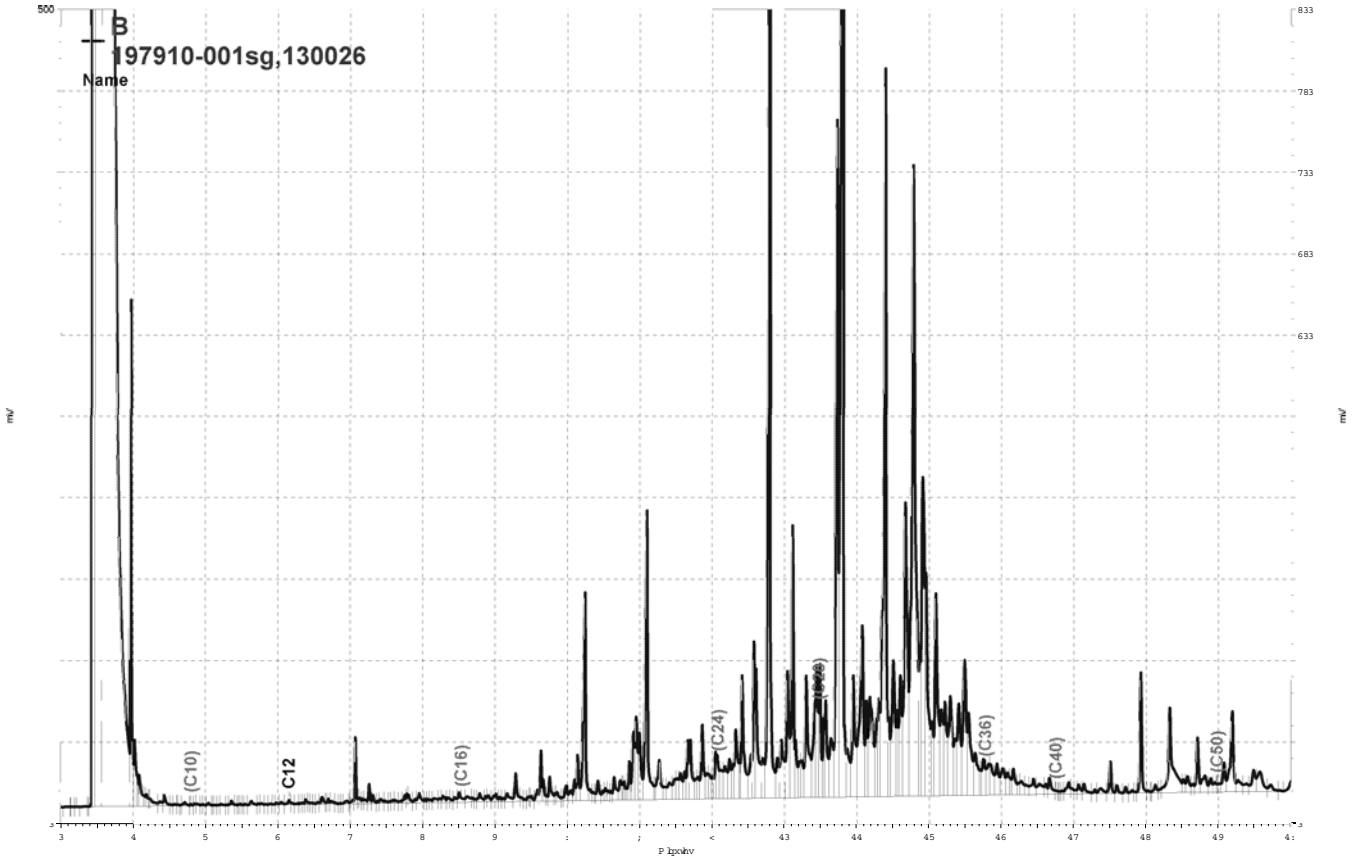
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	49.73	79.94	104	31-150	5	42

Surrogate	%REC	Limits
Hexacosane	99	46-128

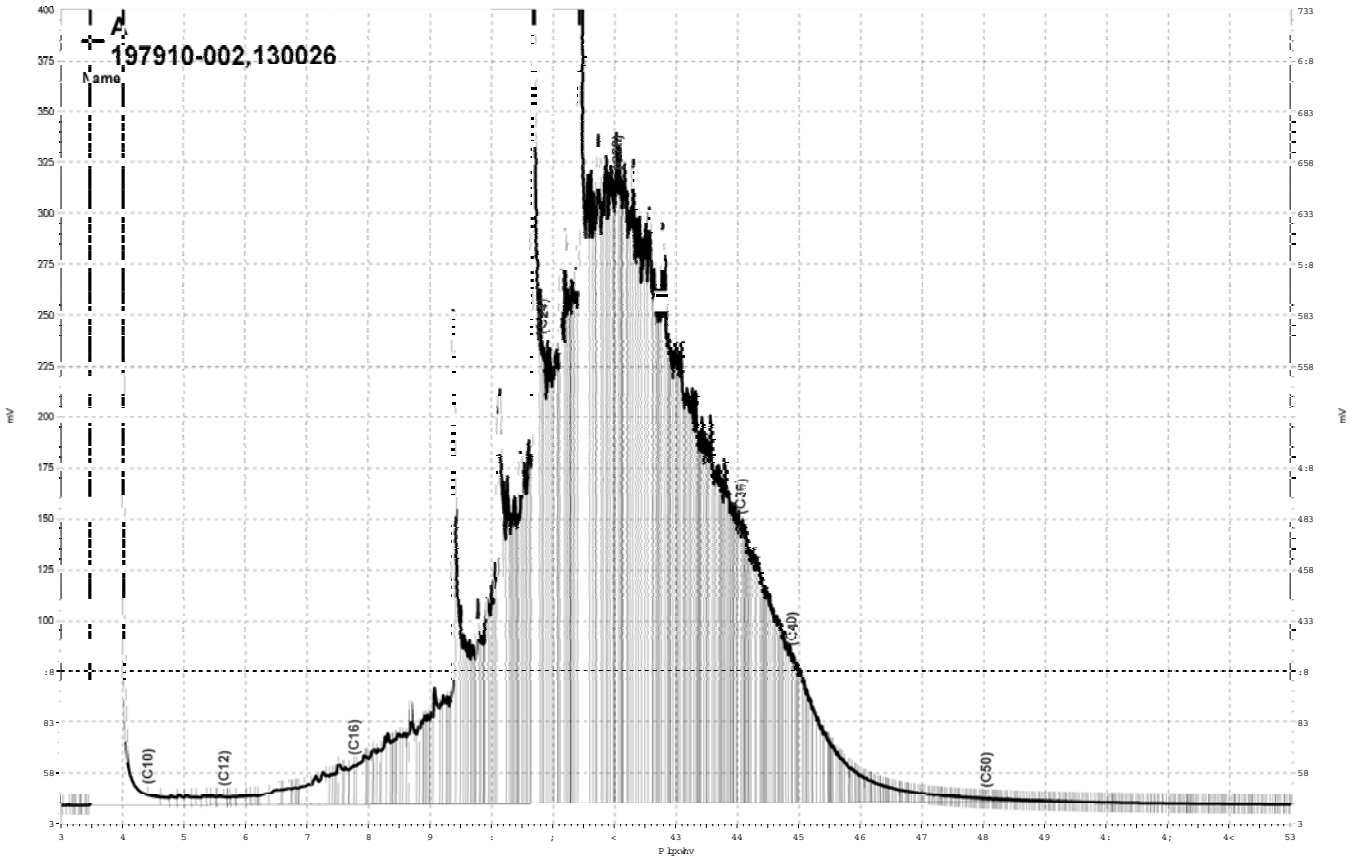
RPD= Relative Percent Difference



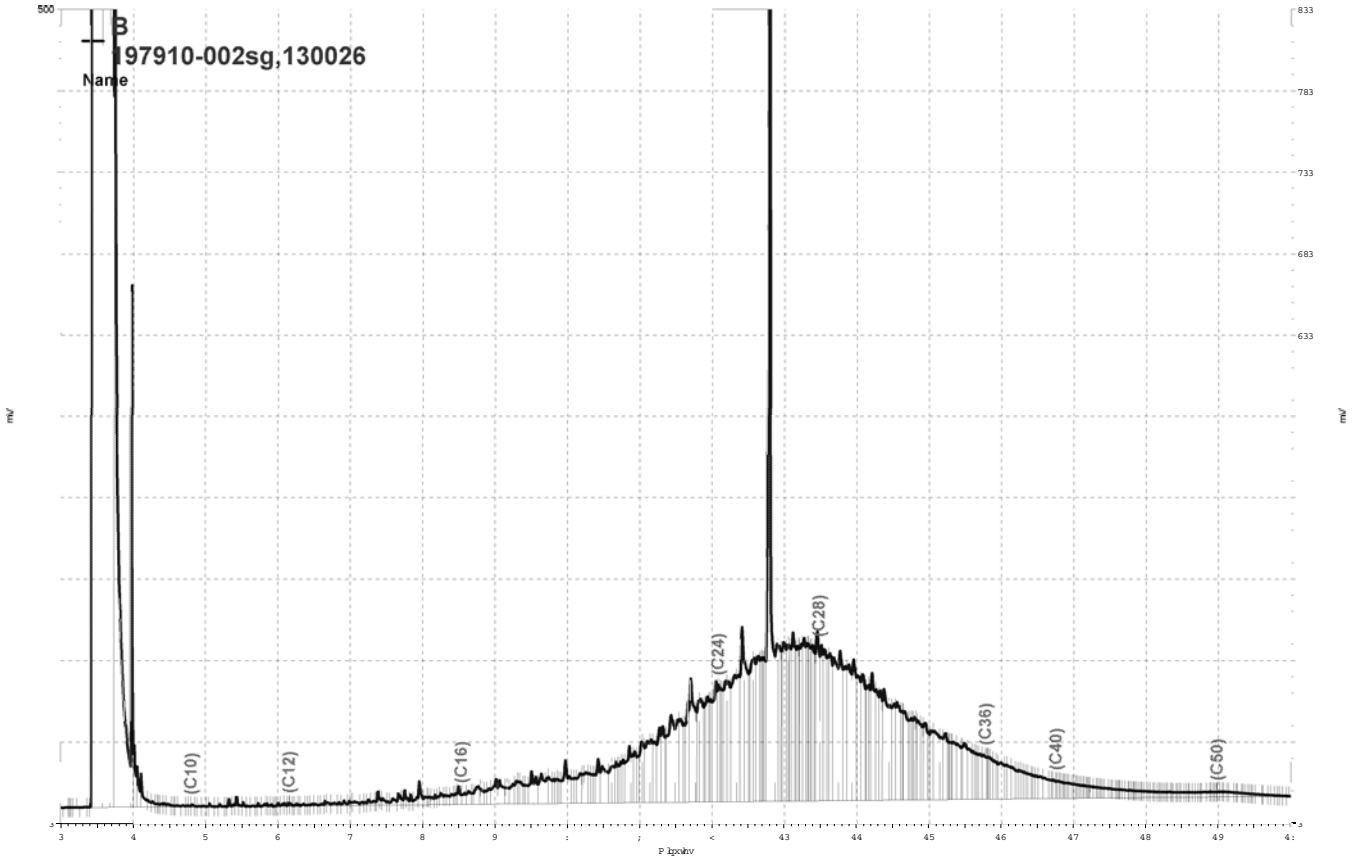
_Olpvjgulyh_h}fkurp_Surmfwr_JF4:D_Gdwd_5:6d345/D



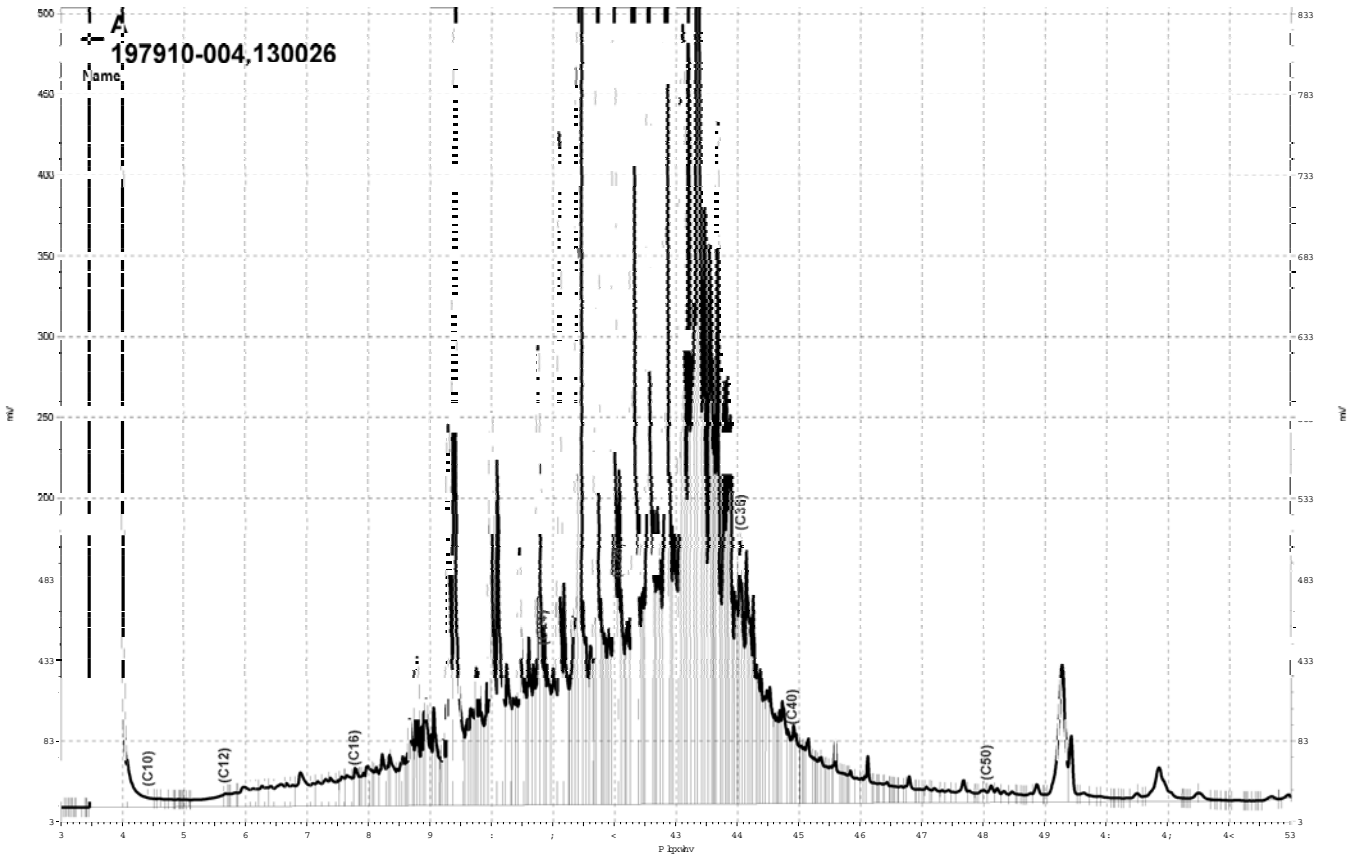
_Olp v jgulyh h}fkurp _Surmfw J F59 Gdwd 638e346/E



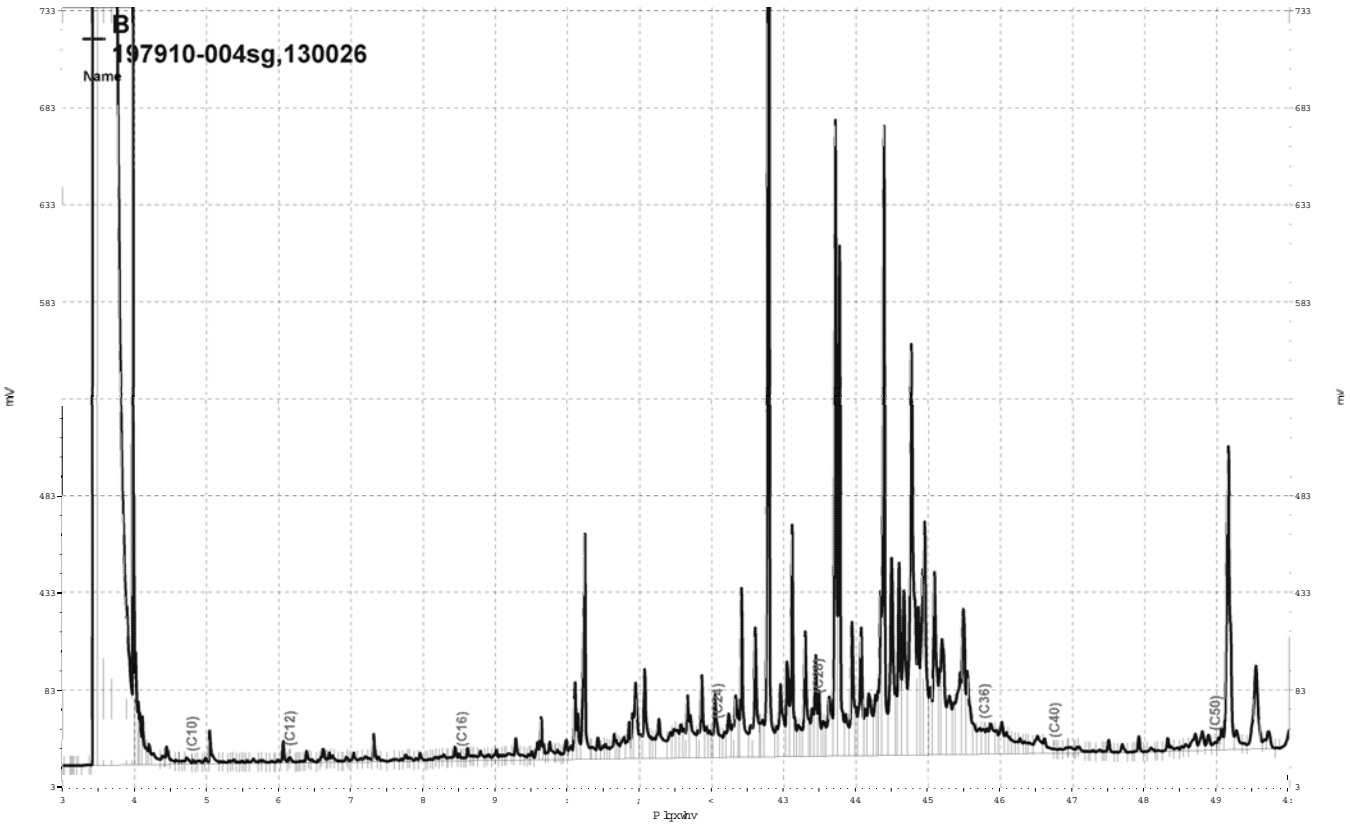
_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5:6d355/D



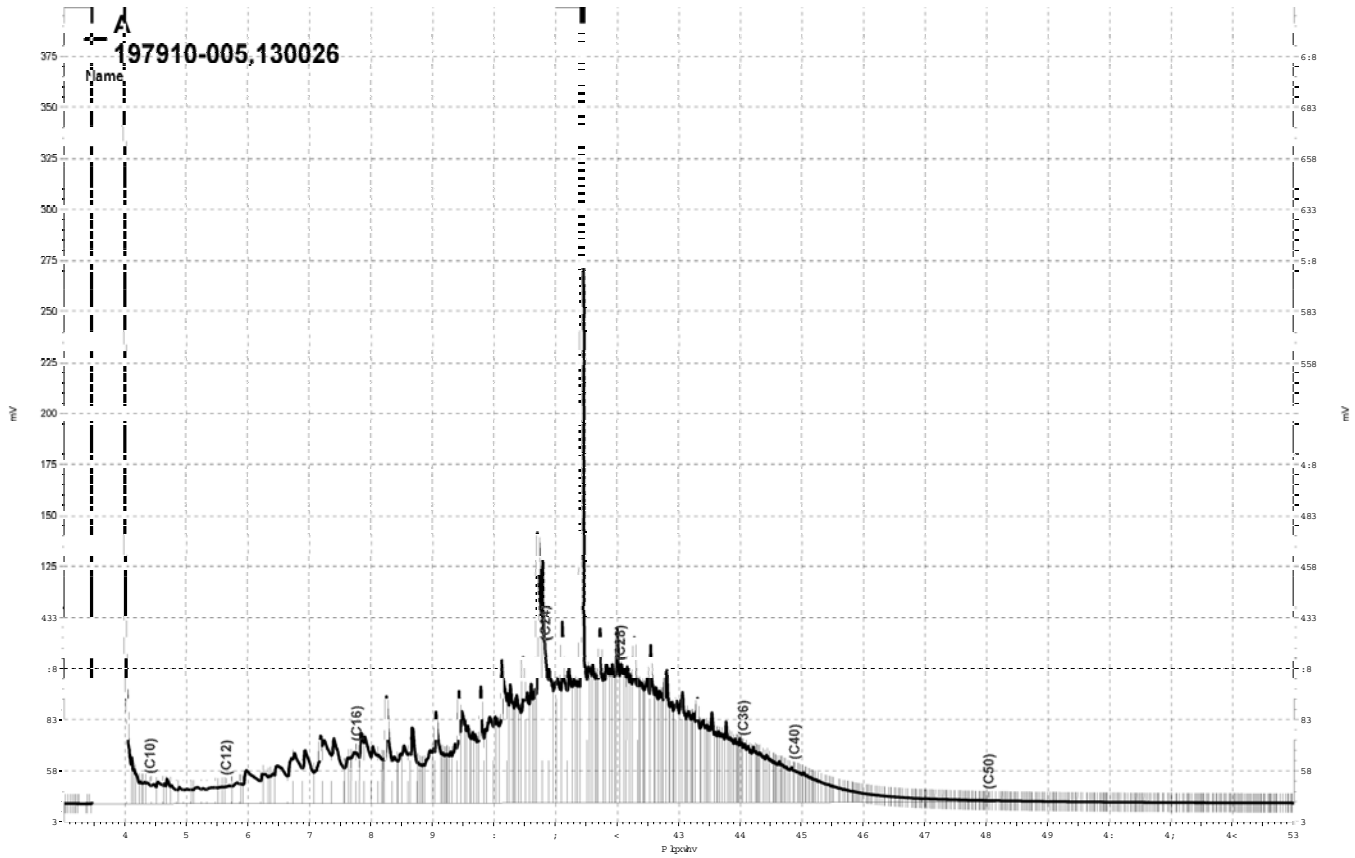
_Olp v jgulyh h}fkurp _Surmfw J F59 Gdwd 638e34</E



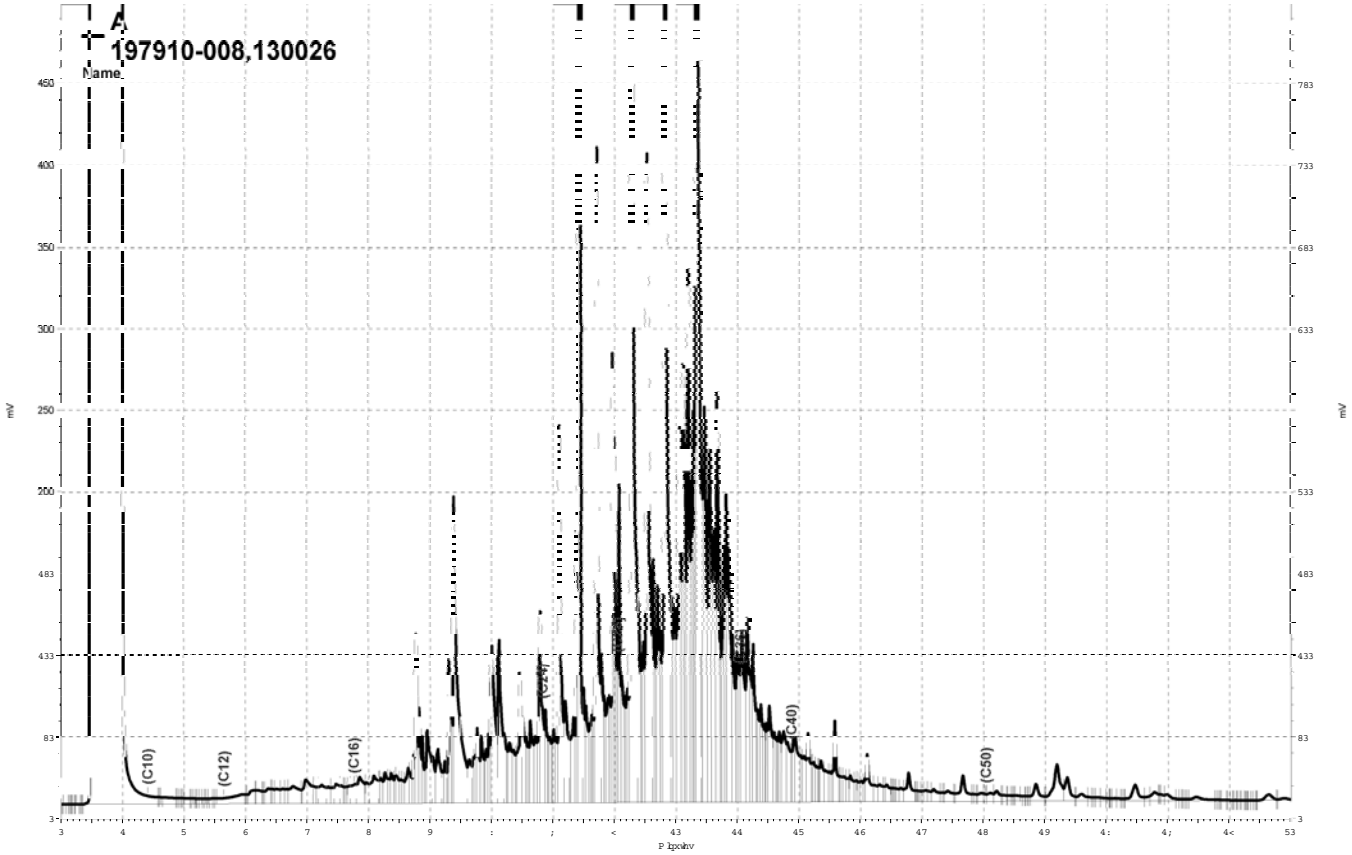
_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5:6d366/D



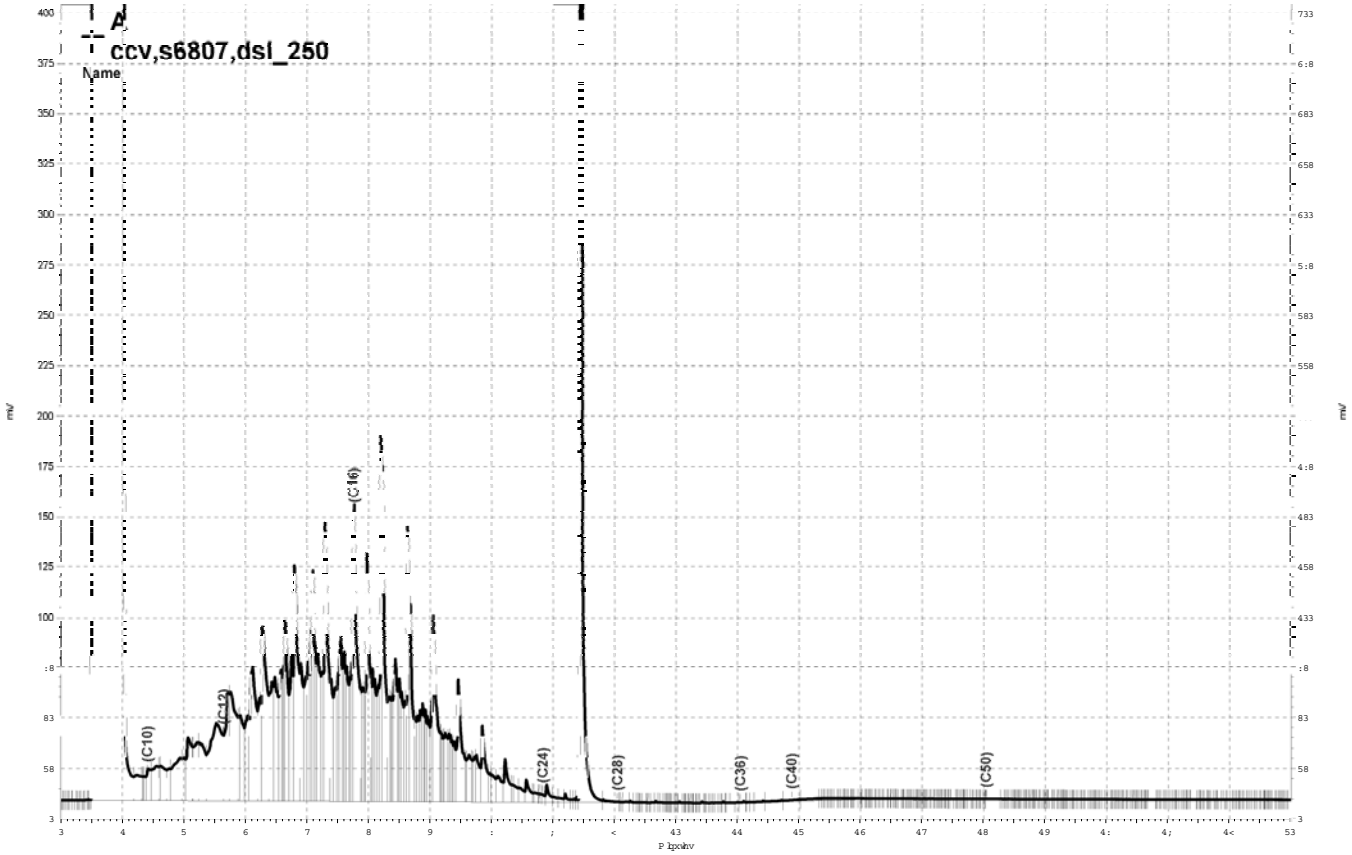
_Olp v jgulyh h}fkurp _Surmfw J F59_Gdwd_639e347/E



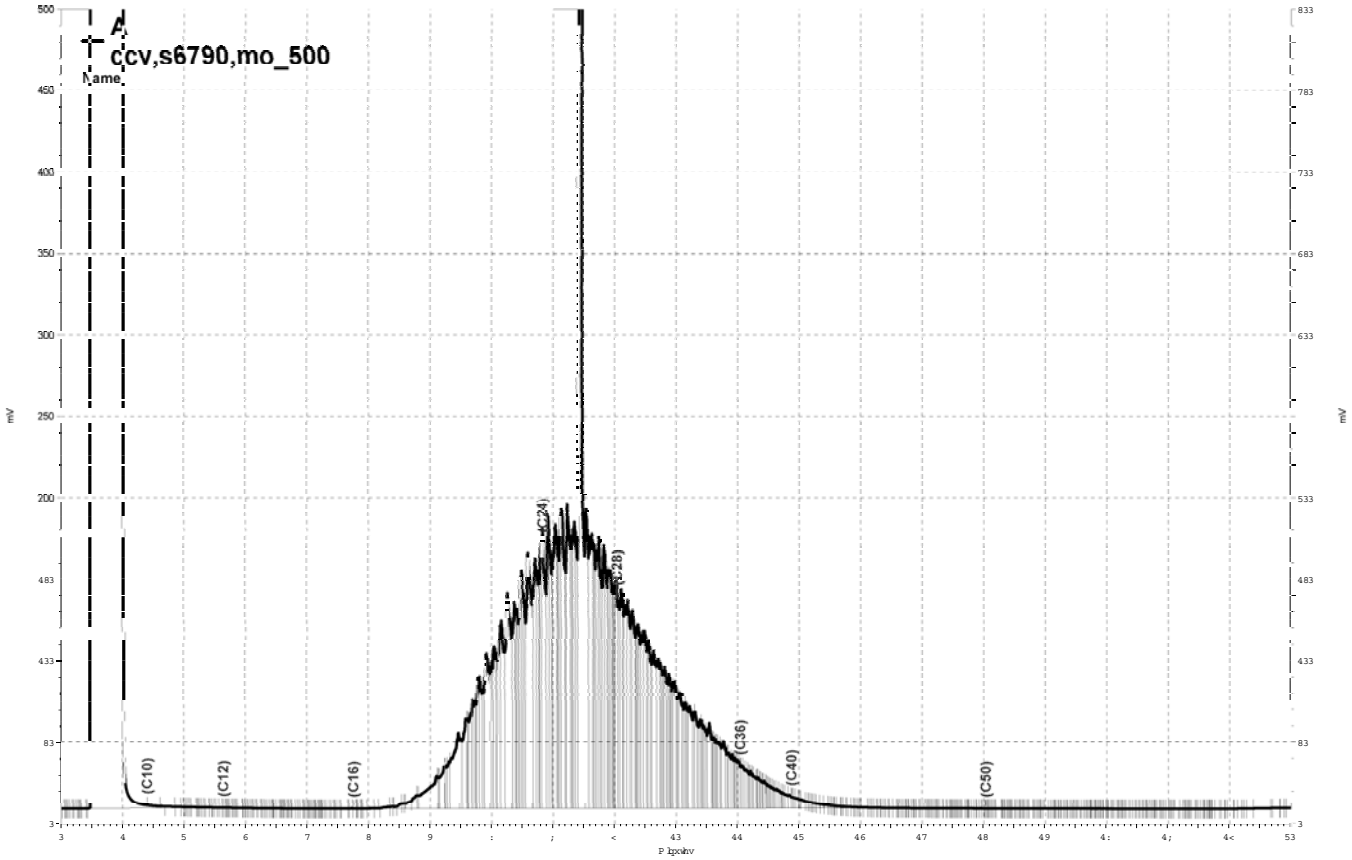
_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5:6d35;/D



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5:6d35</D



_Olp v jgulyh h}fkurp _Surmnfw J F44D_Gdwd_5:6d34</D



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5:6d353/D

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-03-GW-10'	Batch#:	129968
Lab ID:	197910-003	Sampled:	09/25/07
Matrix:	Water	Received:	09/27/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-03-GW-10'	Batch#:	129968
Lab ID:	197910-003	Sampled:	09/25/07
Matrix:	Water	Received:	09/27/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	123	74-137
Toluene-d8	98	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-11-GW-24'	Batch#:	129968
Lab ID:	197910-006	Sampled:	09/26/07
Matrix:	Water	Received:	09/27/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-11-GW-24'	Batch#:	129968
Lab ID:	197910-006	Sampled:	09/26/07
Matrix:	Water	Received:	09/27/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	124	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
RL= Reporting Limit

31.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	129968
Lab ID:	197910-007	Sampled:	09/26/07
Matrix:	Water	Received:	09/27/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	129968
Lab ID:	197910-007	Sampled:	09/26/07
Matrix:	Water	Received:	09/27/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	112	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	101	80-120

ND= Not Detected
RL= Reporting Limit

32.0

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408165	Batch#:	129968
Matrix:	Water	Analyzed:	09/28/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408165	Batch#:	129968
Matrix:	Water	Analyzed:	09/28/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	116	74-137
Toluene-d8	98	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	129968
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Type: BS Lab ID: QC408166

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	27.49	110	80-133
Benzene	25.00	26.11	104	80-120
Trichloroethene	25.00	29.22	117	80-120
Toluene	25.00	26.98	108	80-122
Chlorobenzene	25.00	25.13	101	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	136	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	107	80-120

Type: BSD Lab ID: QC408167

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	25.94	104	80-133	6	20
Benzene	25.00	24.43	98	80-120	7	20
Trichloroethene	25.00	27.41	110	80-120	6	20
Toluene	25.00	25.35	101	80-122	6	20
Chlorobenzene	25.00	24.17	97	80-120	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	132	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	106	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-03-SS-0.0	Diln Fac:	1.000
Lab ID:	197910-001	Batch#:	129930
Matrix:	Soil	Sampled:	09/25/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/27/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-03-SS-0.0	Diln Fac:	1.000
Lab ID:	197910-001	Batch#:	129930
Matrix:	Soil	Sampled:	09/25/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/27/07

Analyte	Result	RL
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	126 *	80-124
1,2-Dichloroethane-d4	113	79-136
Toluene-d8	100	80-120
Bromofluorobenzene	99	80-122

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

20.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-03-SS-25.0	Diln Fac:	0.9804
Lab ID:	197910-002	Batch#:	129930
Matrix:	Soil	Sampled:	09/25/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/27/07

Analyte	Result	RL
Freon 12	ND	9.8
Chloromethane	ND	9.8
Vinyl Chloride	ND	9.8
Bromomethane	ND	9.8
Chloroethane	ND	9.8
Trichlorofluoromethane	ND	4.9
Acetone	ND	25
Freon 113	ND	4.9
1,1-Dichloroethene	ND	4.9
Methylene Chloride	ND	20
Carbon Disulfide	ND	4.9
MTBE	ND	4.9
trans-1,2-Dichloroethene	ND	4.9
Vinyl Acetate	ND	49
1,1-Dichloroethane	ND	4.9
2-Butanone	ND	9.8
cis-1,2-Dichloroethene	ND	4.9
2,2-Dichloropropane	ND	4.9
Chloroform	ND	4.9
Bromochloromethane	ND	4.9
1,1,1-Trichloroethane	ND	4.9
1,1-Dichloropropene	ND	4.9
Carbon Tetrachloride	ND	4.9
1,2-Dichloroethane	ND	4.9
Benzene	ND	4.9
Trichloroethene	ND	4.9
1,2-Dichloropropane	ND	4.9
Bromodichloromethane	ND	4.9
Dibromomethane	ND	4.9
4-Methyl-2-Pentanone	ND	9.8
cis-1,3-Dichloropropene	ND	4.9
Toluene	ND	4.9
trans-1,3-Dichloropropene	ND	4.9
1,1,2-Trichloroethane	ND	4.9
2-Hexanone	ND	9.8
1,3-Dichloropropane	ND	4.9
Tetrachloroethene	ND	4.9
Dibromochloromethane	ND	4.9
1,2-Dibromoethane	ND	4.9
Chlorobenzene	ND	4.9
1,1,1,2-Tetrachloroethane	ND	4.9
Ethylbenzene	ND	4.9
m,p-Xylenes	ND	4.9
o-Xylene	ND	4.9
Styrene	ND	4.9
Bromoform	ND	4.9
Isopropylbenzene	ND	4.9
1,1,2,2-Tetrachloroethane	ND	4.9
1,2,3-Trichloropropane	ND	4.9
Propylbenzene	ND	4.9
Bromobenzene	ND	4.9
1,3,5-Trimethylbenzene	ND	4.9
2-Chlorotoluene	ND	4.9

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-03-SS-25.0	Diln Fac:	0.9804
Lab ID:	197910-002	Batch#:	129930
Matrix:	Soil	Sampled:	09/25/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/27/07

Analyte	Result	RL
4-Chlorotoluene	ND	4.9
tert-Butylbenzene	ND	4.9
1,2,4-Trimethylbenzene	ND	4.9
sec-Butylbenzene	ND	4.9
para-Isopropyl Toluene	ND	4.9
1,3-Dichlorobenzene	ND	4.9
1,4-Dichlorobenzene	ND	4.9
n-Butylbenzene	ND	4.9
1,2-Dichlorobenzene	ND	4.9
1,2-Dibromo-3-Chloropropane	ND	4.9
1,2,4-Trichlorobenzene	ND	4.9
Hexachlorobutadiene	ND	4.9
Naphthalene	ND	4.9
1,2,3-Trichlorobenzene	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	127 *	80-124
1,2-Dichloroethane-d4	111	79-136
Toluene-d8	101	80-120
Bromofluorobenzene	97	80-122

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

21.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-11-SS-0.0'	Diln Fac:	0.9804
Lab ID:	197910-004	Batch#:	129930
Matrix:	Soil	Sampled:	09/26/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/27/07

Analyte	Result	RL
Freon 12	ND	9.8
Chloromethane	ND	9.8
Vinyl Chloride	ND	9.8
Bromomethane	ND	9.8
Chloroethane	ND	9.8
Trichlorofluoromethane	ND	4.9
Acetone	ND	25
Freon 113	ND	4.9
1,1-Dichloroethene	ND	4.9
Methylene Chloride	ND	20
Carbon Disulfide	ND	4.9
MTBE	ND	4.9
trans-1,2-Dichloroethene	ND	4.9
Vinyl Acetate	ND	49
1,1-Dichloroethane	ND	4.9
2-Butanone	ND	9.8
cis-1,2-Dichloroethene	ND	4.9
2,2-Dichloropropane	ND	4.9
Chloroform	ND	4.9
Bromochloromethane	ND	4.9
1,1,1-Trichloroethane	ND	4.9
1,1-Dichloropropene	ND	4.9
Carbon Tetrachloride	ND	4.9
1,2-Dichloroethane	ND	4.9
Benzene	ND	4.9
Trichloroethene	ND	4.9
1,2-Dichloropropane	ND	4.9
Bromodichloromethane	ND	4.9
Dibromomethane	ND	4.9
4-Methyl-2-Pentanone	ND	9.8
cis-1,3-Dichloropropene	ND	4.9
Toluene	ND	4.9
trans-1,3-Dichloropropene	ND	4.9
1,1,2-Trichloroethane	ND	4.9
2-Hexanone	ND	9.8
1,3-Dichloropropane	ND	4.9
Tetrachloroethene	ND	4.9
Dibromochloromethane	ND	4.9
1,2-Dibromoethane	ND	4.9
Chlorobenzene	ND	4.9
1,1,1,2-Tetrachloroethane	ND	4.9
Ethylbenzene	ND	4.9
m,p-Xylenes	ND	4.9
o-Xylene	ND	4.9
Styrene	ND	4.9
Bromoform	ND	4.9
Isopropylbenzene	ND	4.9
1,1,2,2-Tetrachloroethane	ND	4.9
1,2,3-Trichloropropane	ND	4.9
Propylbenzene	ND	4.9
Bromobenzene	ND	4.9
1,3,5-Trimethylbenzene	ND	4.9
2-Chlorotoluene	ND	4.9

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-11-SS-0.0'	Diln Fac:	0.9804
Lab ID:	197910-004	Batch#:	129930
Matrix:	Soil	Sampled:	09/26/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/27/07

Analyte	Result	RL
4-Chlorotoluene	ND	4.9
tert-Butylbenzene	ND	4.9
1,2,4-Trimethylbenzene	ND	4.9
sec-Butylbenzene	ND	4.9
para-Isopropyl Toluene	ND	4.9
1,3-Dichlorobenzene	ND	4.9
1,4-Dichlorobenzene	ND	4.9
n-Butylbenzene	ND	4.9
1,2-Dichlorobenzene	ND	4.9
1,2-Dibromo-3-Chloropropane	ND	4.9
1,2,4-Trichlorobenzene	ND	4.9
Hexachlorobutadiene	ND	4.9
Naphthalene	ND	4.9
1,2,3-Trichlorobenzene	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	131 *	80-124
1,2-Dichloroethane-d4	119	79-136
Toluene-d8	101	80-120
Bromofluorobenzene	99	80-122

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

22.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-11-SS-35'	Diln Fac:	0.9615
Lab ID:	197910-005	Batch#:	129984
Matrix:	Soil	Sampled:	09/26/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/28/07

Analyte	Result	RL
Freon 12	ND	9.6
Chloromethane	ND	9.6
Vinyl Chloride	ND	9.6
Bromomethane	ND	9.6
Chloroethane	ND	9.6
Trichlorofluoromethane	ND	4.8
Acetone	ND	24
Freon 113	ND	4.8
1,1-Dichloroethene	ND	4.8
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.8
MTBE	ND	4.8
trans-1,2-Dichloroethene	ND	4.8
Vinyl Acetate	ND	48
1,1-Dichloroethane	ND	4.8
2-Butanone	ND	9.6
cis-1,2-Dichloroethene	ND	4.8
2,2-Dichloropropane	ND	4.8
Chloroform	ND	4.8
Bromochloromethane	ND	4.8
1,1,1-Trichloroethane	ND	4.8
1,1-Dichloropropene	ND	4.8
Carbon Tetrachloride	ND	4.8
1,2-Dichloroethane	ND	4.8
Benzene	ND	4.8
Trichloroethene	ND	4.8
1,2-Dichloropropane	ND	4.8
Bromodichloromethane	ND	4.8
Dibromomethane	ND	4.8
4-Methyl-2-Pentanone	ND	9.6
cis-1,3-Dichloropropene	ND	4.8
Toluene	ND	4.8
trans-1,3-Dichloropropene	ND	4.8
1,1,2-Trichloroethane	ND	4.8
2-Hexanone	ND	9.6
1,3-Dichloropropane	ND	4.8
Tetrachloroethene	ND	4.8
Dibromochloromethane	ND	4.8
1,2-Dibromoethane	ND	4.8
Chlorobenzene	ND	4.8
1,1,1,2-Tetrachloroethane	ND	4.8
Ethylbenzene	ND	4.8
m,p-Xylenes	ND	4.8
o-Xylene	ND	4.8
Styrene	ND	4.8
Bromoform	ND	4.8
Isopropylbenzene	ND	4.8
1,1,2,2-Tetrachloroethane	ND	4.8
1,2,3-Trichloropropane	ND	4.8
Propylbenzene	ND	4.8
Bromobenzene	ND	4.8
1,3,5-Trimethylbenzene	ND	4.8
2-Chlorotoluene	ND	4.8

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-11-SS-35'	Diln Fac:	0.9615
Lab ID:	197910-005	Batch#:	129984
Matrix:	Soil	Sampled:	09/26/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/28/07

Analyte	Result	RL
4-Chlorotoluene	ND	4.8
tert-Butylbenzene	ND	4.8
1,2,4-Trimethylbenzene	ND	4.8
sec-Butylbenzene	ND	4.8
para-Isopropyl Toluene	ND	4.8
1,3-Dichlorobenzene	ND	4.8
1,4-Dichlorobenzene	ND	4.8
n-Butylbenzene	ND	4.8
1,2-Dichlorobenzene	ND	4.8
1,2-Dibromo-3-Chloropropane	ND	4.8
1,2,4-Trichlorobenzene	ND	4.8
Hexachlorobutadiene	ND	4.8
Naphthalene	ND	4.8
1,2,3-Trichlorobenzene	ND	4.8

Surrogate	%REC	Limits
Dibromofluoromethane	127 *	80-124
1,2-Dichloroethane-d4	113	79-136
Toluene-d8	96	80-120
Bromofluorobenzene	115	80-122

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

23.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-12-SS-0.0'	Diln Fac:	0.9615
Lab ID:	197910-008	Batch#:	129984
Matrix:	Soil	Sampled:	09/26/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/28/07

Analyte	Result	RL
Freon 12	ND	9.6
Chloromethane	ND	9.6
Vinyl Chloride	ND	9.6
Bromomethane	ND	9.6
Chloroethane	ND	9.6
Trichlorofluoromethane	ND	4.8
Acetone	ND	24
Freon 113	ND	4.8
1,1-Dichloroethene	ND	4.8
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.8
MTBE	ND	4.8
trans-1,2-Dichloroethene	ND	4.8
Vinyl Acetate	ND	48
1,1-Dichloroethane	ND	4.8
2-Butanone	ND	9.6
cis-1,2-Dichloroethene	ND	4.8
2,2-Dichloropropane	ND	4.8
Chloroform	ND	4.8
Bromochloromethane	ND	4.8
1,1,1-Trichloroethane	ND	4.8
1,1-Dichloropropene	ND	4.8
Carbon Tetrachloride	ND	4.8
1,2-Dichloroethane	ND	4.8
Benzene	ND	4.8
Trichloroethene	ND	4.8
1,2-Dichloropropane	ND	4.8
Bromodichloromethane	ND	4.8
Dibromomethane	ND	4.8
4-Methyl-2-Pentanone	ND	9.6
cis-1,3-Dichloropropene	ND	4.8
Toluene	ND	4.8
trans-1,3-Dichloropropene	ND	4.8
1,1,2-Trichloroethane	ND	4.8
2-Hexanone	ND	9.6
1,3-Dichloropropane	ND	4.8
Tetrachloroethene	ND	4.8
Dibromochloromethane	ND	4.8
1,2-Dibromoethane	ND	4.8
Chlorobenzene	ND	4.8
1,1,1,2-Tetrachloroethane	ND	4.8
Ethylbenzene	ND	4.8
m,p-Xylenes	ND	4.8
o-Xylene	ND	4.8
Styrene	ND	4.8
Bromoform	ND	4.8
Isopropylbenzene	ND	4.8
1,1,2,2-Tetrachloroethane	ND	4.8
1,2,3-Trichloropropane	ND	4.8
Propylbenzene	ND	4.8
Bromobenzene	ND	4.8
1,3,5-Trimethylbenzene	ND	4.8
2-Chlorotoluene	ND	4.8

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-12-SS-0.0'	Diln Fac:	0.9615
Lab ID:	197910-008	Batch#:	129984
Matrix:	Soil	Sampled:	09/26/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Analyzed:	09/28/07

Analyte	Result	RL
4-Chlorotoluene	ND	4.8
tert-Butylbenzene	ND	4.8
1,2,4-Trimethylbenzene	ND	4.8
sec-Butylbenzene	ND	4.8
para-Isopropyl Toluene	ND	4.8
1,3-Dichlorobenzene	ND	4.8
1,4-Dichlorobenzene	ND	4.8
n-Butylbenzene	ND	4.8
1,2-Dichlorobenzene	ND	4.8
1,2-Dibromo-3-Chloropropane	ND	4.8
1,2,4-Trichlorobenzene	ND	4.8
Hexachlorobutadiene	ND	4.8
Naphthalene	ND	4.8
1,2,3-Trichlorobenzene	ND	4.8

Surrogate	%REC	Limits
Dibromofluoromethane	129 *	80-124
1,2-Dichloroethane-d4	119	79-136
Toluene-d8	100	80-120
Bromofluorobenzene	98	80-122

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

24.0

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC408011	Diln Fac:	1.000
Matrix:	Soil	Batch#:	129930
Units:	ug/Kg	Analyzed:	09/27/07

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	24.36	97	74-131
Benzene	25.00	25.29	101	77-121
Trichloroethene	25.00	24.60	98	77-121
Toluene	25.00	25.12	100	79-122
Chlorobenzene	25.00	24.90	100	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-124
1,2-Dichloroethane-d4	100	79-136
Toluene-d8	100	80-120
Bromofluorobenzene	98	80-122

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC408012	Diln Fac:	1.000
Matrix:	Soil	Batch#:	129930
Units:	ug/Kg	Analyzed:	09/27/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC408012	Diln Fac:	1.000
Matrix:	Soil	Batch#:	129930
Units:	ug/Kg	Analyzed:	09/27/07

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-124
1,2-Dichloroethane-d4	102	79-136
Toluene-d8	97	80-120
Bromofluorobenzene	100	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC408226	Diln Fac:	1.000
Matrix:	Soil	Batch#:	129984
Units:	ug/Kg	Analyzed:	09/28/07

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	28.63	115	74-131
Benzene	25.00	29.84	119	77-121
Trichloroethene	25.00	28.50	114	77-121
Toluene	25.00	28.16	113	79-122
Chlorobenzene	25.00	27.63	111	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-124
1,2-Dichloroethane-d4	106	79-136
Toluene-d8	102	80-120
Bromofluorobenzene	96	80-122

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC408227	Diln Fac:	1.000
Matrix:	Soil	Batch#:	129984
Units:	ug/Kg	Analyzed:	09/28/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC408227	Diln Fac:	1.000
Matrix:	Soil	Batch#:	129984
Units:	ug/Kg	Analyzed:	09/28/07

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	114	80-124
1,2-Dichloroethane-d4	102	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	97	80-122

ND= Not Detected
RL= Reporting Limit

28.0

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	129984
MSS Lab ID:	197913-002	Sampled:	09/26/07
Matrix:	Soil	Received:	09/26/07
Units:	ug/Kg	Analyzed:	09/28/07
Basis:	as received		

Type: MS Diln Fac: 0.8197
Lab ID: QC408271

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.3835	40.98	35.33	86	61-145
Benzene	<0.2673	40.98	31.54	77	57-123
Trichloroethene	<0.3775	40.98	31.62	77	52-141
Toluene	<0.3623	40.98	31.39	77	53-126
Chlorobenzene	<0.2449	40.98	26.46	65	49-121

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-124
1,2-Dichloroethane-d4	91	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	104	80-122

Type: MSD Diln Fac: 0.8929
Lab ID: QC408272

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	44.64	45.38	102	61-145	16	26
Benzene	44.64	39.92	89	57-123	15	25
Trichloroethene	44.64	40.11	90	52-141	15	26
Toluene	44.64	39.42	88	53-126	14	27
Chlorobenzene	44.64	34.55	77	49-121	18	27

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-124
1,2-Dichloroethane-d4	94	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	102	80-122

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-11-SS-0.0'	Batch#:	130100
Lab ID:	197910-004	Sampled:	09/26/07
Matrix:	Soil	Received:	09/27/07
Units:	ug/Kg	Prepared:	10/02/07
Basis:	as received	Analyzed:	10/04/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	78	54-120
Decachlorobiphenyl	81	49-142

ND= Not Detected
RL= Reporting Limit

58.1

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-SS-0.0'	Batch#:	130100
Lab ID:	197910-008	Sampled:	09/26/07
Matrix:	Soil	Received:	09/27/07
Units:	ug/Kg	Prepared:	10/02/07
Basis:	as received	Analyzed:	10/04/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	4.8	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	59

Surrogate	%REC	Limits
TCMX	81	54-120
Decachlorobiphenyl	74	49-142

ND= Not Detected
RL= Reporting Limit

59.1

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408694	Batch#:	130100
Matrix:	Soil	Prepared:	10/02/07
Units:	ug/Kg	Analyzed:	10/04/07
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	55	54-120
Decachlorobiphenyl	85	49-142

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC408695	Batch#:	130100
Matrix:	Soil	Prepared:	10/02/07
Units:	ug/Kg	Analyzed:	10/04/07
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	13.25	9.430	71	44-120
Heptachlor	13.25	9.797	74	44-120
Aldrin	13.25	9.404	71	47-120
Dieldrin	26.50	19.59	74	50-120
Endrin	26.50	18.87	71	27-128
4,4'-DDT	26.50	19.64	74	42-128

Surrogate	%REC	Limits
TCMX	69	54-120
Decachlorobiphenyl	79	49-142

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	ZZZZZZZZZZ	Batch#:	130100
MSS Lab ID:	197913-004	Sampled:	09/26/07
Matrix:	Soil	Received:	09/26/07
Units:	ug/Kg	Prepared:	10/02/07
Basis:	as received	Analyzed:	10/12/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3620B
Lab ID: QC408696

Analyte	MSS Result	Spiked	Result	%REC	Limits
gamma-BHC	2.432	13.28	15.07	95	45-122
Heptachlor	<0.4792	13.28	13.42	101	49-125
Aldrin	<0.3149	13.28	12.57	95	48-120
Dieldrin	<0.9902	26.57	28.83	108	50-121
Endrin	<1.174	26.57	26.16	98	42-123
4,4'-DDT	5.678	26.57	28.50 #	86	29-135

Surrogate	%REC	Limits
TCMX	106	54-120
Decachlorobiphenyl	101	49-142

Type: MSD Cleanup Method: EPA 3620B
Lab ID: QC408697

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
gamma-BHC	13.24	12.54	76	45-122	18	40
Heptachlor	13.24	9.405	71	49-125	35	42
Aldrin	13.24	9.170	69	48-120	31	37
Dieldrin	26.48	23.05	87	50-121	22	34
Endrin	26.48	19.20	73	42-123	30	39
4,4'-DDT	26.48	22.94 #	65	29-135	21	51

Surrogate	%REC	Limits
TCMX	84	54-120
Decachlorobiphenyl	80	49-142

#= CCV drift outside limits; average CCV drift within limits per method requirements
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	09/26/07
Units:	ug/Kg	Received:	09/27/07
Basis:	as received	Prepared:	10/02/07
Diln Fac:	1.000	Analyzed:	10/03/07
Batch#:	130100		

Field ID: B-11-SS-0.0' Lab ID: 197910-004
Type: SAMPLE Cleanup Method: EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	126	66-140
Decachlorobiphenyl	131	51-152

Field ID: B-12-SS-0.0' Lab ID: 197910-008
Type: SAMPLE Cleanup Method: EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	49	12

Surrogate	%REC	Limits
TCMX	130	66-140
Decachlorobiphenyl	146	51-152

Type: BLANK Cleanup Method: EPA 3665A
Lab ID: QC408694

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	91	66-140
Decachlorobiphenyl	106	51-152

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC408698	Batch#:	130100
Matrix:	Soil	Prepared:	10/02/07
Units:	ug/Kg	Analyzed:	10/03/07
Basis:	as received		

Cleanup Method: EPA 3665A

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	166.6	162.0	97	69-142
Aroclor-1260	166.6	176.9	106	69-155

Surrogate	%REC	Limits
TCMX	94	66-140
Decachlorobiphenyl	107	51-152

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Field ID:	ZZZZZZZZZZ	Batch#:	130100
MSS Lab ID:	197913-004	Sampled:	09/26/07
Matrix:	Soil	Received:	09/26/07
Units:	ug/Kg	Prepared:	10/02/07
Basis:	as received	Analyzed:	10/03/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3665A
Lab ID: QC408699

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1016	<2.294	165.0	186.1	113	62-139
Aroclor-1260	62.07	165.0	207.6	88	54-143

Surrogate	%REC	Limits
TCMX	108	66-140
Decachlorobiphenyl	119	51-152

Type: MSD Cleanup Method: EPA 3665A
Lab ID: QC408700

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	165.6	157.2	95	62-139	17	33
Aroclor-1260	165.6	172.2	66	54-143	19	34

Surrogate	%REC	Limits
TCMX	88	66-140
Decachlorobiphenyl	97	51-152

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	197910	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-03-SS-0.0	Basis:	as received
Lab ID:	197910-001	Diln Fac:	1.000
Matrix:	Soil	Sampled:	09/25/07
Units:	mg/Kg	Received:	09/27/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	1.1	0.50	129961	09/27/07	10/01/07	EPA 3050B	EPA 6010B
Arsenic	5.2	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Barium	80	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Beryllium	0.33	0.10	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Chromium	70	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cobalt	18	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Copper	17	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Lead	18	0.20	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Mercury	0.22	0.020	130031	10/01/07	10/01/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Nickel	100	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Selenium	ND	0.50	129961	09/27/07	10/01/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Vanadium	41	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Zinc	41	1.0	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	197910	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-03-SS-25.0	Basis:	as received
Lab ID:	197910-002	Sampled:	09/25/07
Matrix:	Soil	Received:	09/27/07
Units:	mg/Kg		

Analyte	Result	RL	Diln Fac	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	0.50	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Arsenic	2.4	0.25	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Barium	140	0.25	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Beryllium	0.19	0.10	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Chromium	320	0.25	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cobalt	130	0.25	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Copper	49	0.25	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Lead	3.1	0.23	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Mercury	0.55	0.020	1.000	130031	10/01/07	10/01/07	METHOD	EPA 7471A
Molybdenum	3.3	0.25	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Nickel	2,100	2.5	10.00	129961	09/27/07	10/01/07	EPA 3050B	EPA 6010B
Selenium	2.8	0.50	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Vanadium	22	0.25	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Zinc	31	1.0	1.000	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	197910	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-11-SS-0.0'	Basis:	as received
Lab ID:	197910-004	Diln Fac:	1.000
Matrix:	Soil	Sampled:	09/26/07
Units:	mg/Kg	Received:	09/27/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	0.50	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Arsenic	5.9	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Barium	100	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Beryllium	0.41	0.10	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Chromium	62	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cobalt	20	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Copper	26	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Lead	18	0.22	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Mercury	0.23	0.020	130031	10/01/07	10/01/07	METHOD	EPA 7471A
Molybdenum	0.51	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Nickel	100	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Selenium	ND	0.50	129961	09/27/07	10/01/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Vanadium	47	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Zinc	47	1.0	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	197910	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-11-SS-35'	Basis:	as received
Lab ID:	197910-005	Diln Fac:	1.000
Matrix:	Soil	Sampled:	09/26/07
Units:	mg/Kg	Received:	09/27/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	0.50	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Arsenic	8.2	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Barium	110	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Beryllium	0.46	0.10	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Chromium	40	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cobalt	16	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Copper	52	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Lead	6.7	0.22	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Mercury	0.072	0.020	130031	10/01/07	10/01/07	METHOD	EPA 7471A
Molybdenum	0.28	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Nickel	69	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Selenium	1.5	0.50	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Vanadium	45	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Zinc	68	1.0	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	197910	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-12-SS-0.0'	Basis:	as received
Lab ID:	197910-008	Diln Fac:	1.000
Matrix:	Soil	Sampled:	09/26/07
Units:	mg/Kg	Received:	09/27/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	0.50	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Arsenic	5.9	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Barium	74	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Beryllium	0.36	0.10	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Chromium	78	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Cobalt	16	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Copper	21	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Lead	21	0.22	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Mercury	0.18	0.020	130031	10/01/07	10/01/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Nickel	100	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Selenium	0.76	0.50	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Vanadium	43	0.25	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B
Zinc	60	1.0	129961	09/27/07	09/29/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408129	Batch#:	129961
Matrix:	Soil	Prepared:	09/27/07
Units:	mg/Kg	Analyzed:	09/29/07
Basis:	as received		

Analyte	Result	RL
Antimony	ND	0.50
Arsenic	ND	0.25
Barium	ND	0.25
Beryllium	ND	0.10
Cadmium	ND	0.25
Chromium	0.48 b	0.25
Cobalt	ND	0.25
Copper	ND	0.25
Lead	ND	0.23
Molybdenum	ND	0.25
Nickel	ND	0.25
Selenium	ND	0.50
Silver	ND	0.25
Thallium	ND	0.50
Vanadium	ND	0.25
Zinc	ND	1.0

b= See narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	129961
Units:	mg/Kg	Prepared:	09/27/07
Basis:	as received	Analyzed:	09/29/07
Diln Fac:	1.000		

Type: BS Lab ID: QC408130

Analyte	Spiked	Result	%REC	Limits
Antimony	100.0	88.63	89	80-120
Arsenic	50.00	45.04	90	80-120
Barium	100.0	87.21	87	80-120
Beryllium	2.500	2.434	97	80-120
Cadmium	10.00	8.934	89	80-120
Chromium	100.0	86.41	86	80-120
Cobalt	25.00	21.07	84	80-120
Copper	12.50	10.60	85	80-120
Lead	100.0	84.89	85	80-120
Molybdenum	20.00	18.12	91	80-120
Nickel	25.00	21.36	85	80-120
Selenium	50.00	43.66	87	80-120
Silver	10.00	8.567	86	80-120
Thallium	50.00	43.21	86	80-120
Vanadium	25.00	21.59	86	80-120
Zinc	25.00	21.98	88	80-120

Type: BSD Lab ID: QC408131

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	100.0	87.37	87	80-120	1	20
Arsenic	50.00	44.38	89	80-120	1	20
Barium	100.0	86.47	86	80-120	1	20
Beryllium	2.500	2.410	96	80-120	1	20
Cadmium	10.00	8.855	89	80-120	1	20
Chromium	100.0	84.87	85	80-120	2	20
Cobalt	25.00	20.86	83	80-120	1	20
Copper	12.50	10.50	84	80-120	1	20
Lead	100.0	83.99	84	80-120	1	20
Molybdenum	20.00	17.83	89	80-120	2	20
Nickel	25.00	21.19	85	80-120	1	20
Selenium	50.00	43.21	86	80-120	1	20
Silver	10.00	8.465	85	80-120	1	20
Thallium	50.00	42.76	86	80-120	1	20
Vanadium	25.00	21.36	85	80-120	1	20
Zinc	25.00	21.77	87	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	129961
MSS Lab ID:	197894-011	Sampled:	09/25/07
Matrix:	Soil	Received:	09/25/07
Units:	mg/Kg	Prepared:	09/27/07
Basis:	as received	Analyzed:	09/29/07
Diln Fac:	1.000		

Type: MS Lab ID: QC408132

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	1.104	93.46	30.72	32	1-122
Arsenic	6.773	46.73	46.53	85	72-120
Barium	168.5	93.46	245.3	82	49-139
Beryllium	0.4134	2.336	2.567	92	80-120
Cadmium	0.06297	9.346	7.885	84	74-120
Chromium	60.67	93.46	135.2	80	65-120
Cobalt	12.99	23.36	31.63	80	60-120
Copper	26.48	11.68	36.94	89	47-146
Lead	11.41	93.46	85.65	79	53-123
Molybdenum	0.1521	18.69	14.37	76	66-120
Nickel	78.68	23.36	96.87	78	43-142
Selenium	<0.07415	46.73	39.52	85	71-120
Silver	0.08443	9.346	8.128	86	66-120
Thallium	0.1285	46.73	36.95	79	62-120
Vanadium	34.45	23.36	53.57	82	52-139
Zinc	63.89	23.36	81.71	76	42-147

Type: MSD Lab ID: QC408133

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	97.09	32.83	33	1-122	3	30
Arsenic	48.54	47.36	84	72-120	2	20
Barium	97.09	246.1	80	49-139	1	23
Beryllium	2.427	2.626	91	80-120	1	20
Cadmium	9.709	8.051	82	74-120	2	20
Chromium	97.09	136.8	78	65-120	1	20
Cobalt	24.27	32.18	79	60-120	1	24
Copper	12.14	36.74	85	47-146	2	21
Lead	97.09	87.29	78	53-123	2	28
Molybdenum	19.42	14.89	76	66-120	0	20
Nickel	24.27	96.29	73	43-142	1	26
Selenium	48.54	41.46	85	71-120	1	20
Silver	9.709	8.296	85	66-120	2	20
Thallium	48.54	38.16	78	62-120	1	20
Vanadium	24.27	54.33	82	52-139	0	20
Zinc	24.27	81.06	71	42-147	2	27

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408403	Batch#:	130031
Matrix:	Soil	Prepared:	10/01/07
Units:	mg/Kg	Analyzed:	10/01/07

Result	RL
ND	0.020

ND= Not Detected
RL= Reporting Limit

46.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130031
Units:	mg/Kg	Prepared:	10/01/07
Basis:	as received	Analyzed:	10/01/07

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC408404	0.5000	0.5180	104	80-120		
BSD	QC408405	0.5000	0.4930	99	80-120	5	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	130031
MSS Lab ID:	197895-055	Sampled:	09/25/07
Matrix:	Soil	Received:	09/25/07
Units:	mg/Kg	Prepared:	10/01/07
Basis:	as received	Analyzed:	10/01/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC408407	0.03185	0.5208	0.5823	106	70-143		
MSD	QC408408		0.4545	0.5100	105	70-143	0	22

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	197910	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-03-GW-10'	Sampled:	09/25/07
Lab ID:	197910-003	Received:	09/27/07
Matrix:	Filtrate	Prepared:	09/28/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Analyte	Result	RL	Batch#	Prep	Analysis
Antimony	ND	10	129973	EPA 3010A	EPA 6010B
Arsenic	ND	6.1	129973	EPA 3010A	EPA 6010B
Barium	100	5.0	129973	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	129973	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	129973	EPA 3010A	EPA 6010B
Chromium	ND	5.0	129973	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	129973	EPA 3010A	EPA 6010B
Copper	ND	5.0	129973	EPA 3010A	EPA 6010B
Lead	ND	3.0	129973	EPA 3010A	EPA 6010B
Mercury	ND	0.20	129985	METHOD	EPA 7470A
Molybdenum	ND	5.0	129973	EPA 3010A	EPA 6010B
Nickel	13	5.0	129973	EPA 3010A	EPA 6010B
Selenium	ND	10	129973	EPA 3010A	EPA 6010B
Silver	ND	5.0	129973	EPA 3010A	EPA 6010B
Thallium	ND	10	129973	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	129973	EPA 3010A	EPA 6010B
Zinc	ND	20	129973	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	197910	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-11-GW-24'	Sampled:	09/26/07
Lab ID:	197910-006	Received:	09/27/07
Matrix:	Filtrate	Prepared:	09/28/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Analyte	Result	RL	Batch#	Prep	Analysis
Antimony	ND	10	129973	EPA 3010A	EPA 6010B
Arsenic	ND	6.1	129973	EPA 3010A	EPA 6010B
Barium	330	5.0	129973	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	129973	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	129973	EPA 3010A	EPA 6010B
Chromium	ND	5.0	129973	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	129973	EPA 3010A	EPA 6010B
Copper	ND	5.0	129973	EPA 3010A	EPA 6010B
Lead	ND	3.0	129973	EPA 3010A	EPA 6010B
Mercury	ND	0.20	129985	METHOD	EPA 7470A
Molybdenum	ND	5.0	129973	EPA 3010A	EPA 6010B
Nickel	ND	5.0	129973	EPA 3010A	EPA 6010B
Selenium	ND	10	129973	EPA 3010A	EPA 6010B
Silver	ND	5.0	129973	EPA 3010A	EPA 6010B
Thallium	ND	10	129973	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	129973	EPA 3010A	EPA 6010B
Zinc	ND	20	129973	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408190	Batch#:	129973
Matrix:	Filtrate	Prepared:	09/28/07
Units:	ug/L	Analyzed:	09/28/07

Analyte	Result	RL
Antimony	ND	10
Arsenic	ND	6.1
Barium	ND	5.0
Beryllium	ND	2.0
Cadmium	ND	5.0
Chromium	ND	5.0
Cobalt	ND	5.0
Copper	ND	5.0
Lead	ND	3.0
Molybdenum	ND	5.0
Nickel	ND	5.0
Selenium	ND	10
Silver	ND	5.0
Thallium	ND	10
Vanadium	ND	5.0
Zinc	ND	20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Filtrate	Batch#:	129973
Units:	ug/L	Prepared:	09/28/07
Diln Fac:	1.000		

Type: BS Lab ID: QC408191

Analyte	Spiked	Result	%REC	Limits	Analyzed
Antimony	500.0	540.7	108	80-120	09/28/07
Arsenic	100.0	99.83	100	80-120	10/03/07
Barium	2,000	2,066	103	80-120	09/28/07
Beryllium	50.00	57.71	115	80-120	09/28/07
Cadmium	50.00	59.20	118	80-120	09/28/07
Chromium	200.0	207.5	104	80-120	09/28/07
Cobalt	500.0	517.5	104	80-120	09/28/07
Copper	250.0	237.0	95	80-120	09/28/07
Lead	100.0	103.4	103	80-120	09/28/07
Molybdenum	400.0	421.1	105	80-120	09/28/07
Nickel	500.0	535.9	107	80-120	09/28/07
Selenium	100.0	115.9	116	80-120	09/28/07
Silver	50.00	47.29	95	80-120	09/28/07
Thallium	100.0	102.3	102	80-120	09/28/07
Vanadium	500.0	504.3	101	80-120	09/28/07
Zinc	500.0	584.0	117	80-120	09/28/07

Type: BSD Lab ID: QC408192

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
Antimony	500.0	514.8	103	80-120	5	20	09/28/07
Arsenic	100.0	99.46	99	80-120	0	20	10/03/07
Barium	2,000	2,021	101	80-120	2	20	09/28/07
Beryllium	50.00	56.37	113	80-120	2	20	09/28/07
Cadmium	50.00	54.21	108	80-120	9	20	09/28/07
Chromium	200.0	202.7	101	80-120	2	20	09/28/07
Cobalt	500.0	501.8	100	80-120	3	20	09/28/07
Copper	250.0	240.9	96	80-120	2	20	09/28/07
Lead	100.0	97.94	98	80-120	5	20	09/28/07
Molybdenum	400.0	404.3	101	80-120	4	20	09/28/07
Nickel	500.0	513.7	103	80-120	4	20	09/28/07
Selenium	100.0	103.6	104	80-120	11	20	09/28/07
Silver	50.00	48.06	96	80-120	2	20	09/28/07
Thallium	100.0	106.2	106	80-120	4	20	09/28/07
Vanadium	500.0	501.7	100	80-120	1	20	09/28/07
Zinc	500.0	540.1	108	80-120	8	20	09/28/07

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	B-02-GW-30'	Batch#:	129973
MSS Lab ID:	197909-003	Sampled:	09/25/07
Matrix:	Filtrate	Received:	09/27/07
Units:	ug/L	Prepared:	09/28/07
Diln Fac:	1.000	Analyzed:	09/28/07

Type: MS Lab ID: QC408193

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	4.140	500.0	502.5	100	80-120
Arsenic	<2.042	100.0	113.3	113	80-127
Barium	198.9	2,000	2,103	95	80-120
Beryllium	0.2294	50.00	54.09	108	80-120
Cadmium	<0.1091	50.00	50.17	100	80-120
Chromium	<0.2448	200.0	193.2	97	80-120
Cobalt	<0.3034	500.0	464.0	93	80-120
Copper	2.701	250.0	242.9	96	80-120
Lead	<0.6892	100.0	93.43	93	76-120
Molybdenum	1.197	400.0	392.8	98	80-120
Nickel	1.392	500.0	462.1	92	80-120
Selenium	2.513	100.0	97.80	95	80-128
Silver	<0.7459	50.00	47.92	96	73-122
Thallium	3.418	100.0	101.5	98	78-120
Vanadium	<1.034	500.0	485.6	97	80-120
Zinc	8.891	500.0	495.4	97	80-123

Type: MSD Lab ID: QC408194

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	517.4	103	80-120	3	20
Arsenic	100.0	114.8	115	80-127	1	20
Barium	2,000	2,179	99	80-120	4	20
Beryllium	50.00	55.59	111	80-120	3	20
Cadmium	50.00	51.46	103	80-120	3	20
Chromium	200.0	198.8	99	80-120	3	20
Cobalt	500.0	477.5	95	80-120	3	20
Copper	250.0	250.9	99	80-120	3	20
Lead	100.0	96.31	96	76-120	3	20
Molybdenum	400.0	405.0	101	80-120	3	20
Nickel	500.0	476.6	95	80-120	3	20
Selenium	100.0	102.0	99	80-128	4	20
Silver	50.00	49.19	98	73-122	3	20
Thallium	100.0	106.1	103	78-120	4	20
Vanadium	500.0	498.1	100	80-120	3	20
Zinc	500.0	513.0	101	80-123	3	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	129985
Lab ID:	QC408228	Prepared:	09/28/07
Matrix:	Filtrate	Analyzed:	09/28/07
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	129985
Matrix:	Filtrate	Prepared:	09/28/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC408229	5.000	5.240	105	80-120		
BSD	QC408230	5.000	5.230	105	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	129985
Field ID:	ZZZZZZZZZZ	Sampled:	09/25/07
MSS Lab ID:	197861-002	Received:	09/25/07
Matrix:	Water	Prepared:	09/28/07
Units:	ug/L	Analyzed:	09/28/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC408232	0.1290	5.000	5.800	113	79-125		
MSD	QC408233		5.000	5.750	112	79-125	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Matrix:	Water	Batch#:	129933
Units:	mg/L	Received:	09/27/07

Field ID	Type	Lab ID	Result	RL	Sampled	Analyzed
B-03-GW-10'	SAMPLE	197910-003	0.82	0.05	09/25/07 16:30	09/27/07 11:54
B-11-GW-24'	SAMPLE	197910-006	4.5	0.05	09/26/07 12:00	09/27/07 11:16
	BLANK	QC408021	ND	0.05		09/27/07 10:20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	B-03-GW-10'	Batch#:	129933
MSS Lab ID:	197910-003	Sampled:	09/25/07 16:30
Matrix:	Water	Received:	09/27/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC408022		1.000	0.9680	97	80-120			1.000	09/27/07 12:27
BSD	QC408023		1.000	0.9534	95	80-120	2	20	1.000	09/27/07 12:45
MS	QC408060	0.8191	2.500	3.186	95	80-120			5.000	09/27/07 13:22
MSD	QC408061		2.500	3.028	88	80-120	5	20	5.000	09/27/07 13:40

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130091
Units:	mg/Kg	Received:	09/27/07
Basis:	as received		

Field ID	Type	Lab ID	Result	RL	Sampled	Analyzed
B-03-SS-25.0	SAMPLE	197910-002	ND	0.5	09/25/07 13:00	10/02/07 14:26
B-11-SS-35'	SAMPLE	197910-005	ND	0.5	09/26/07 09:30	10/02/07 14:47
	BLANK	QC408656	ND	0.5		10/02/07 13:28

ND= Not Detected
RL= Reporting Limit

49.0

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	197910	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Basis:	as received
Matrix:	Soil	Diln Fac:	1.000
Units:	mg/Kg	Batch#:	130091

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
BS	QC408657	10.00	9.704	97	80-120			10/02/07 13:45
BSD	QC408658	10.00	9.781	98	80-120	1	20	10/02/07 14:02

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

~~197909~~ AMK 09/26/07

Chain of Custody Record

197910

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 9/25/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier: UPS
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☐ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15-B
1 of 2 COCs
Job No. 379-1827-15-02
SDG No.

	Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	Filtered Sample	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
1	B-03-SS-0.0	9/25/07	12:00	250ml poly	SO	1		✓	✓	✓	✓		✓		
2	B-03-SS-25.0		13:00	250ml poly	SO	1		✓	✓	✓	✓	✓			
3	B-03-GW-10'		16:30	VOA	GW	3		✓							
				VOA		3					✓				
				1L amber		2								hold	Hold
				1L amber		1				✓					
				1L amber		1							hold		Hold
				250ml poly		1						✓			
				250ml poly		1	✓		✓						
NA	Trip Blank			VOA	AQ	1									

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Richard Ch-Ch	Weiss Associates	9/25/07 14:00	Anne Kath	C&T	9/27/07 10:30 AM
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

197910

Chain of Custody Record

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 9/26/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier: UPS
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☐ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15 - C
2 of 2 COCs
Job No. 379-1827-15-02
SDG No.

	Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	Interesting Sample	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082												Sample Specific Notes:
4	B-11-SS-0.0'	9/26/07	8:00	Poly	SO	1		✓	✓	✓	✓		✓	X		AMK										
5	B-11-SS-35'		09:30	Poly	SO	1		✓	✓	✓	✓	✓				09/27/07										
6	B-11-GW-24'	9/26/07	12:00	VOA	GW	3		✓																		pr
				VOA		3					✓															J. Adams
				1L amber		2				✓																9/27/07
				Poly		1			✓																	
				250 ml poly		1						✓														
8	B-12-SS-0.0'	9/26/07	10:50	POLY	SO	1		X	X	X	X	X	X	X		AMK	09/27/07									
7	Trip Blank			VOA	AQ	1																				

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:
Received

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Robert Ui	Weiss Associates	9/26/07 14:00	Anne Kath	C&T	9/27/07 10:30 AM
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Subject: Re: 379-1827-15-02 - C&T Login Summary (197910)
From: "Joyce E. Adams" <jea@weiss.com>
Date: Thu, 27 Sep 2007 15:25:55 -0700
To: "Anne Kathain" <Anne@ctberk.com>
CC: "Joyce E. Adams" <JEA@weiss.com>

This looks correct and yes please run the trip blank for VOCs.

Thank you,
Joyce

"Anne Kathain" <Anne@ctberk.com> 9/27/2007 2:52 PM >>>

********Please confirm whether or not you need the TRIP BLANK analyzed*******
C&T Login Summary for 197910

Project:379-1827-15-02

Site:Cloverdale Project
Lab Login #:197910
Report Due:10/04/07
PO#:
C&T Proj Mgr:Anne Kathain

Report To:Weiss Associates

350 East Middlefield Rd

Mountain View, CA 94043

ATTN: Joyce Adams

(650) 968-7000

Bill To:Weiss Associates

350 East Middlefield Rd

Mountain View, CA 94043

ATTN: Joyce Adams

(650) 968-7000

Client IDLab IDSampledReceivedMatrixAnalysesCOC #Comments
B-03-SS-0.000109/2509/27

use Project ID as Project#; for RSK-175-CO2 write "RSK-CO2" on

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates 350 East Middlefield Rd Mountain View, CA 94043	Project : 379-1827-15-02 Location : Cloverdale Project Level : II

Sample ID	Lab ID
B-03-GW-7.5	197961-001

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/05/2007
Project Manager

Signature: _____ Date: 10/08/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**197961**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**09/28/07**
Samples Received:	**09/28/07**

This hardcopy data package contains sample and QC results for one water sample, requested for the above referenced project on 09/28/07. The sample was received on ice and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the LCS/MS/MSD for batch 130056. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Metals (EPA 6010B and EPA 7470A):
No analytical problems were encountered.

Ion Chromatography (EPA 300.0):
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-03-GW-7.5	Batch#:	130056
Matrix:	Water	Sampled:	09/27/07
Units:	ug/L	Received:	09/28/07
Diln Fac:	1.000	Analyzed:	10/01/07

Type: SAMPLE Lab ID: 197961-001

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	116	73-134
Bromofluorobenzene (FID)	120	77-140

Type: BLANK Lab ID: QC408510

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	105	73-134
Bromofluorobenzene (FID)	100	77-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC408511	Batch#:	130056
Matrix:	Water	Analyzed:	10/01/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,739	87	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	148 *	73-134
Bromofluorobenzene (FID)	138	77-140

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130056
MSS Lab ID:	197825-003	Sampled:	09/24/07
Matrix:	Water	Received:	09/24/07
Units:	ug/L	Analyzed:	10/02/07
Diln Fac:	1.000		

Type: MS Lab ID: QC408512

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	794.2	2,000	2,647	93	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	141 *	73-134
Bromofluorobenzene (FID)	192 *	77-140

Type: MSD Lab ID: QC408513

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,628	92	72-120	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	132	73-134
Bromofluorobenzene (FID)	177 *	77-140

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-03-GW-7.5	Batch#:	130096
Matrix:	Water	Sampled:	09/27/07
Units:	ug/L	Received:	09/28/07
Diln Fac:	1.000	Prepared:	10/02/07

Type: SAMPLE Analyzed: 10/04/07
Lab ID: 197961-001

Analyte	Result	RL	MDL
Diesel C10-C24	79 Y	50	
Motor Oil C24-C36	120 J	300	56

Surrogate	%REC	Limits
Hexacosane	99	61-133

Type: BLANK Analyzed: 10/03/07
Lab ID: QC408677

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	ND	300	85

Surrogate	%REC	Limits
Hexacosane	98	61-133

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130096
Units:	ug/L	Prepared:	10/02/07
Diln Fac:	1.000	Analyzed:	10/03/07

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC408678

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,892	76	58-128

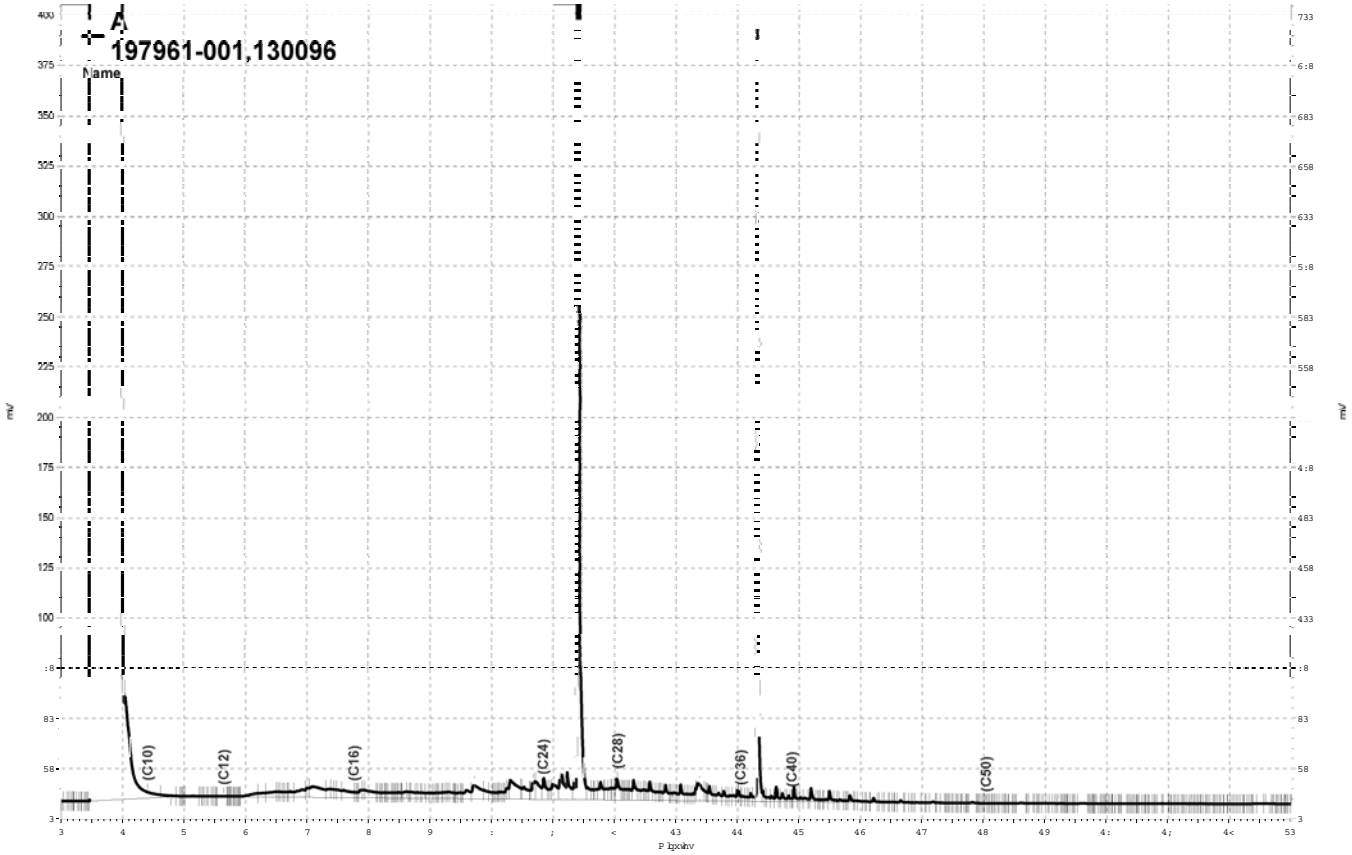
Surrogate	%REC	Limits
Hexacosane	80	61-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC408679

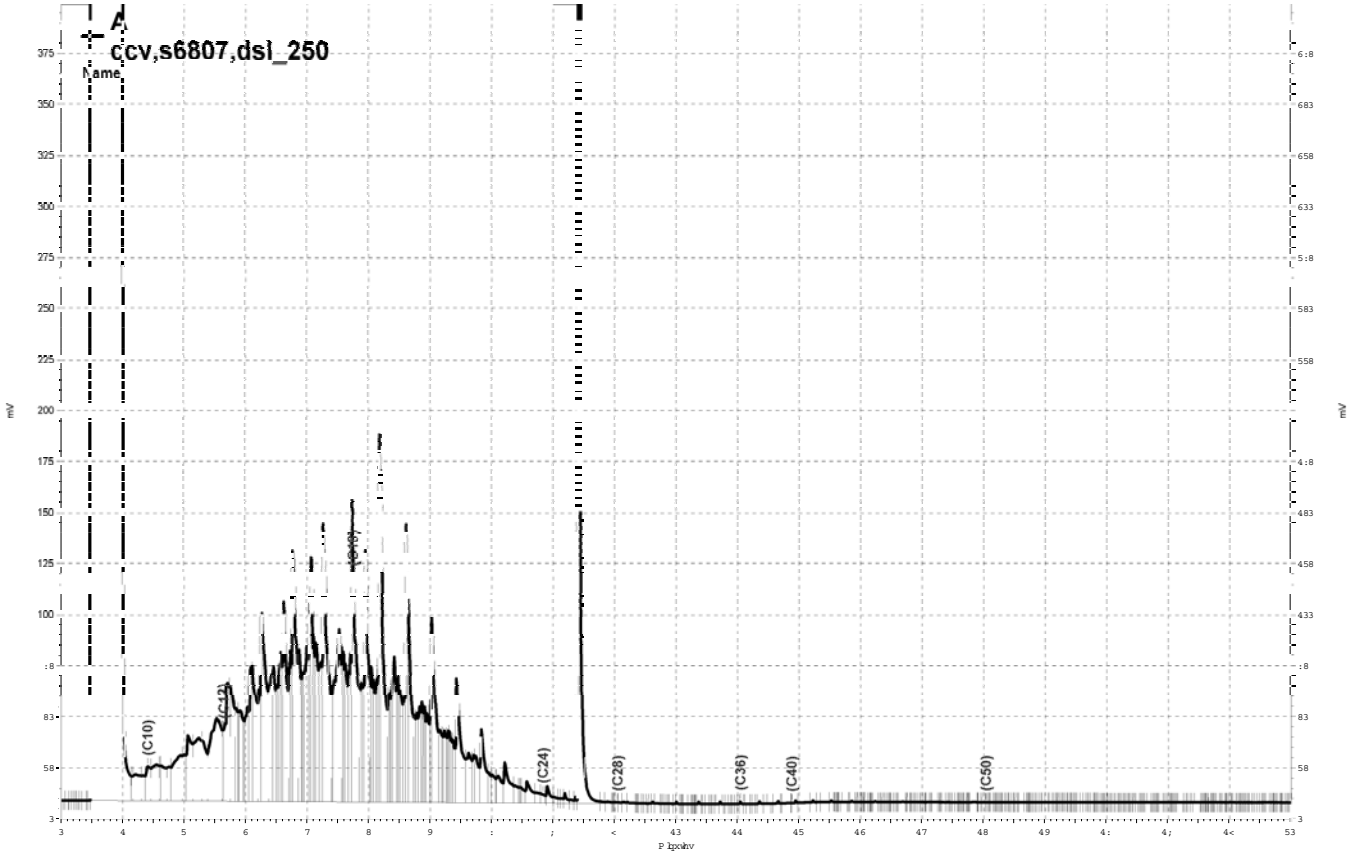
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,464	99	58-128	26	29

Surrogate	%REC	Limits
Hexacosane	103	61-133

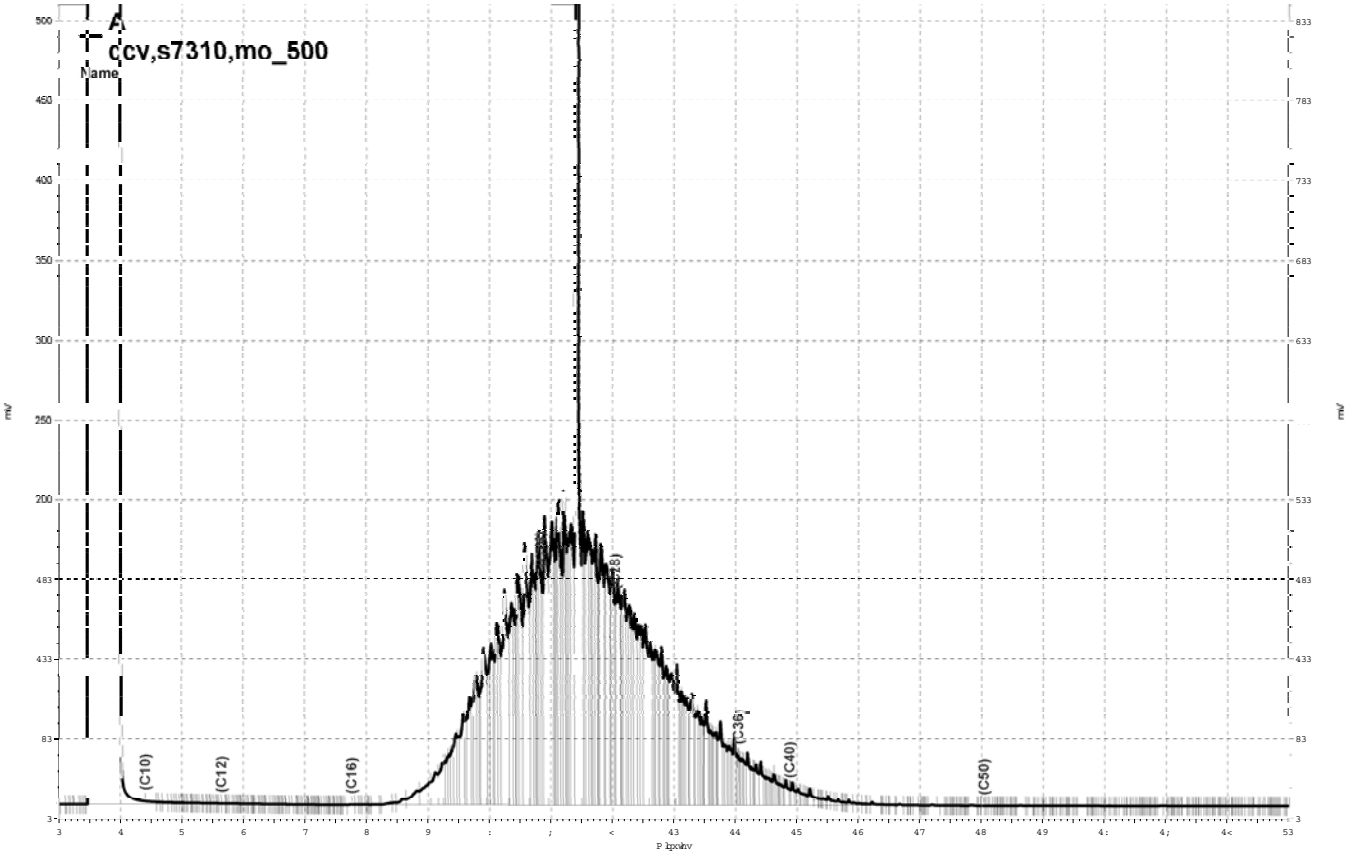
RPD= Relative Percent Difference



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5:9d369/D



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5:9d363/D



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5:9d364/D

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-03-GW-7.5	Batch#:	130029
Lab ID:	197961-001	Sampled:	09/27/07
Matrix:	Water	Received:	09/28/07
Units:	ug/L	Analyzed:	10/01/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-03-GW-7.5	Batch#:	130029
Lab ID:	197961-001	Sampled:	09/27/07
Matrix:	Water	Received:	09/28/07
Units:	ug/L	Analyzed:	10/01/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	119	74-137
Toluene-d8	98	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	130029
Units:	ug/L	Analyzed:	10/01/07
Diln Fac:	1.000		

Type: BS Lab ID: QC408398

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	22.29	89	80-133
Benzene	25.00	22.79	91	80-120
Trichloroethene	25.00	26.27	105	80-120
Toluene	25.00	26.47	106	80-122
Chlorobenzene	25.00	24.14	97	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	118	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	101	80-120

Type: BSD Lab ID: QC408399

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	21.02	84	80-133	6	20
Benzene	25.00	22.33	89	80-120	2	20
Trichloroethene	25.00	25.59	102	80-120	3	20
Toluene	25.00	24.00	96	80-122	10	20
Chlorobenzene	25.00	23.07	92	80-120	5	20

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-122
1,2-Dichloroethane-d4	120	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	103	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408400	Batch#:	130029
Matrix:	Water	Analyzed:	10/01/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408400	Batch#:	130029
Matrix:	Water	Analyzed:	10/01/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	124	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	197961	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-03-GW-7.5	Diln Fac:	1.000
Lab ID:	197961-001	Sampled:	09/27/07
Matrix:	Filtrate	Received:	09/28/07
Units:	ug/L		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	10	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Arsenic	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Barium	470	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Copper	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Lead	ND	3.4	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130083	10/02/07	10/02/07	METHOD	EPA 7470A
Molybdenum	270	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Nickel	37	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Selenium	ND	10	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Silver	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Thallium	ND	10	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Zinc	ND	20	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408391	Batch#:	130028
Matrix:	Water	Prepared:	10/01/07
Units:	ug/L	Analyzed:	10/01/07

Analyte	Result	RL
Antimony	ND	10
Arsenic	ND	5.0
Barium	ND	5.0
Beryllium	ND	2.0
Cadmium	ND	5.0
Chromium	ND	5.0
Cobalt	ND	5.0
Copper	ND	5.0
Lead	ND	3.4
Molybdenum	ND	5.0
Nickel	ND	5.0
Selenium	ND	10
Silver	ND	5.0
Thallium	ND	10
Vanadium	ND	5.0
Zinc	ND	20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Water	Batch#:	130028
Units:	ug/L	Prepared:	10/01/07
Diln Fac:	1.000	Analyzed:	10/01/07

Type: BS Lab ID: QC408392

Analyte	Spiked	Result	%REC	Limits
Antimony	500.0	455.3	91	80-120
Arsenic	100.0	95.70	96	80-120
Barium	2,000	1,786	89	80-120
Beryllium	50.00	51.49	103	80-120
Cadmium	50.00	46.43	93	80-120
Chromium	200.0	178.0	89	80-120
Cobalt	500.0	437.7	88	80-120
Copper	250.0	223.2	89	80-120
Lead	100.0	88.14	88	80-120
Molybdenum	400.0	366.1	92	80-120
Nickel	500.0	447.1	89	80-120
Selenium	100.0	95.32	95	80-120
Silver	50.00	45.41	91	80-120
Thallium	100.0	94.91	95	80-120
Vanadium	500.0	452.0	90	80-120
Zinc	500.0	463.5	93	80-120

Type: BSD Lab ID: QC408393

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	443.9	89	80-120	3	20
Arsenic	100.0	91.64	92	80-120	4	20
Barium	2,000	1,719	86	80-120	4	20
Beryllium	50.00	49.60	99	80-120	4	20
Cadmium	50.00	45.12	90	80-120	3	20
Chromium	200.0	173.1	87	80-120	3	20
Cobalt	500.0	421.2	84	80-120	4	20
Copper	250.0	214.9	86	80-120	4	20
Lead	100.0	84.72	85	80-120	4	20
Molybdenum	400.0	356.6	89	80-120	3	20
Nickel	500.0	429.7	86	80-120	4	20
Selenium	100.0	93.39	93	80-120	2	20
Silver	50.00	43.69	87	80-120	4	20
Thallium	100.0	92.92	93	80-120	2	20
Vanadium	500.0	433.5	87	80-120	4	20
Zinc	500.0	444.2	89	80-120	4	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	B-03-GW-7.5	Batch#:	130028
MSS Lab ID:	197961-001	Sampled:	09/27/07
Matrix:	Water	Received:	09/28/07
Units:	ug/L	Prepared:	10/01/07
Diln Fac:	1.000	Analyzed:	10/01/07

Type: MS Lab ID: QC408394

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	<0.9637	500.0	451.7	90	80-120
Arsenic	1.407	100.0	96.66	95	80-127
Barium	473.5	2,000	2,300	91	80-120
Beryllium	0.1753	50.00	52.98	106	80-120
Cadmium	<0.3555	50.00	46.09	92	80-120
Chromium	1.093	200.0	179.3	89	80-120
Cobalt	0.6526	500.0	431.8	86	80-120
Copper	2.108	250.0	226.9	90	80-120
Lead	<1.150	100.0	86.65	87	76-120
Molybdenum	269.6	400.0	643.9	94	80-120
Nickel	37.34	500.0	472.4	87	80-120
Selenium	5.068	100.0	99.50	94	80-128
Silver	<0.7500	50.00	45.85	92	73-122
Thallium	2.322	100.0	93.35	91	78-120
Vanadium	<0.6065	500.0	456.3	91	80-120
Zinc	<3.056	500.0	462.2	92	80-123

Type: MSD Lab ID: QC408395

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	449.1	90	80-120	1	20
Arsenic	100.0	98.87	97	80-127	2	20
Barium	2,000	2,306	92	80-120	0	20
Beryllium	50.00	53.09	106	80-120	0	20
Cadmium	50.00	47.23	94	80-120	2	20
Chromium	200.0	183.7	91	80-120	2	20
Cobalt	500.0	433.2	87	80-120	0	20
Copper	250.0	228.1	90	80-120	1	20
Lead	100.0	88.28	88	76-120	2	20
Molybdenum	400.0	654.2	96	80-120	2	20
Nickel	500.0	474.7	87	80-120	0	20
Selenium	100.0	102.7	98	80-128	3	20
Silver	50.00	46.02	92	73-122	0	20
Thallium	100.0	96.12	94	78-120	3	20
Vanadium	500.0	458.9	92	80-120	1	20
Zinc	500.0	463.5	93	80-123	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	130083
Lab ID:	QC408622	Prepared:	10/02/07
Matrix:	Water	Analyzed:	10/02/07
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130083
Matrix:	Water	Prepared:	10/02/07
Units:	ug/L	Analyzed:	10/02/07
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC408623	5.000	5.440	109	80-120		
BSD	QC408624	5.000	5.350	107	80-120	2	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130083
Field ID:	ZZZZZZZZZZ	Sampled:	09/25/07
MSS Lab ID:	197861-001	Received:	09/25/07
Matrix:	Filtrate	Prepared:	10/02/07
Units:	ug/L	Analyzed:	10/02/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC408626	<0.04502	5.000	5.860	117	79-125		
MSD	QC408627		5.000	5.890	118	79-125	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Field ID:	B-03-GW-7.5	Batch#:	130003
Matrix:	Water	Sampled:	09/27/07 13:00
Units:	mg/L	Received:	09/28/07

Type	Lab ID	Result	RL	Analyzed
SAMPLE	197961-001	0.28	0.05	09/28/07 15:11
BLANK	QC408292	ND	0.05	09/28/07 14:07

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	197961	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	ZZZZZZZZZZ	Batch#:	130003
MSS Lab ID:	197962-001	Sampled:	09/28/07 08:20
Matrix:	Water	Received:	09/28/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC408293		1.000	0.9534	95	80-120			1.000	09/28/07 14:24
BSD	QC408294		1.000	0.9615	96	80-120	1	20	1.000	09/28/07 14:42
MS	QC408311	12.04	5.000	16.95	98	80-120			10.00	09/28/07 18:09
MSD	QC408312		5.000	16.95	98	80-120	0	20	10.00	09/28/07 18:27

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

Chain of Custody Record

197961

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 9/27/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier: UPS
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☐ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15-D
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	Filtered Sample	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
B-03-GW-7.5	9/27/07	1:00	VOA	GW	3		✓							
			VOA	GW	3					✓				
			1L amber	GW	2				✓					
			250ml poly	GW	1						✓			
			750ml poly	GW	1	✓		✓						

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Robert K. [illegible]	Weiss Associates	9/27/07 2:00	[illegible]	C&T	9-28-07 1502
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates	Project : 379-1827-15-02
350 East Middlefield Rd	Location : Cloverdale Project
Mountain View, CA 94043	Level : II

Sample ID	Lab ID
B-12-GW-28	197970-001
TRIP BLANK	197970-002

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/17/2007
Project Manager

Signature: _____ Date: 10/17/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**197970**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/05/07**
Samples Received:	**09/28/07**

This hardcopy data package contains sample and QC results for one water sample, requested for the above referenced project on 10/05/07. The sample was received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the LCS/MS/MSD for batch 130056. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Pesticides (EPA 8081A):
High ICAL percent RSD (relative standard deviation) was observed for 4,4'-DDT in the calibration analyzed 10/10/07 15:50; average ICAL %RSD met method requirements, and affected data was qualified with "b". 197970-001 was prepared outside of hold time; affected data was qualified with "b". Analysis was requested on the last day of the hold. No other analytical problems were encountered.

Polychlorinated Biphenyls (PCBs) (EPA 8082):
197970-001 was prepared outside of hold time; affected data was qualified with "b". Analysis was requested on the last day of the hold. No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7470A):
No analytical problems were encountered.

Ion Chromatography (EPA 300.0):
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-12-GW-28	Batch#:	130056
Matrix:	Water	Sampled:	09/28/07
Units:	ug/L	Received:	09/28/07
Diln Fac:	1.000		

Type: SAMPLE Analyzed: 10/02/07
Lab ID: 197970-001

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	116	73-134
Bromofluorobenzene (FID)	125	77-140

Type: BLANK Analyzed: 10/01/07
Lab ID: QC408510

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	105	73-134
Bromofluorobenzene (FID)	100	77-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC408511	Batch#:	130056
Matrix:	Water	Analyzed:	10/01/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,739	87	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	148 *	73-134
Bromofluorobenzene (FID)	138	77-140

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130056
MSS Lab ID:	197825-003	Sampled:	09/24/07
Matrix:	Water	Received:	09/24/07
Units:	ug/L	Analyzed:	10/02/07
Diln Fac:	1.000		

Type: MS Lab ID: QC408512

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	794.2	2,000	2,647	93	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	141 *	73-134
Bromofluorobenzene (FID)	192 *	77-140

Type: MSD Lab ID: QC408513

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,628	92	72-120	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	132	73-134
Bromofluorobenzene (FID)	177 *	77-140

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-12-GW-28	Batch#:	130096
Matrix:	Water	Sampled:	09/28/07
Units:	ug/L	Received:	09/28/07
Diln Fac:	1.000	Prepared:	10/02/07

Type: SAMPLE Cleanup Method: EPA 3630C
Lab ID: 197970-001

Analyte	Result	RL	MDL	Analyzed
Diesel C10-C24	760 Y	50		10/04/07
Diesel C10-C24 (SGCU)	380 Y	50		11/01/07
Motor Oil C24-C36	670	300	85	10/04/07
Motor Oil C24-C36 (SGCU)	670	300	130	11/01/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	94	61-133	10/04/07
Hexacosane (SGCU)	105	61-133	11/01/07

Type: BLANK Analyzed: 10/03/07
Lab ID: QC408677 Cleanup Method: EPA 3630C

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Diesel C10-C24 (SGCU)	ND	50	
Motor Oil C24-C36	ND	300	85
Motor Oil C24-C36 (SGCU)	ND	300	85

Surrogate	%REC	Limits
Hexacosane	98	61-133
Hexacosane (SGCU)	96	61-133

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130096
Units:	ug/L	Prepared:	10/02/07
Diln Fac:	1.000	Analyzed:	10/03/07

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC408678

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	2,500	1,892	76	58-128

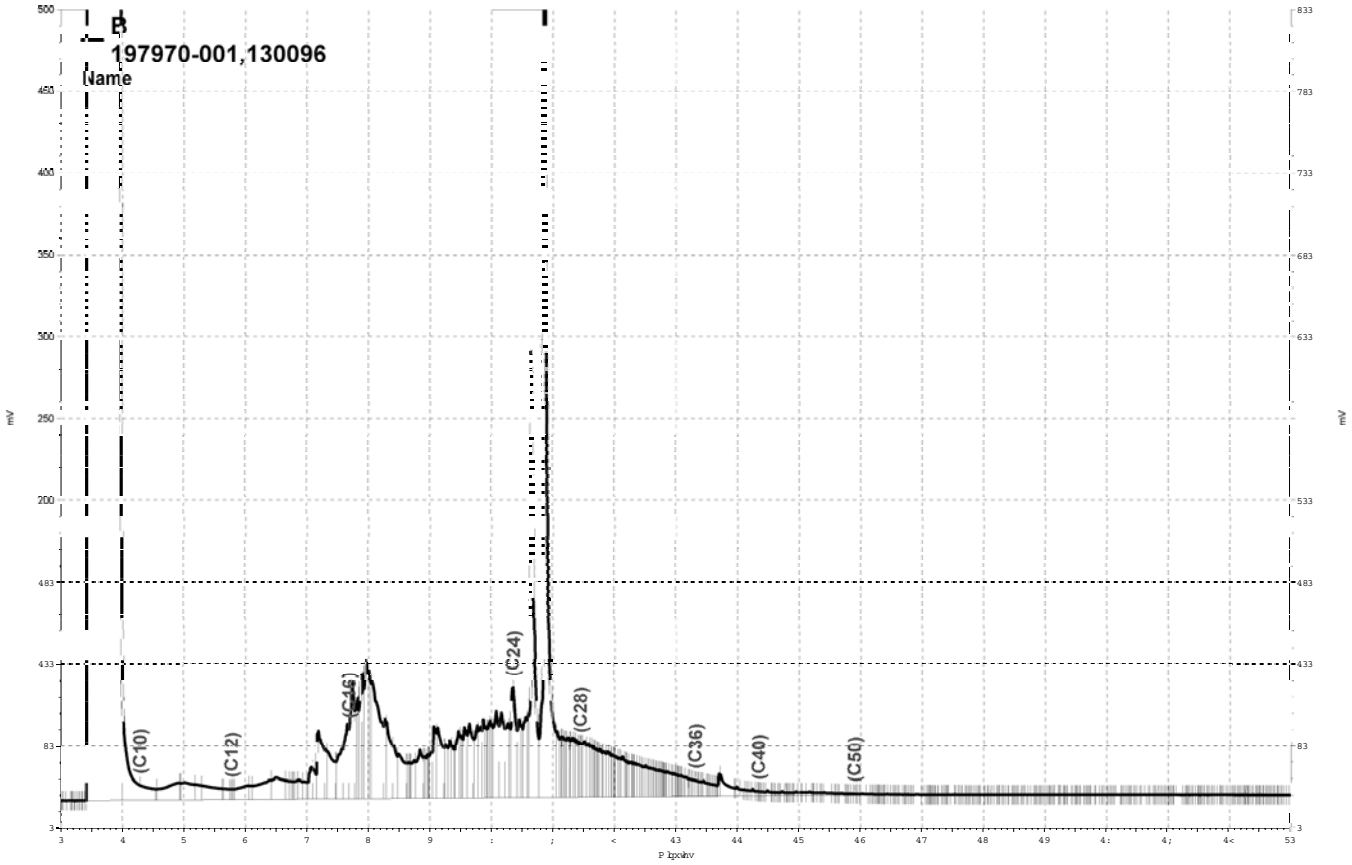
Surrogate	%REC	Limits
Hexacosane (SGCU)	80	61-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC408679

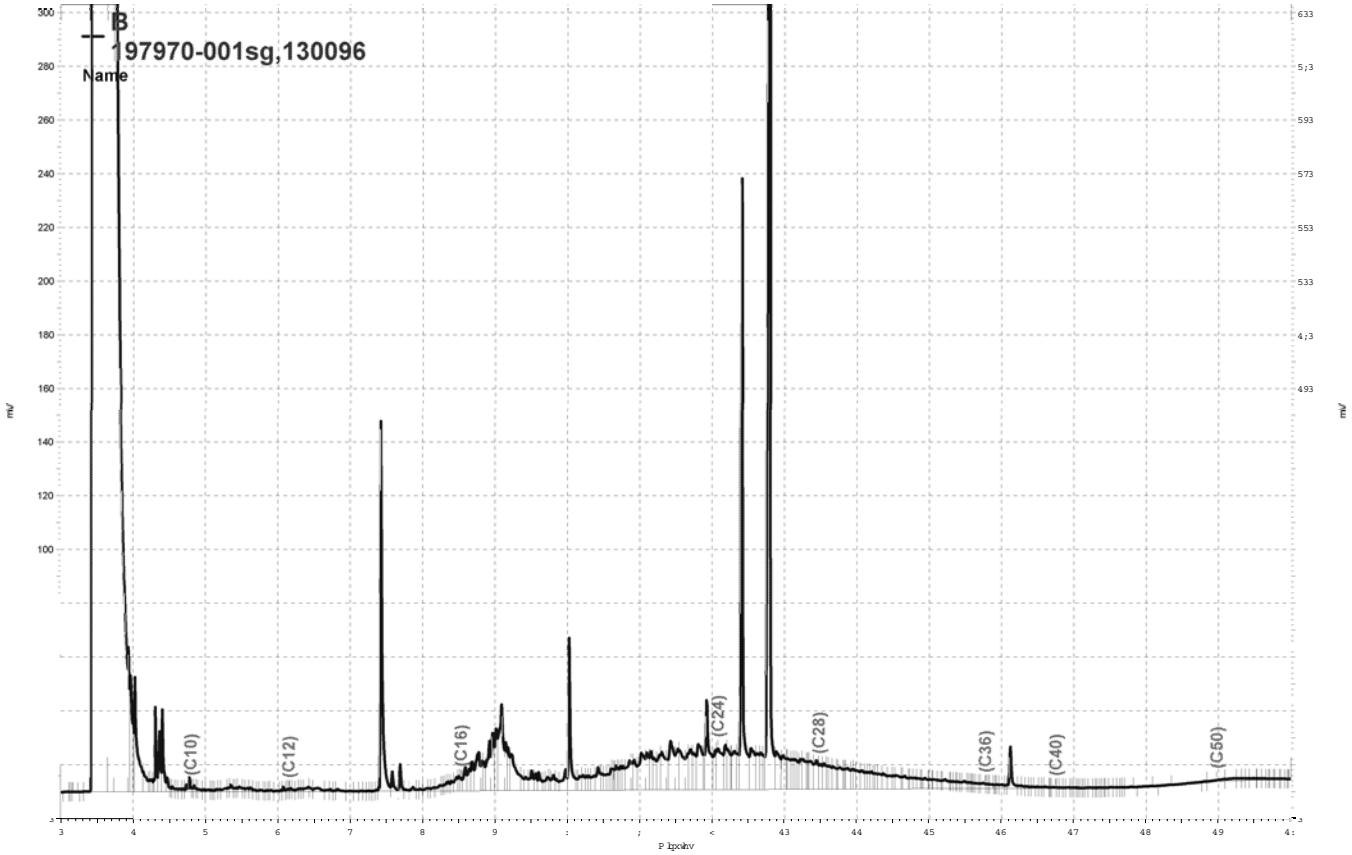
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	2,500	2,464	99	58-128	26	29

Surrogate	%REC	Limits
Hexacosane (SGCU)	103	61-133

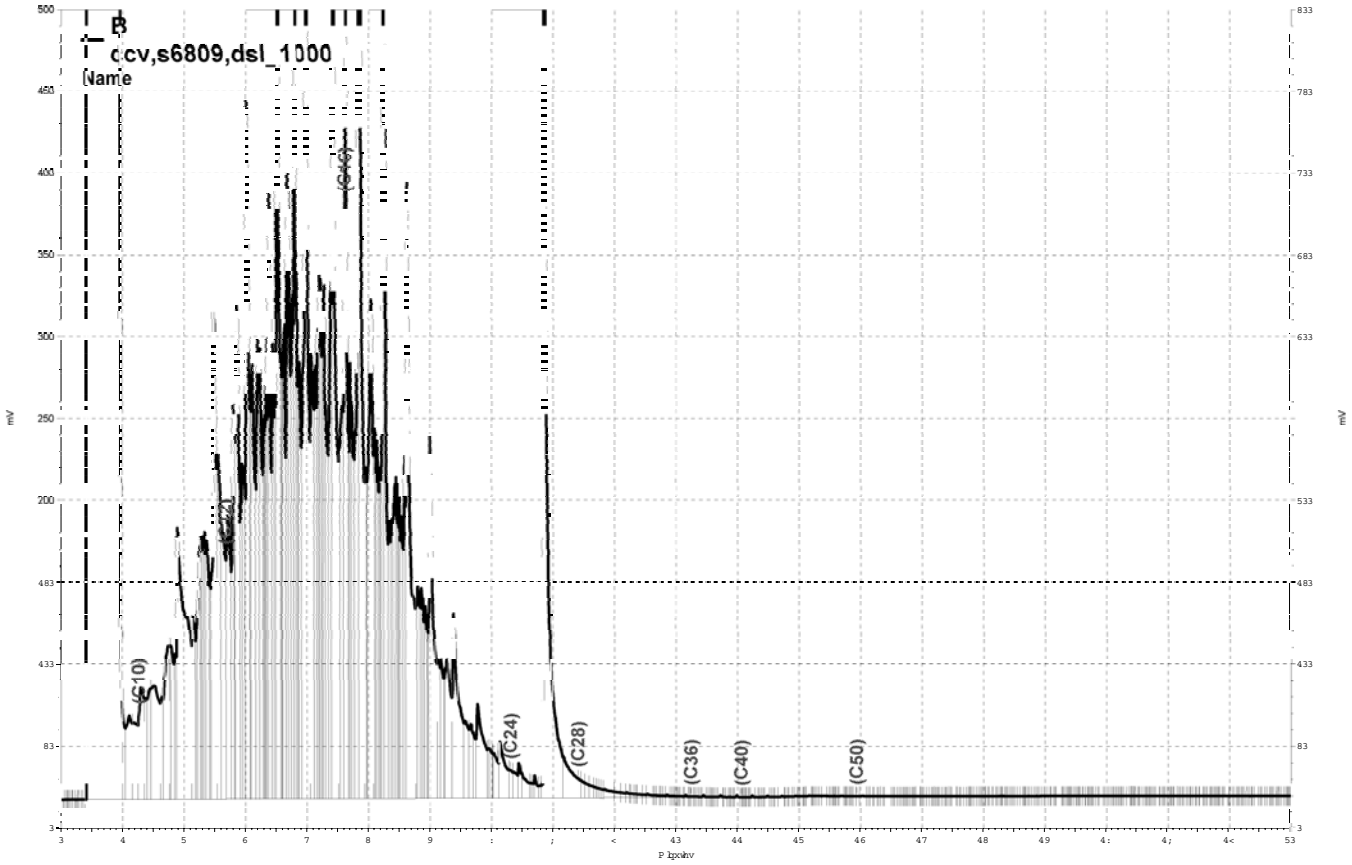
RPD= Relative Percent Difference
SGCU= Silica gel cleanup



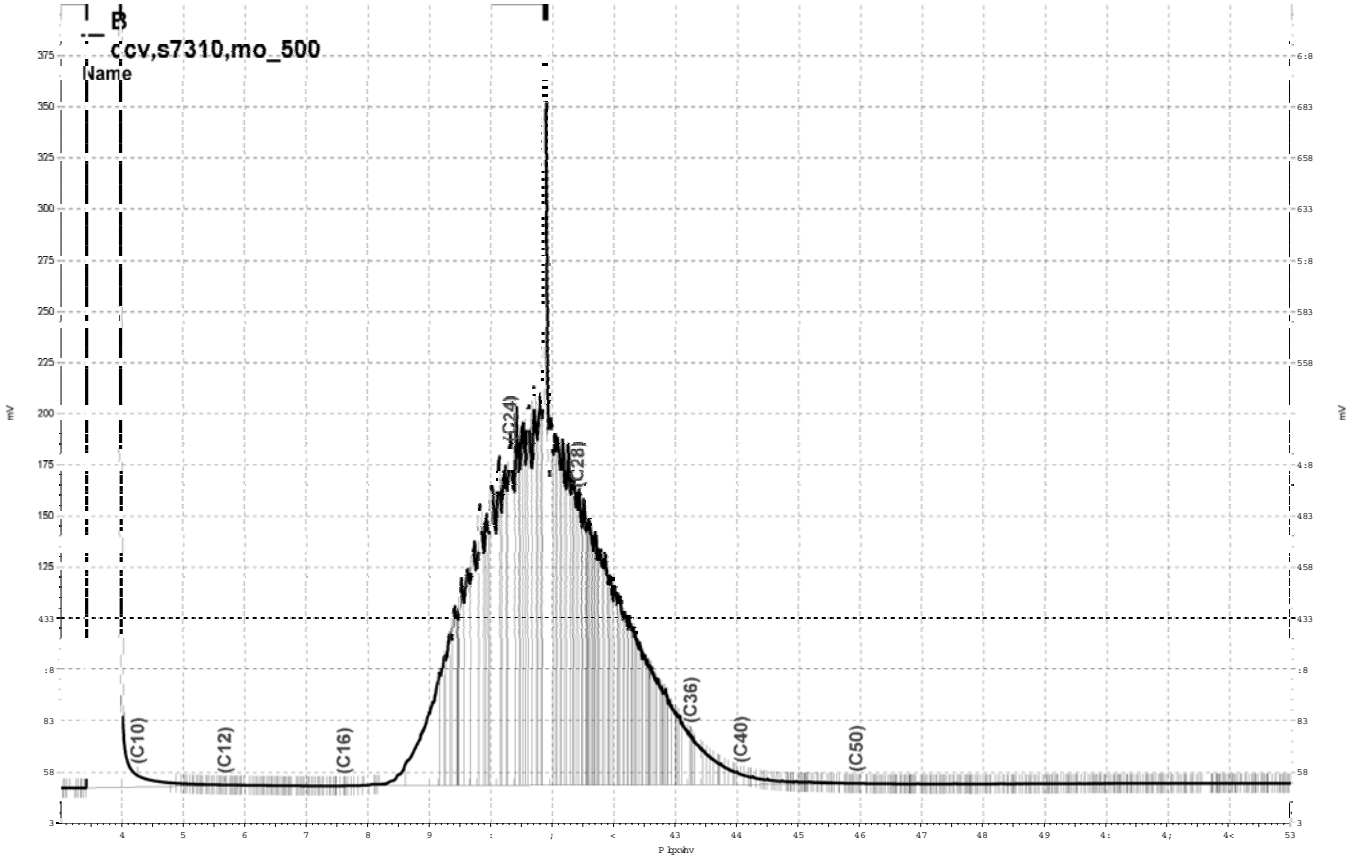
_Olpvjgulyh_h}fkurp_Surmfw_JF48E_Gdwd_5:9e385/E



_Olp v jgulyh h}fkurp _Surmfw J F59 Gdwd 638e34:/E



_Olp v jgulyh h}fkurp _Surmfw J F48E_Gdwd_5:9e353/E



_Olp vjgulyh h}fkurp _Surmfw_J F48E_Gdwd_5:9e354/E

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-12-GW-28	Batch#:	130029
Lab ID:	197970-001	Sampled:	09/28/07
Matrix:	Water	Received:	09/28/07
Units:	ug/L	Analyzed:	10/01/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-12-GW-28	Batch#:	130029
Lab ID:	197970-001	Sampled:	09/28/07
Matrix:	Water	Received:	09/28/07
Units:	ug/L	Analyzed:	10/01/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	119	74-137
Toluene-d8	97	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	130029
Units:	ug/L	Analyzed:	10/01/07
Diln Fac:	1.000		

Type: BS Lab ID: QC408398

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	22.29	89	80-133
Benzene	25.00	22.79	91	80-120
Trichloroethene	25.00	26.27	105	80-120
Toluene	25.00	26.47	106	80-122
Chlorobenzene	25.00	24.14	97	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	118	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	101	80-120

Type: BSD Lab ID: QC408399

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	21.02	84	80-133	6	20
Benzene	25.00	22.33	89	80-120	2	20
Trichloroethene	25.00	25.59	102	80-120	3	20
Toluene	25.00	24.00	96	80-122	10	20
Chlorobenzene	25.00	23.07	92	80-120	5	20

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-122
1,2-Dichloroethane-d4	120	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	103	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408400	Batch#:	130029
Matrix:	Water	Analyzed:	10/01/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408400	Batch#:	130029
Matrix:	Water	Analyzed:	10/01/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	124	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-GW-28	Batch#:	130279
Lab ID:	197970-001	Sampled:	09/28/07
Matrix:	Water	Received:	09/28/07
Units:	ug/L	Prepared:	10/07/07
Diln Fac:	1.000	Analyzed:	10/12/07

Analyte	Result	RL
alpha-BHC	ND b	0.05
beta-BHC	ND b	0.05
gamma-BHC	ND b	0.05
delta-BHC	ND b	0.05
Heptachlor	ND b	0.05
Aldrin	ND b	0.05
Heptachlor epoxide	ND b	0.05
Endosulfan I	ND b	0.05
Dieldrin	ND b	0.1
4,4'-DDE	ND b	0.1
Endrin	ND b	0.1
Endosulfan II	ND b	0.1
Endosulfan sulfate	ND b	0.1
4,4'-DDD	ND b	0.1
Endrin aldehyde	ND b	0.1
4,4'-DDT	ND # b	0.1
alpha-Chlordane	ND b	0.05
gamma-Chlordane	ND b	0.05
Methoxychlor	ND b	0.5
Toxaphene	ND b	1.0

Surrogate	%REC	Limits
TCMX	43 b	43-120
Decachlorobiphenyl	47 b	39-135

#= CCV drift outside limits; average CCV drift within limits per method requirements
b= See narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409446	Batch#:	130279
Matrix:	Water	Prepared:	10/07/07
Units:	ug/L	Analyzed:	10/11/07

Analyte	Result	RL
alpha-BHC	ND	0.05
beta-BHC	ND	0.05
gamma-BHC	ND	0.05
delta-BHC	ND	0.05
Heptachlor	ND	0.05
Aldrin	ND	0.05
Heptachlor epoxide	ND	0.05
Endosulfan I	ND	0.05
Dieldrin	ND	0.1
4,4'-DDE	ND	0.1
Endrin	ND	0.1
Endosulfan II	ND	0.1
Endosulfan sulfate	ND	0.1
4,4'-DDD	ND	0.1
Endrin aldehyde	ND	0.1
4,4'-DDT	ND	0.1
alpha-Chlordane	ND	0.05
gamma-Chlordane	ND	0.05
Methoxychlor	ND	0.5
Toxaphene	ND	1.0

Surrogate	%REC	Limits
TCMX	79	43-120
Decachlorobiphenyl	59	39-135

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409447	Batch#:	130279
Matrix:	Water	Prepared:	10/07/07
Units:	ug/L	Analyzed:	10/11/07

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	0.2000	0.1571	79	64-126
Heptachlor	0.2000	0.1434	72	50-124
Aldrin	0.2000	0.1380	69	48-123
Dieldrin	0.4000	0.3100	78	59-131
Endrin	0.4000	0.3722	93	54-129
4,4'-DDT	0.4000	0.3534	88	39-140

Surrogate	%REC	Limits
TCMX	70	43-120
Decachlorobiphenyl	44	39-135

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	ZZZZZZZZZZ	Batch#:	130279
MSS Lab ID:	198061-003	Sampled:	10/03/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Prepared:	10/07/07
Diln Fac:	1.000	Analyzed:	10/12/07

Type: MS Lab ID: QC409448

Analyte	MSS Result	Spiked	Result	%REC	Limits
gamma-BHC	<0.005430	0.1905	0.1701	89	68-120
Heptachlor	<0.005230	0.1905	0.1618	85	56-120
Aldrin	<0.005225	0.1905	0.1513	79	61-120
Dieldrin	<0.01031	0.3810	0.3229 #	85	59-121
Endrin	<0.01092	0.3810	0.3454	91	65-120
4,4'-DDT	<0.01445	0.3810	0.2898 # b	76	42-126

Surrogate	%REC	Limits
TCMX	81	43-120
Decachlorobiphenyl	48	39-135

Type: MSD Lab ID: QC409449

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
gamma-BHC	0.1905	0.1588	83	68-120	7	30
Heptachlor	0.1905	0.1587	83	56-120	2	33
Aldrin	0.1905	0.1508	79	61-120	0	30
Dieldrin	0.3810	0.3388 #	89	59-121	5	32
Endrin	0.3810	0.3611	95	65-120	4	36
4,4'-DDT	0.3810	0.3216 # b	84	42-126	10	40

Surrogate	%REC	Limits
TCMX	77	43-120
Decachlorobiphenyl	55	39-135

#= CCV drift outside limits; average CCV drift within limits per method requirements
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8082
Field ID:	B-12-GW-28	Sampled:	09/28/07
Matrix:	Water	Received:	09/28/07
Units:	ug/L	Prepared:	10/07/07
Diln Fac:	1.000	Analyzed:	10/11/07
Batch#:	130281		

Type: SAMPLE Cleanup Method: EPA 3665A
Lab ID: 197970-001

Analyte	Result	RL
Aroclor-1016	ND b	0.50
Aroclor-1221	ND b	1.0
Aroclor-1232	ND b	0.50
Aroclor-1242	ND b	0.50
Aroclor-1248	ND b	0.50
Aroclor-1254	ND b	0.50
Aroclor-1260	ND b	0.50

Surrogate	%REC	Limits
TCMX	73 b	54-128
Decachlorobiphenyl	50 b	25-122

Type: BLANK Cleanup Method: EPA 3665A
Lab ID: QC409453

Analyte	Result	RL
Aroclor-1016	ND	0.50
Aroclor-1221	ND	1.0
Aroclor-1232	ND	0.50
Aroclor-1242	ND	0.50
Aroclor-1248	ND	0.50
Aroclor-1254	ND	0.50
Aroclor-1260	ND	0.50

Surrogate	%REC	Limits
TCMX	110	54-128
Decachlorobiphenyl	79	25-122

b= See narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8082
Matrix:	Water	Batch#:	130281
Units:	ug/L	Prepared:	10/07/07
Diln Fac:	1.000	Analyzed:	10/11/07

Type: BS Cleanup Method: EPA 3665A
Lab ID: QC409454

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	5.000	6.108	122	71-140
Aroclor-1260	5.000	6.128	123	68-150

Surrogate	%REC	Limits
TCMX	111	54-128
Decachlorobiphenyl	68	25-122

Type: BSD Cleanup Method: EPA 3665A
Lab ID: QC409455

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	5.000	5.548	111	71-140	10	21
Aroclor-1260	5.000	5.494	110	68-150	11	27

Surrogate	%REC	Limits
TCMX	116	54-128
Decachlorobiphenyl	92	25-122

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	197970	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-12-GW-28	Diln Fac:	1.000
Lab ID:	197970-001	Sampled:	09/28/07
Matrix:	Filtrate	Received:	09/28/07
Units:	ug/L		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	10	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Arsenic	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Barium	140	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Copper	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Lead	ND	3.4	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130230	10/05/07	10/05/07	METHOD	EPA 7470A
Molybdenum	25	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Selenium	ND	10	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Silver	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Thallium	ND	10	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B
Zinc	28	20	130028	10/01/07	10/01/07	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408391	Batch#:	130028
Matrix:	Water	Prepared:	10/01/07
Units:	ug/L	Analyzed:	10/01/07

Analyte	Result	RL
Antimony	ND	10
Arsenic	ND	5.0
Barium	ND	5.0
Beryllium	ND	2.0
Cadmium	ND	5.0
Chromium	ND	5.0
Cobalt	ND	5.0
Copper	ND	5.0
Lead	ND	3.4
Molybdenum	ND	5.0
Nickel	ND	5.0
Selenium	ND	10
Silver	ND	5.0
Thallium	ND	10
Vanadium	ND	5.0
Zinc	ND	20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Water	Batch#:	130028
Units:	ug/L	Prepared:	10/01/07
Diln Fac:	1.000	Analyzed:	10/01/07

Type: BS Lab ID: QC408392

Analyte	Spiked	Result	%REC	Limits
Antimony	500.0	455.3	91	80-120
Arsenic	100.0	95.70	96	80-120
Barium	2,000	1,786	89	80-120
Beryllium	50.00	51.49	103	80-120
Cadmium	50.00	46.43	93	80-120
Chromium	200.0	178.0	89	80-120
Cobalt	500.0	437.7	88	80-120
Copper	250.0	223.2	89	80-120
Lead	100.0	88.14	88	80-120
Molybdenum	400.0	366.1	92	80-120
Nickel	500.0	447.1	89	80-120
Selenium	100.0	95.32	95	80-120
Silver	50.00	45.41	91	80-120
Thallium	100.0	94.91	95	80-120
Vanadium	500.0	452.0	90	80-120
Zinc	500.0	463.5	93	80-120

Type: BSD Lab ID: QC408393

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	443.9	89	80-120	3	20
Arsenic	100.0	91.64	92	80-120	4	20
Barium	2,000	1,719	86	80-120	4	20
Beryllium	50.00	49.60	99	80-120	4	20
Cadmium	50.00	45.12	90	80-120	3	20
Chromium	200.0	173.1	87	80-120	3	20
Cobalt	500.0	421.2	84	80-120	4	20
Copper	250.0	214.9	86	80-120	4	20
Lead	100.0	84.72	85	80-120	4	20
Molybdenum	400.0	356.6	89	80-120	3	20
Nickel	500.0	429.7	86	80-120	4	20
Selenium	100.0	93.39	93	80-120	2	20
Silver	50.00	43.69	87	80-120	4	20
Thallium	100.0	92.92	93	80-120	2	20
Vanadium	500.0	433.5	87	80-120	4	20
Zinc	500.0	444.2	89	80-120	4	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	B-03-GW-7.5	Batch#:	130028
MSS Lab ID:	197961-001	Sampled:	09/27/07
Matrix:	Water	Received:	09/28/07
Units:	ug/L	Prepared:	10/01/07
Diln Fac:	1.000	Analyzed:	10/01/07

Type: MS Lab ID: QC408394

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	<0.9637	500.0	451.7	90	80-120
Arsenic	1.407	100.0	96.66	95	80-127
Barium	473.5	2,000	2,300	91	80-120
Beryllium	0.1753	50.00	52.98	106	80-120
Cadmium	<0.3555	50.00	46.09	92	80-120
Chromium	1.093	200.0	179.3	89	80-120
Cobalt	0.6526	500.0	431.8	86	80-120
Copper	2.108	250.0	226.9	90	80-120
Lead	<1.150	100.0	86.65	87	76-120
Molybdenum	269.6	400.0	643.9	94	80-120
Nickel	37.34	500.0	472.4	87	80-120
Selenium	5.068	100.0	99.50	94	80-128
Silver	<0.7500	50.00	45.85	92	73-122
Thallium	2.322	100.0	93.35	91	78-120
Vanadium	<0.6065	500.0	456.3	91	80-120
Zinc	<3.056	500.0	462.2	92	80-123

Type: MSD Lab ID: QC408395

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	449.1	90	80-120	1	20
Arsenic	100.0	98.87	97	80-127	2	20
Barium	2,000	2,306	92	80-120	0	20
Beryllium	50.00	53.09	106	80-120	0	20
Cadmium	50.00	47.23	94	80-120	2	20
Chromium	200.0	183.7	91	80-120	2	20
Cobalt	500.0	433.2	87	80-120	0	20
Copper	250.0	228.1	90	80-120	1	20
Lead	100.0	88.28	88	76-120	2	20
Molybdenum	400.0	654.2	96	80-120	2	20
Nickel	500.0	474.7	87	80-120	0	20
Selenium	100.0	102.7	98	80-128	3	20
Silver	50.00	46.02	92	73-122	0	20
Thallium	100.0	96.12	94	78-120	3	20
Vanadium	500.0	458.9	92	80-120	1	20
Zinc	500.0	463.5	93	80-123	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	130230
Lab ID:	QC409253	Prepared:	10/05/07
Matrix:	Water	Analyzed:	10/05/07
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130230
Matrix:	Water	Prepared:	10/05/07
Units:	ug/L	Analyzed:	10/05/07
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC409254	5.000	5.460	109	80-120		
BSD	QC409255	5.000	5.390	108	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130230
Field ID:	ZZZZZZZZZZ	Sampled:	10/02/07
MSS Lab ID:	198043-005	Received:	10/02/07
Matrix:	Filtrate	Prepared:	10/05/07
Units:	ug/L	Analyzed:	10/05/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC409260	<0.04502	5.000	5.510	110	79-125		
MSD	QC409261		5.000	5.580	112	79-125	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Field ID:	B-12-GW-28	Batch#:	129995
Matrix:	Water	Sampled:	09/28/07 12:30
Units:	mg/L	Received:	09/28/07

Type	Lab ID	Result	RL	Analyzed
SAMPLE	197970-001	0.39	0.05	09/28/07 17:34
BLANK	QC408263	ND	0.05	09/28/07 10:50

ND= Not Detected
RL= Reporting Limit

2.0

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	197970	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	B-12-GW-28	Batch#:	129995
MSS Lab ID:	197970-001	Sampled:	09/28/07 12:30
Matrix:	Water	Received:	09/28/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC408264		1.000	1.054	105	80-120			1.000	09/28/07 13:33
BSD	QC408265		1.000	1.016	102	80-120	4	20	1.000	09/28/07 13:51
MS	QC408341	0.3897	2.500	2.942	102	80-120			5.000	09/29/07 00:16
MSD	QC408342		2.500	3.062	107	80-120	4	20	5.000	09/29/07 00:34

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

Chain of Custody Record

197970

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 9/27/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier:
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☒ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15 - D
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	Filtered Sample	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
B-12-GW-28	9/28/07	12:30	VOA	GW	3		✓							
			VOA	GW	3					✓				
			1L amber	GW	2				✓					
			250 ml poly	GW	1						✓			
			750ml poly	GW	1	✓		✓						
Trip Blank			VOA	AQ	1									

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Robert U. [illegible]	Weiss Associates	9/28/07	[illegible]	C&T	9/28/07 4:55
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

cold & intact

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates 350 East Middlefield Rd Mountain View, CA 94043	Project : 379-1824-15-2 Level : II

Sample ID	Lab ID
MGM-30	198041-001
MGM-35	198041-002

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/09/2007
Project Manager

Signature: _____ Date: 10/09/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198041**
Client:	**Weiss Associates**
Project:	**379-1824-15-2**
Request Date:	**10/02/07**
Samples Received:	**10/02/07**

This hardcopy data package contains sample and QC results for two water samples, requested for the above referenced project on 10/02/07. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the LCS/MS/MSD for batch 130204. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198041	Prep:	EPA 5030B
Client:	Weiss Associates	Analysis:	EPA 8015B
Project#:	379-1824-15-2		
Matrix:	Water	Batch#:	130204
Units:	ug/L	Sampled:	10/01/07
Diln Fac:	1.000	Received:	10/02/07

Field ID:	MGM-30	Lab ID:	198041-001
Type:	SAMPLE	Analyzed:	10/05/07

Analyte	Result	RL
Gasoline C7-C12	65 Y	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	114	73-134
Bromofluorobenzene (FID)	114	77-140

Field ID:	MGM-35	Lab ID:	198041-002
Type:	SAMPLE	Analyzed:	10/05/07

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	106	73-134
Bromofluorobenzene (FID)	95	77-140

Type:	BLANK	Analyzed:	10/04/07
Lab ID:	QC409145		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	106	73-134
Bromofluorobenzene (FID)	101	77-140

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198041	Prep:	EPA 5030B
Client:	Weiss Associates	Analysis:	EPA 8015B
Project#:	379-1824-15-2		
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409147	Batch#:	130204
Matrix:	Water	Analyzed:	10/04/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,916	96	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	145 *	73-134
Bromofluorobenzene (FID)	134	77-140

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198041	Prep:	EPA 5030B
Client:	Weiss Associates	Analysis:	EPA 8015B
Project#:	379-1824-15-2		
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	198025-001	Batch#:	130204
Matrix:	Water	Sampled:	10/02/07
Units:	ug/L	Received:	10/02/07

Type: MS Analyzed: 10/04/07
Lab ID: QC409148

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	16.39	2,000	1,786	88	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	147 *	73-134
Bromofluorobenzene (FID)	146 *	77-140

Type: MSD Analyzed: 10/05/07
Lab ID: QC409149

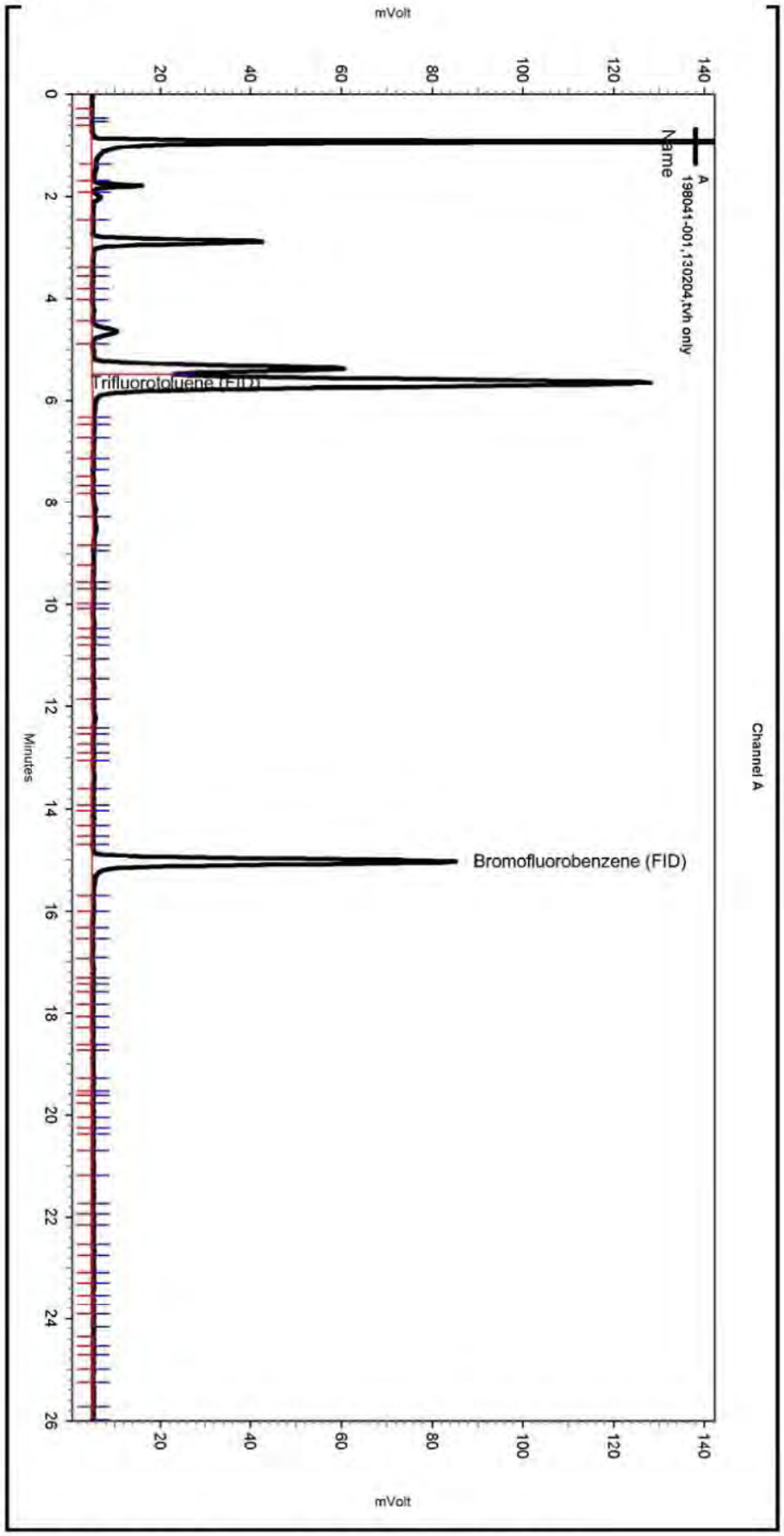
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,889	93	72-120	6	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	151 *	73-134
Bromofluorobenzene (FID)	152 *	77-140

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Sequence File: **\\Lims\gdrive\ezchrom\Projects\GC05\Sequence\277.seq**
Sample Name: **198041-001,130204,tvh only**
Data File: **\\Lims\gdrive\ezchrom\Projects\GC05\Data\277_012**
Instrument: GC05 (Offline) Vial: N/A Operator: Tvh 1, Analyst (lims2k3\tvh1)
Method Name: \\Lims\gdrive\ezchrom\Projects\GC05\Method\tvhbtxe264.met

Software Version 3.1.7
Run Date: 10/5/2007 8:08:00 AM
Analysis Date: 10/5/2007 10:28:46 AM
Sample Amount: 5 Multiplier: 5
Vial & pH or Core ID: a1.3



—< General Method Parameters >—

No items selected for this section

—< A >—

No items selected for this section

Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

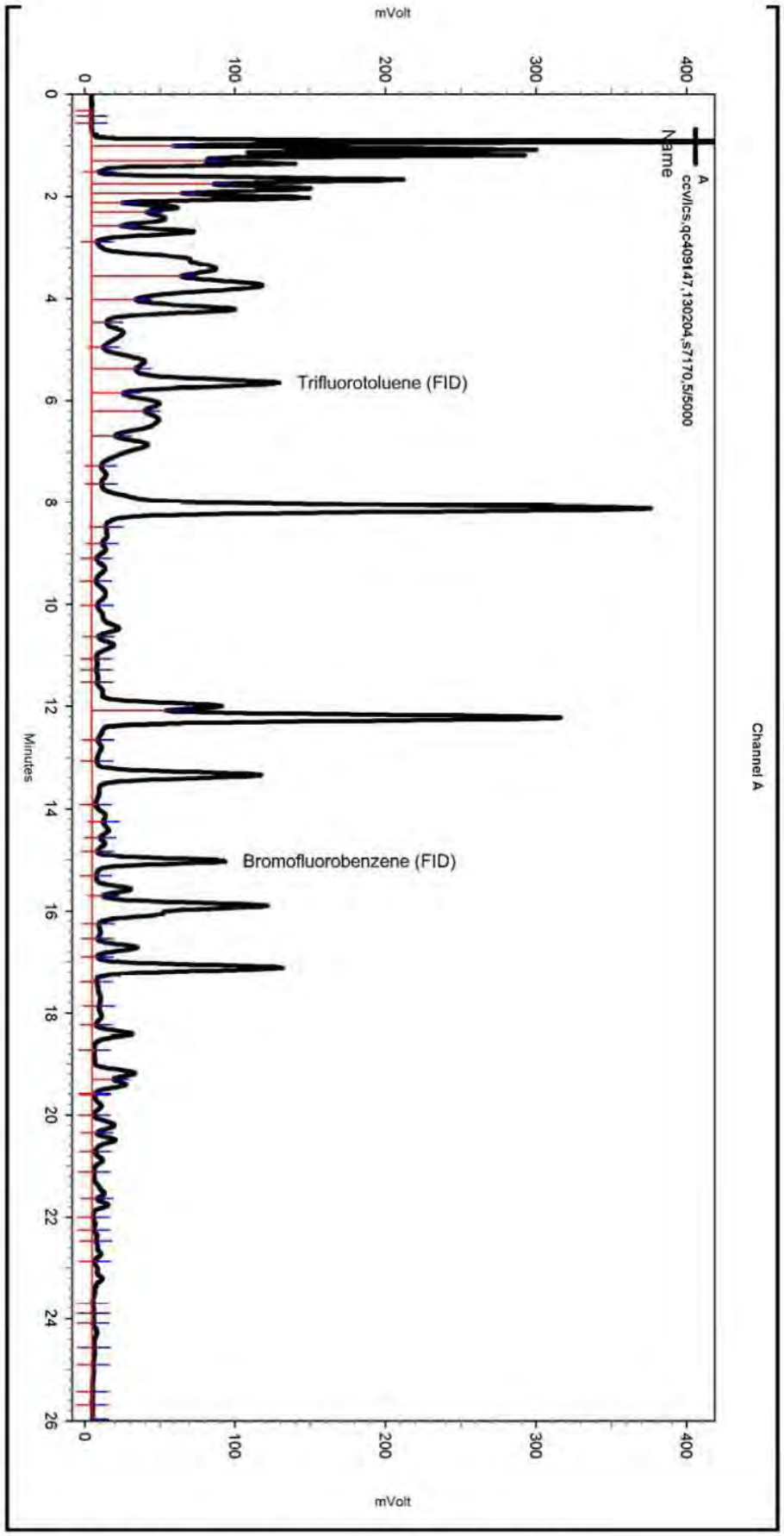
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\277_012

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
None				

Sequence File: **\\Lims\gdrive\ezchrom\Projects\GC05\Sequence\277.seq**
Sample Name: **ccv/lcs,qc409147,130204,s7170,5/5000**
Data File: **\\Lims\gdrive\ezchrom\Projects\GC05\Data\277_003**
Instrument: GC05 (Offline) Vial: N/A Operator: Tvh 1, Analyst (lims2k3\tvh1)
Method Name: \\Lims\gdrive\ezchrom\Projects\GC05\Method\tvhbtxe264.met

Software Version 3.1.7
Run Date: 10/4/2007 3:27:02 PM
Analysis Date: 10/5/2007 10:28:01 AM
Sample Amount: 5 Multiplier: 5
Vial & pH or Core ID: {Data Description}



—< General Method Parameters >—

No items selected for this section

—< A >—

No items selected for this section

Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\277_003

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value

None

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198041	Prep:	EPA 3520C
Client:	Weiss Associates	Analysis:	EPA 8015B
Project#:	379-1824-15-2		
Matrix:	Water	Sampled:	10/01/07
Units:	ug/L	Received:	10/02/07
Diln Fac:	1.000	Prepared:	10/04/07
Batch#:	130202		

Field ID:	MGM-30	Lab ID:	198041-001
Type:	SAMPLE	Analyzed:	10/05/07

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	ND	300	56

Surrogate	%REC	Limits
Hexacosane	96	61-133

Field ID:	MGM-35	Lab ID:	198041-002
Type:	SAMPLE	Cleanup Method:	EPA 3630C

Analyte	Result	RL	MDL	Analyzed
Diesel C10-C24	160 Y	50		10/05/07
Diesel C10-C24 (SGCU)	ND	50		11/01/07
Motor Oil C24-C36	150 J	300	56	10/05/07
Motor Oil C24-C36 (SGCU)	ND	300	130	11/01/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	103	61-133	10/05/07
Hexacosane (SGCU)	91	61-133	11/01/07

Type:	BLANK	Analyzed:	10/05/07
Lab ID:	QC409139	Cleanup Method:	EPA 3630C

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Diesel C10-C24 (SGCU)	ND	50	
Motor Oil C24-C36	ND	300	56
Motor Oil C24-C36 (SGCU)	ND	300	85

Surrogate	%REC	Limits
Hexacosane	103	61-133
Hexacosane (SGCU)	115	61-133

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198041	Prep:	EPA 3520C
Client:	Weiss Associates	Analysis:	EPA 8015B
Project#:	379-1824-15-2		
Matrix:	Water	Batch#:	130202
Units:	ug/L	Prepared:	10/04/07
Diln Fac:	1.000	Analyzed:	10/05/07

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC409140

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	2,500	2,621	105	58-128

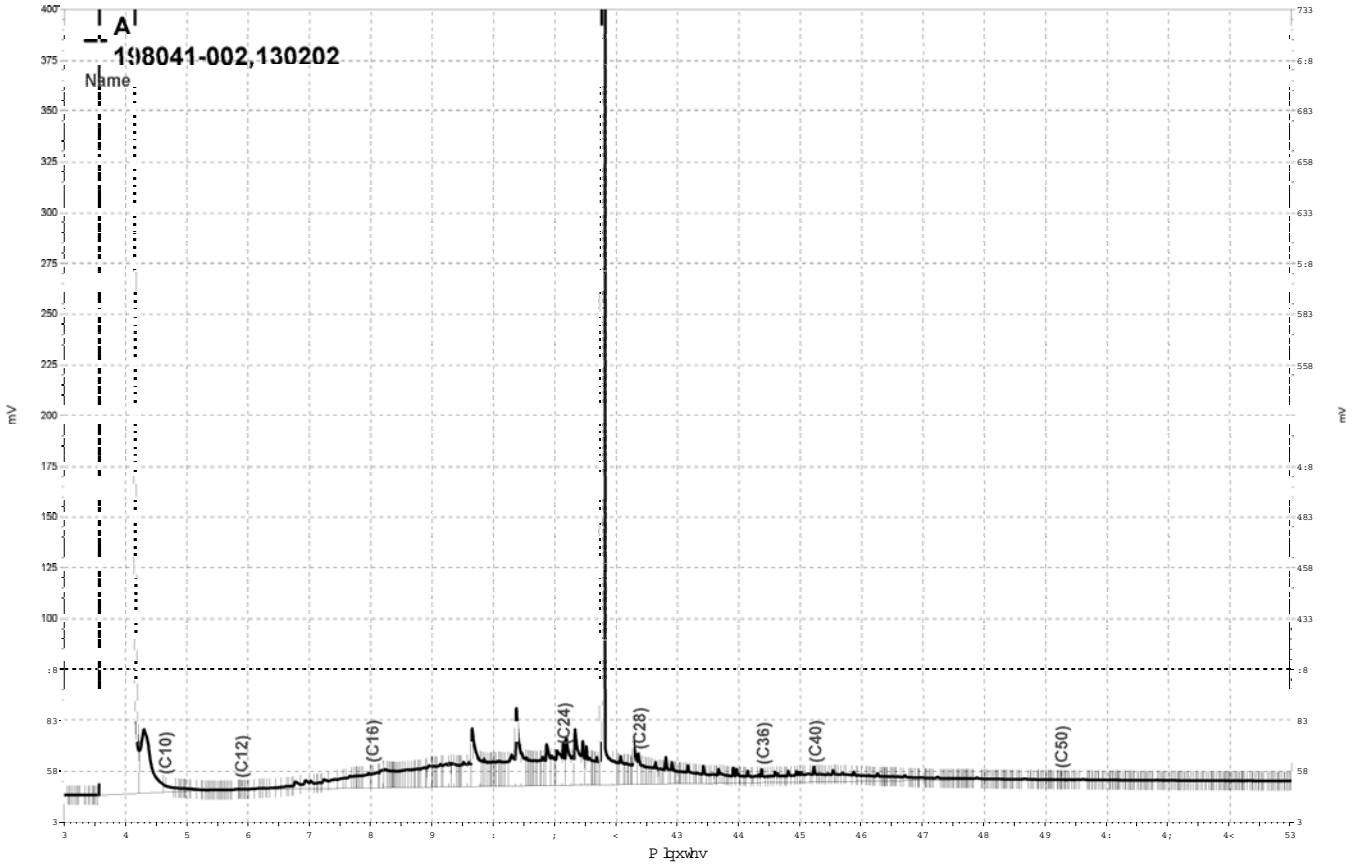
Surrogate	%REC	Limits
Hexacosane (SGCU)	115	61-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC409141

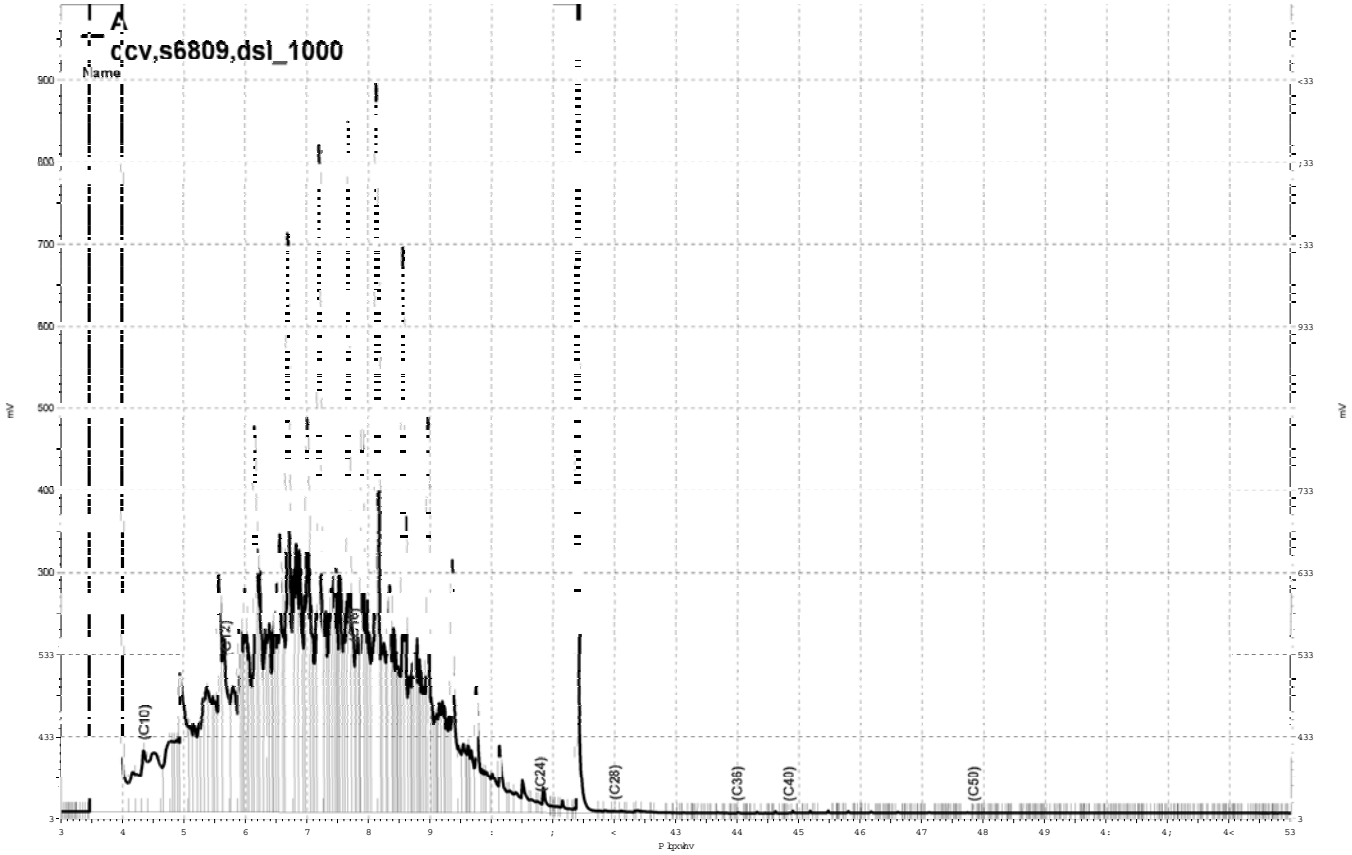
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	2,500	2,425	97	58-128	8	29

Surrogate	%REC	Limits
Hexacosane (SGCU)	107	61-133

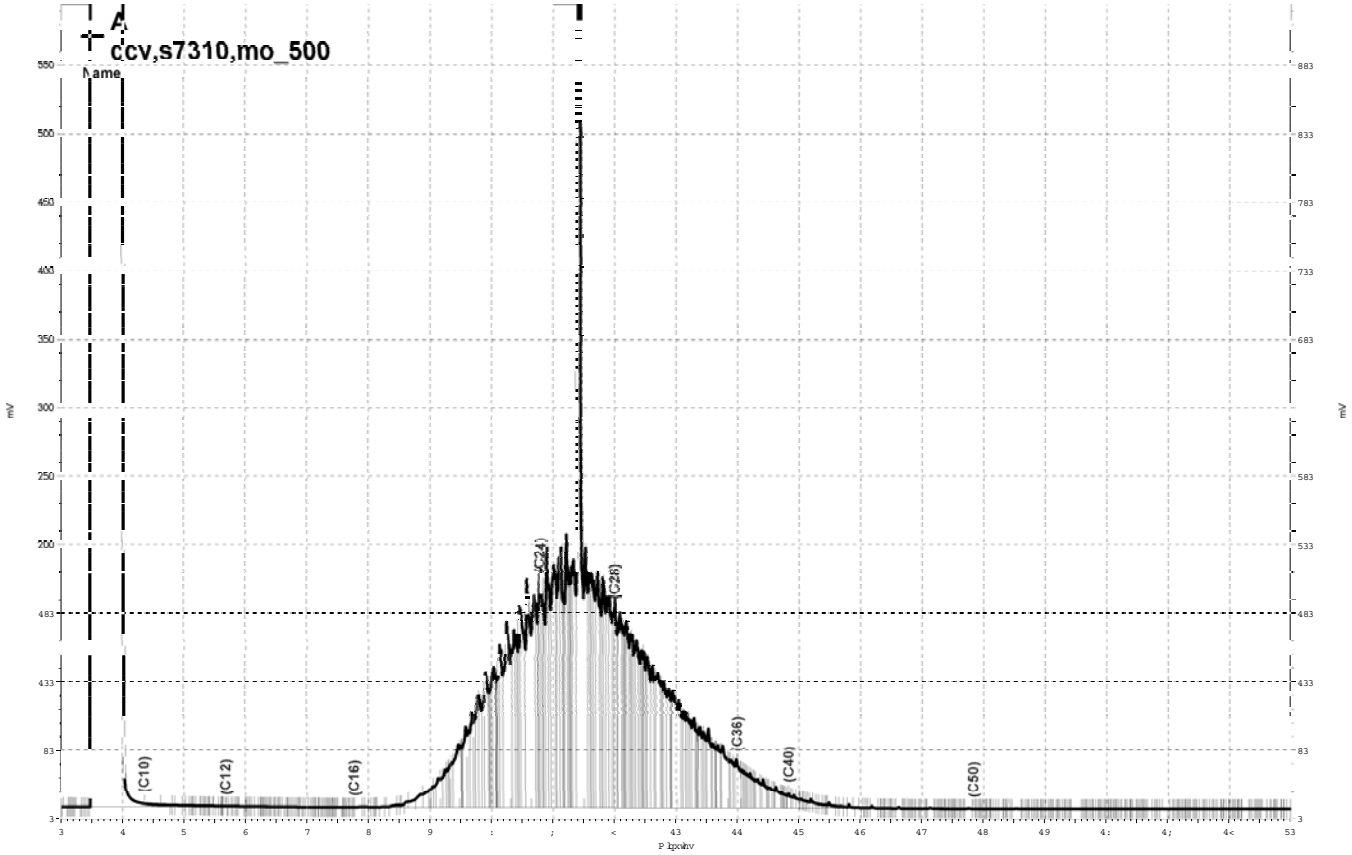
RPD= Relative Percent Difference
SGCU= Silica gel cleanup



_Olpvjgulyh_h}fkurp_Surmfwr_JF4:D_Gdwd_5::d37:/D



_Olp v jgulyh h}fkurp _Surmfwr J F44D_Gdwd_5::d36;/D



_Olp v jgulyh h}fkurp _Surmnfw J F44D_Gdwd_5::d36</D

198041

Weiss Associates
Environmental Science, Engineering and Management Services
5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043
A geoTherm Associates Incorporated, DBA

Please send analytic results, EDD, EDF, and the original chain-of-custody form to:
Joyce Adams (jea@weiss.com)

Project ID: 379--1824--15-2
Protocol No.: 1824-100107

INSTRUCTIONS FOR LAB PERSONNEL:
GeoTracker EDF required? ☐ Yes ☒ No
Include laboratory QA/QC data with report.
Specify analytic/prep method and detection limit in report.
Notify us of any anomalous peaks in GC or other scans.
Call immediately with any questions or problems.

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: CMC Laboratory Name: C & T Berkeley Site Name: Perry Johnson

Sample ID	Sample Date	Sample Time	# of Con-tainers	Sample/ Container Type[1]	Volume	Preser-vative?	Filter? 2	Refrig? 3	Turn 4	Analyze for	Analytical Method	Special Instructions
MGM-30	10/01/07	1130	2	W/A	1 L	none	N	Y	N	TPH-D/TPH-MO	8015M	Petroleum Hydrocarbons in the diesel-motor oil range
MGM-30	↓	1130	~~2~~ 3	VOAs	40 ml	HCL	N	Y	N	TPH-G	8015M	
MGM-35	↓	0942	2	W/A	1 L	none	N	Y	N	TPH-D/TPH-MO	8015M	Petroleum Hydrocarbons in the diesel-motor oil range
MGM-35	↓	0942	~~2~~ 3	VOAs	40 ml	HCL	N	Y	N	TPH-G	8015M	
MGM-40			2	W/A	1 L	none	N	Y	N	TPH-D/TPH-MO	8015M	Petroleum Hydrocarbons in the diesel-motor oil range
MGM-40			2	VOAs	40 ml	HCL	N	Y	N	TPH-G	8015M	

1 Released by (Signature), Date, Time: 10/01/07 1600 ☒
1 (Affiliation): WA
3 Released by (Signature), Date, Time: ☐
3 (Affiliation):
5 Released by (Signature), Date, Time: ☐
5 (Affiliation):

2 Received by (Signature), Date, Time: 10/2/07 1830 ☐
2 (Affiliation): C&T
4 Received by (Signature), Date, Time: ☐
4 (Affiliation):
6 Received by (Signature), Date, Time: ☐
6 (Affiliation):

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
2 = Filtered (Y/N)
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

Other instructions:

Page _____ **of** _____

intact cold
RG

J:\CASTROL\0597\Protocols\2005\379-1824_100207_protocol.xls\COC (1)

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 198041 Date Received: 10-2-07 Number of Coolers: 1
Client: Weiss Project: Perry Johnson

A. Preliminary Examination Phase
Date Opened: 10-2-07 By (print): Faith Nichols (sign) [signature]

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)
   If YES, enter carrier name and airbill number: _____
2. Were custody seals on outside of cooler? ..... YES (NO)
   How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO N/A
4. Were custody papers dry and intact when received? ..... (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO
6. Did you sign the custody papers in the appropriate place? ..... (YES) NO
7. Was project identifiable from custody papers? ..... (YES) NO
   If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: Ziploc bags
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... (YES) NO
   Type of ice: Wet Temperature: No temp blank, All on ice
10. Were Encore sampling devices present in the cooler? ..... YES (NO)
    If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10-2-07 By (print): Troy Windsor (sign) [signature]

1. Did all bottles arrive unbroken? ..... (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... (YES) NO
3. Did bottle labels agree with custody papers? ..... (YES) NO
4. Were appropriate containers used for the tests indicated? ..... (YES) NO
5. Were correct preservatives added to samples? ..... (YES) NO
6. Was sufficient amount of sample sent for tests indicated? ..... (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below ..... (YES) NO
8. Was the client contacted concerning this sample delivery? ..... YES NO
   If YES, give details below.
   Who was called? _____ By whom? _____ Date: _____

Additional Comments:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates 5801 Christie Avenue Emeryville, CA 94608	Project : 379-1827-15-02 Location : Cloverdale Project Level : II

Sample ID	Lab ID
B-12-SS-42'	198049-001
B-12-SS-0.0'	198049-002
B-12-GW-33'	198049-003
B-10-SS-0.0'	198049-004
B-10-SS-45'	198049-005
B-10-GW-27.5'	198049-006
B-10-GW-45'	198049-007
TRIP BLANK	198049-008

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/24/2007
Project Manager

Signature: _____ Date: 10/25/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198049**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/03/07, 10/05/07**
Samples Received:	**10/03/07**

This hardcopy data package contains sample and QC results for four soil samples and four water samples, requested for the above referenced project on 10/03/07 and 10/05/07. The samples were received intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:
High surrogate recoveries were observed for trifluorotoluene (FID) in the MS/MSD for batch 130252; the corresponding bromofluorobenzene (FID) surrogate recoveries were within limits, and the parent sample was not a project sample. No other analytical problems were encountered.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Soil:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Water:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Soil:
Low recoveries were observed for toluene and chlorobenzene in the MSD of B-10-SS-0.0' (lab # 198049-004); the LCS was within limits. High RPD was observed for benzene and trichloroethene in the MS/MSD of B-10-SS-0.0' (lab # 198049-004); these analytes were not detected at or above the RL in the associated samples. No other analytical problems were encountered.

Pesticides (EPA 8081A) Water:
High ICAL percent RSD (relative standard deviation) was observed for 4,4'-DDT in the calibration analyzed 10/10/07 15:50; average ICAL %RSD met method requirements, and affected data was qualified with "b". No other analytical problems were encountered.

Pesticides (EPA 8081A) Soil:
No analytical problems were encountered.

Polychlorinated Biphenyls (PCBs) (EPA 8082) Water:
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198049**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/03/07, 10/05/07**
Samples Received:	**10/03/07**

Polychlorinated Biphenyls (PCBs) (EPA 8082) Soil:
No analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A) Soil:
High recovery was observed for zinc in the MSD for batch 130163; the parent sample was not a project sample, the BS/BSD were within limits, and the associated RPD was within limits. No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7470A) Filtrate:
No analytical problems were encountered.

Ion Chromatography (EPA 300.0) Water:
No analytical problems were encountered.

Ion Chromatography (EPA 300.0) Soil:
No analytical problems were encountered.

Asbestos PLM (EPA 600/R-93-116):
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130252
Units:	ug/L	Received:	10/03/07
Diln Fac:	1.000		

Field ID:	B-12-GW-33'	Sampled:	10/01/07
Type:	SAMPLE	Analyzed:	10/06/07
Lab ID:	198049-003		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	73-134
Bromofluorobenzene (FID)	98	77-140

Field ID:	B-10-GW-27.5'	Sampled:	10/01/07
Type:	SAMPLE	Analyzed:	10/06/07
Lab ID:	198049-006		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	78	73-134
Bromofluorobenzene (FID)	81	77-140

Field ID:	B-10-GW-45'	Sampled:	10/02/07
Type:	SAMPLE	Analyzed:	10/06/07
Lab ID:	198049-007		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	73-134
Bromofluorobenzene (FID)	97	77-140

Type:	BLANK	Analyzed:	10/05/07
Lab ID:	QC409338		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	73-134
Bromofluorobenzene (FID)	95	77-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409339	Batch#:	130252
Matrix:	Water	Analyzed:	10/05/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	970.2	97	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	127	73-134
Bromofluorobenzene (FID)	103	77-140

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130252
MSS Lab ID:	197934-009	Sampled:	09/27/07
Matrix:	Water	Received:	09/27/07
Units:	ug/L	Analyzed:	10/05/07
Diln Fac:	1.000		

Type: MS Lab ID: QC409340

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	18.39	2,000	1,837	91	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	143 *	73-134
Bromofluorobenzene (FID)	107	77-140

Type: MSD Lab ID: QC409341

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,872	93	72-120	2	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	145 *	73-134
Bromofluorobenzene (FID)	111	77-140

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130246
Units:	mg/Kg	Sampled:	10/01/07
Basis:	as received	Received:	10/03/07
Diln Fac:	1.000		

Field ID:	B-12-SS-42'	Lab ID:	198049-001
Type:	SAMPLE	Analyzed:	10/06/07

Analyte	Result	RL
Gasoline C7-C12	ND	0.96

Surrogate	%REC	Limits
Trifluorotoluene (FID)	97	71-132
Bromofluorobenzene (FID)	95	69-145

Field ID:	B-12-SS-0.0'	Lab ID:	198049-002
Type:	SAMPLE	Analyzed:	10/06/07

Analyte	Result	RL
Gasoline C7-C12	ND	0.94

Surrogate	%REC	Limits
Trifluorotoluene (FID)	86	71-132
Bromofluorobenzene (FID)	97	69-145

Field ID:	B-10-SS-0.0'	Lab ID:	198049-004
Type:	SAMPLE	Analyzed:	10/06/07

Analyte	Result	RL
Gasoline C7-C12	ND	0.95

Surrogate	%REC	Limits
Trifluorotoluene (FID)	91	71-132
Bromofluorobenzene (FID)	99	69-145

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130246
Units:	mg/Kg	Sampled:	10/01/07
Basis:	as received	Received:	10/03/07
Diln Fac:	1.000		

Field ID:	B-10-SS-45'	Lab ID:	198049-005
Type:	SAMPLE	Analyzed:	10/06/07

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	94	71-132
Bromofluorobenzene (FID)	100	69-145

Type:	BLANK	Analyzed:	10/05/07
Lab ID:	QC409318		

Analyte	Result	RL
Gasoline C7-C12	ND	0.20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	88	71-132
Bromofluorobenzene (FID)	95	69-145

ND= Not Detected
RL= Reporting Limit

37.0

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC409320	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130246
Units:	mg/Kg	Analyzed:	10/05/07

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	5.000	5.059	101	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	71-132
Bromofluorobenzene (FID)	99	69-145

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	197959-002	Batch#:	130246
Matrix:	Soil	Sampled:	09/28/07
Units:	mg/Kg	Received:	09/28/07
Basis:	as received	Analyzed:	10/06/07

Type: MS Lab ID: QC409321

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.2565	10.10	7.144	68	43-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	71-132
Bromofluorobenzene (FID)	98	69-145

Type: MSD Lab ID: QC409322

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.10	6.202	59	43-120	14	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	97	71-132
Bromofluorobenzene (FID)	97	69-145

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130235
Units:	ug/L	Received:	10/03/07
Diln Fac:	1.000	Prepared:	10/05/07

Field ID:	B-12-GW-33'	Sampled:	10/01/07
Type:	SAMPLE	Cleanup Method:	EPA 3630C
Lab ID:	198049-003		

Analyte	Result	RL	MDL	Analyzed
Diesel C10-C24	110 Y	50		10/08/07
Diesel C10-C24 (SGCU)	58 Y	50		11/01/07
Motor Oil C24-C36	120 J	300	64	10/08/07
Motor Oil C24-C36 (SGCU)	ND	300	130	11/01/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	116	61-133	10/08/07
Hexacosane (SGCU)	103	61-133	11/01/07

Field ID:	B-10-GW-27.5'	Sampled:	10/01/07
Type:	SAMPLE	Analyzed:	10/08/07
Lab ID:	198049-006		

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	ND	300	64

Surrogate	%REC	Limits
Hexacosane	115	61-133

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130235
Units:	ug/L	Received:	10/03/07
Diln Fac:	1.000	Prepared:	10/05/07

Field ID:	B-10-GW-45'	Sampled:	10/02/07
Type:	SAMPLE	Analyzed:	10/08/07
Lab ID:	198049-007		

Analyte	Result	RL	MDL
Diesel C10-C24	52 Y	50	
Motor Oil C24-C36	ND	300	85

Surrogate	%REC	Limits
Hexacosane	106	61-133

Type:	BLANK	Analyzed:	10/08/07
Lab ID:	QC409284	Cleanup Method:	EPA 3630C

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Diesel C10-C24 (SGCU)	ND	50	
Motor Oil C24-C36	ND	300	64
Motor Oil C24-C36 (SGCU)	ND	300	85

Surrogate	%REC	Limits
Hexacosane	120	61-133
Hexacosane (SGCU)	104	61-133

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130235
Units:	ug/L	Prepared:	10/05/07
Diln Fac:	1.000	Analyzed:	10/08/07

Type: BS
Lab ID: QC409285
Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	2,500	2,649	106	58-128

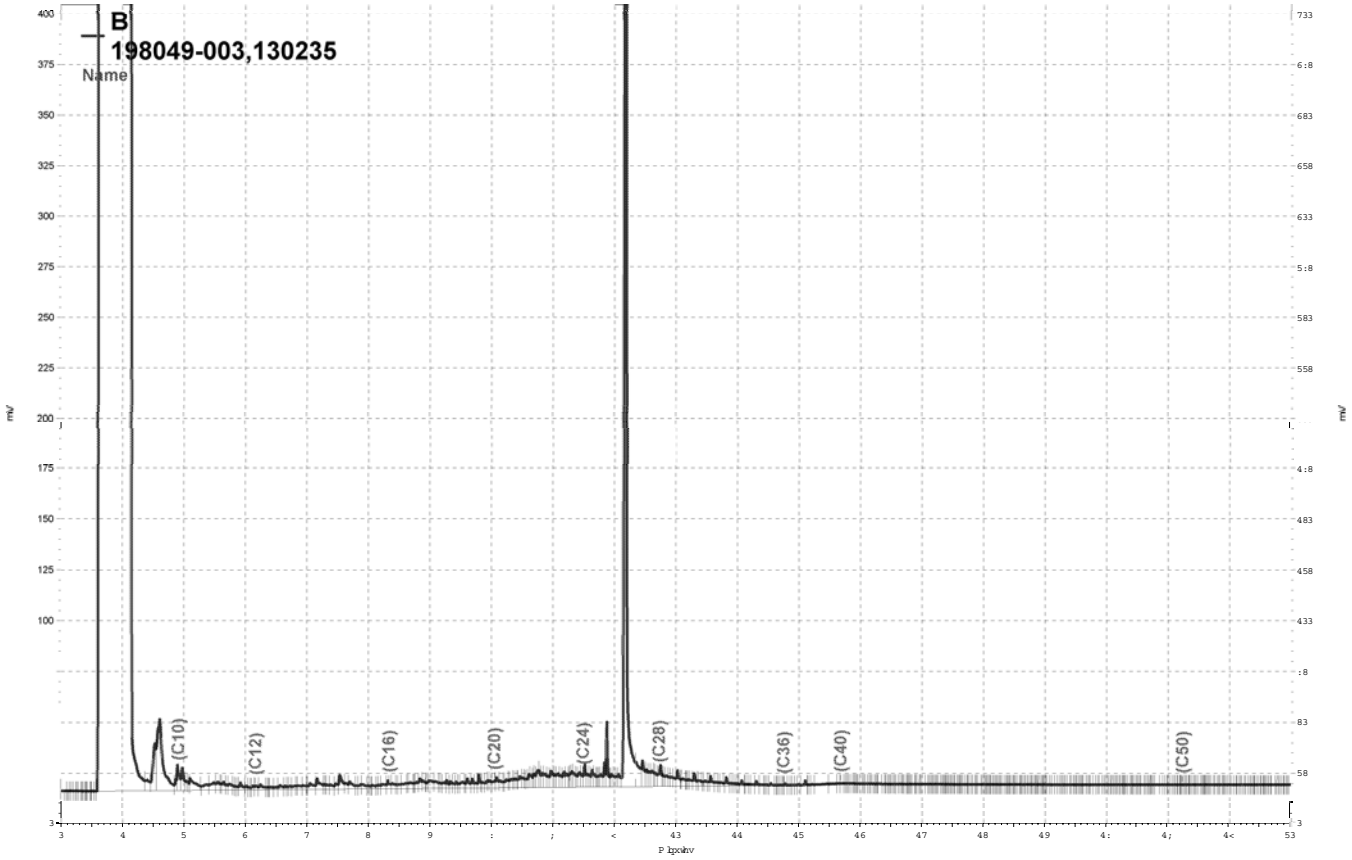
Surrogate	%REC	Limits
Hexacosane (SGCU)	110	61-133

Type: BSD
Lab ID: QC409286
Cleanup Method: EPA 3630C

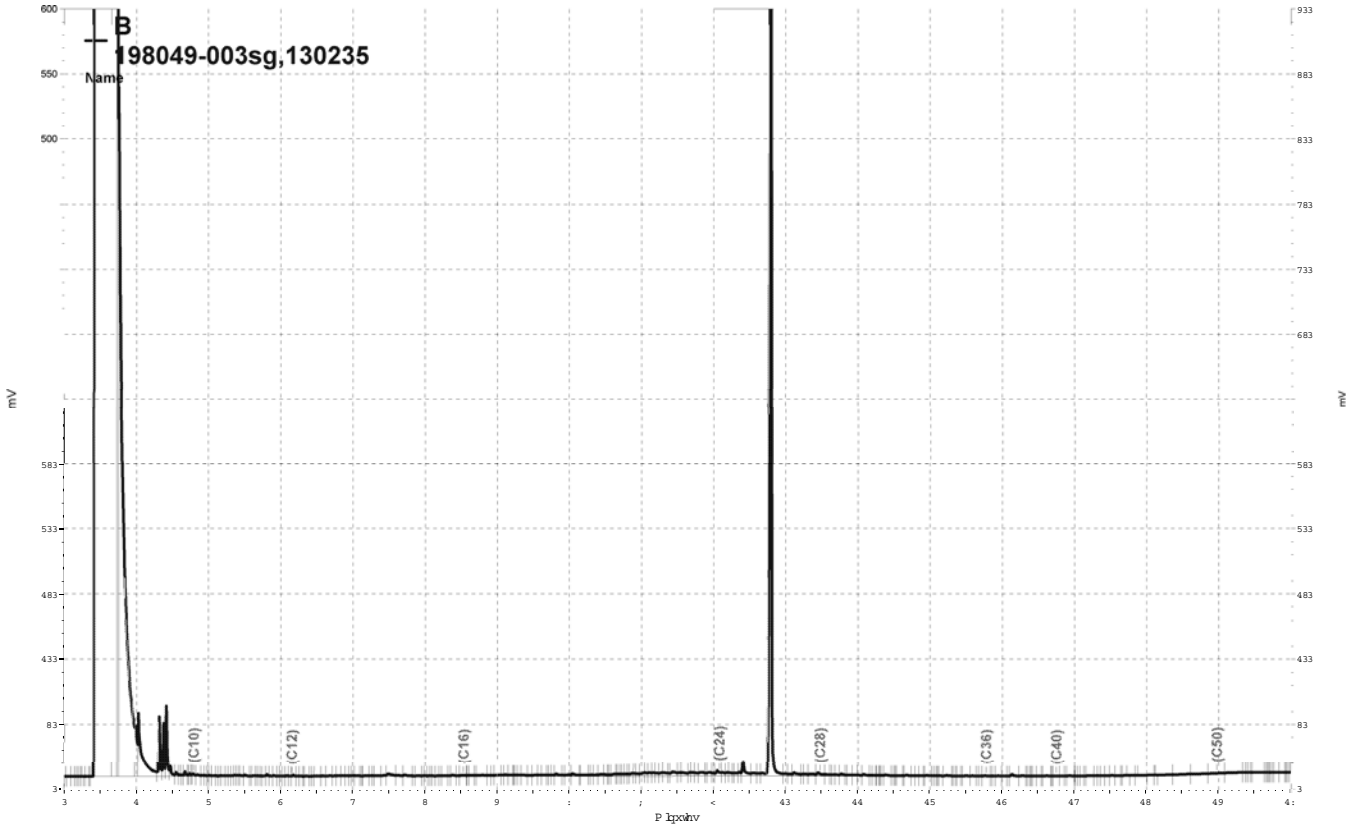
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	2,500	2,235	89	58-128	17	29

Surrogate	%REC	Limits
Hexacosane (SGCU)	94	61-133

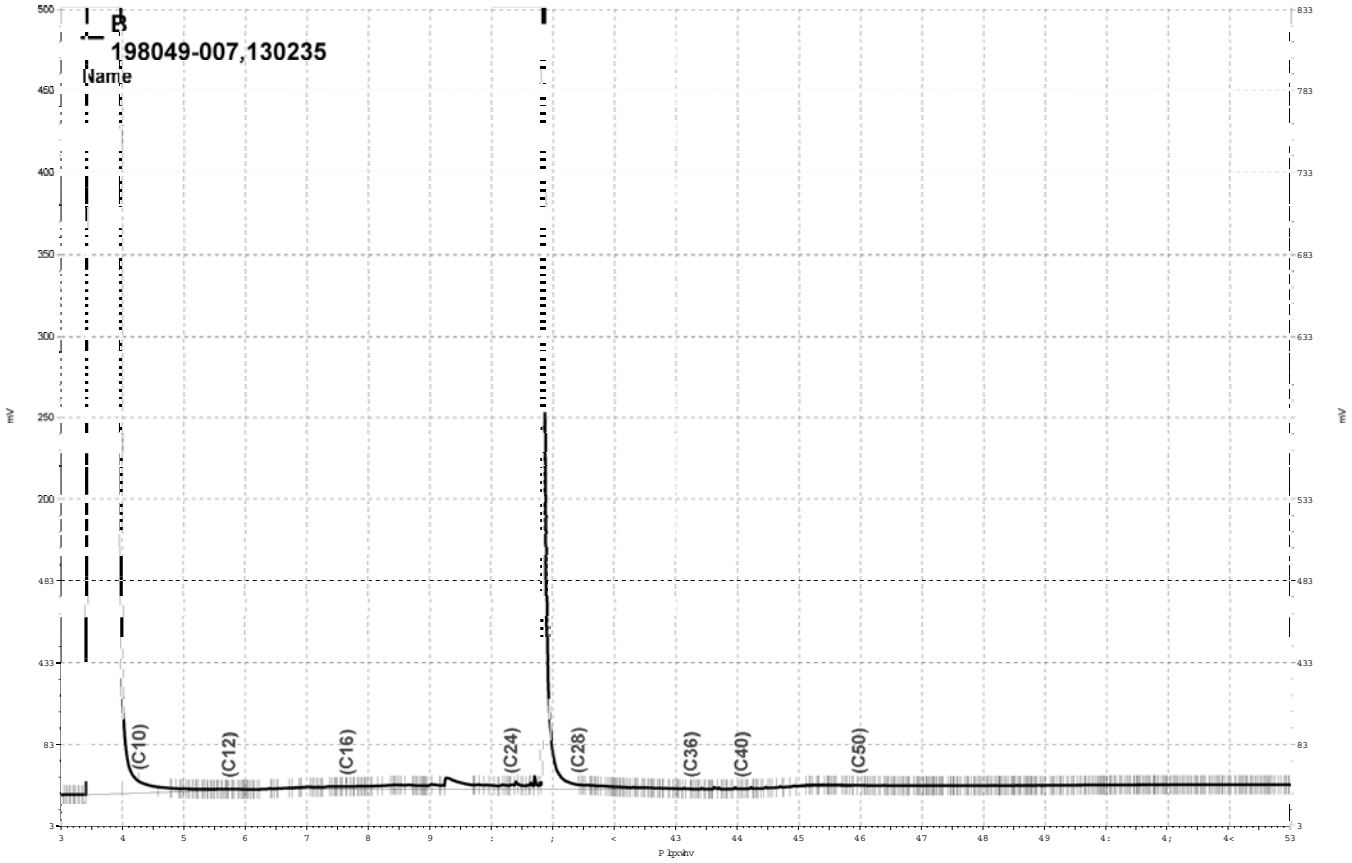
RPD= Relative Percent Difference
SGCU= Silica gel cleanup



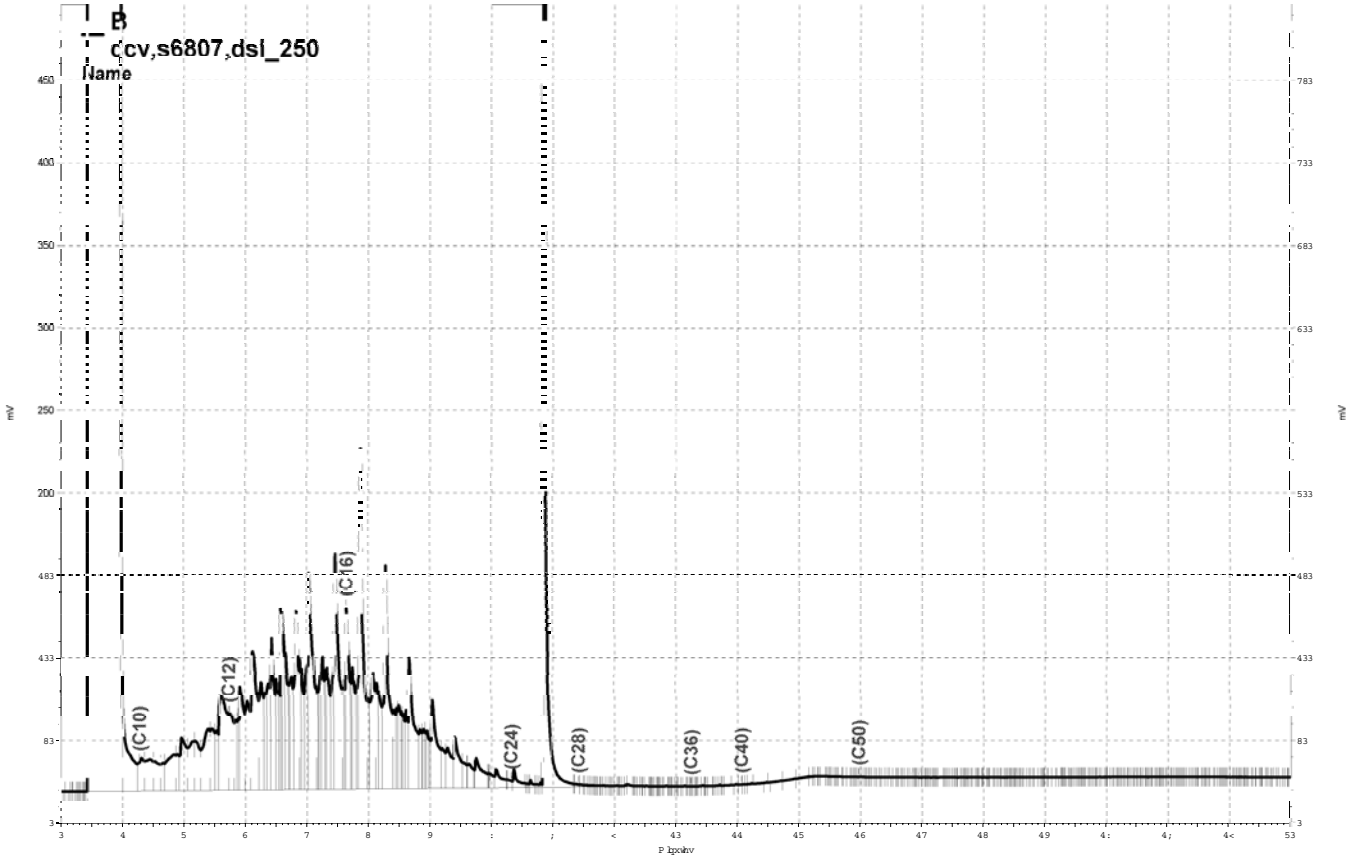
_Olp vjgulyh h}fkurp _Surmfw_J F47E_Gdwd_5;3e35:/E



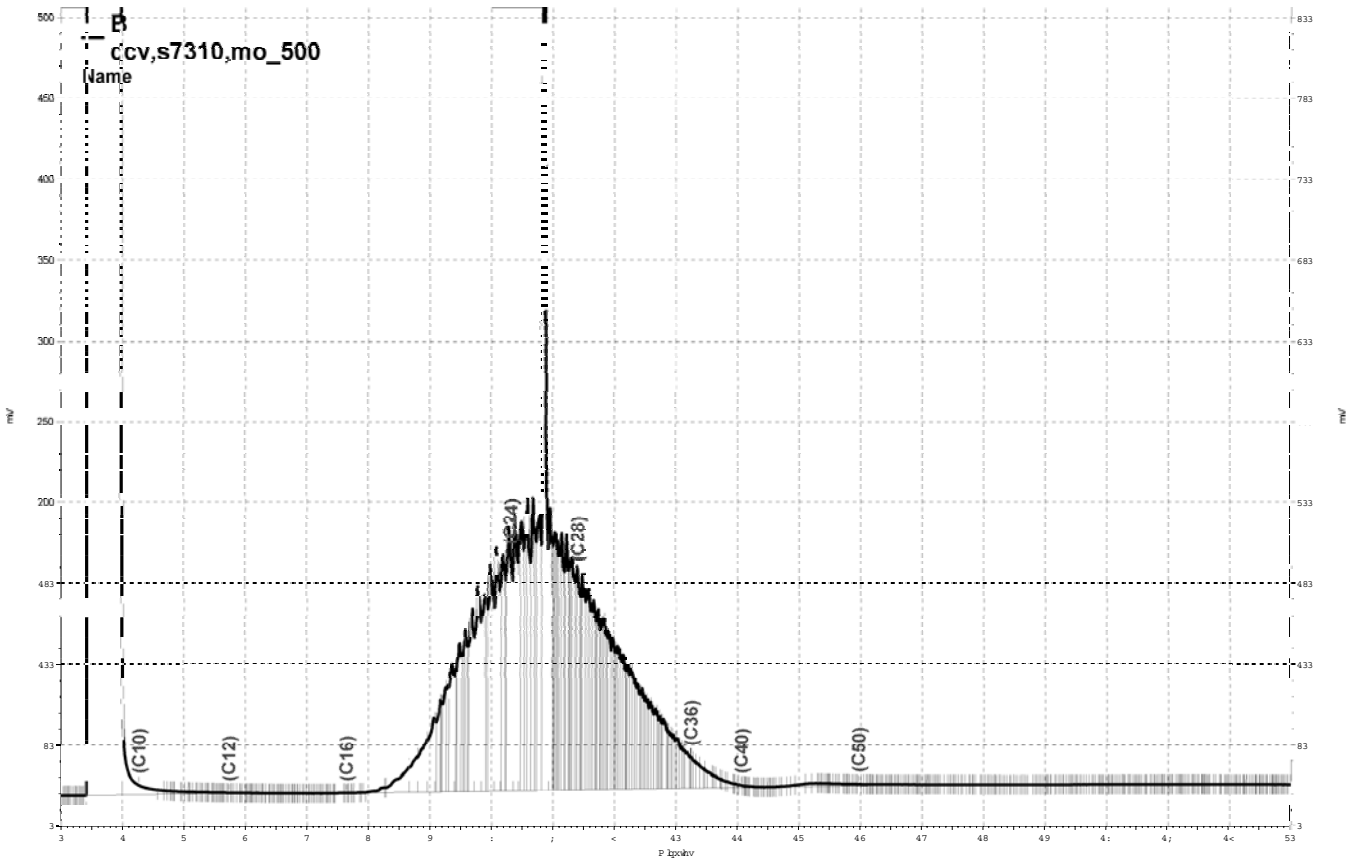
_Olp v jgulyh h}fkurp _Surmfw J F59 Gdwd 638e343/E



_Olp v jgulyh h}fkurp _Surmfw J F48E_Gdwd_5;3e365/E



_Olp v jgulyh h}fkurp _Surmfw J F48E_Gdwd_5;3e34;/E



_Olp vjgulyh h}fkurp_Surmfw_JF48E_Gdwd_5;3e34</E

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	10/01/07
Units:	mg/Kg	Received:	10/03/07
Basis:	as received	Prepared:	10/08/07
Diln Fac:	1.000		

Field ID: B-12-SS-42'
Type: SAMPLE
Lab ID: 198049-001
Batch#: 130290
Analyzed: 10/09/07

Analyte	Result	RL
Diesel C10-C24	11 Y	1.0
Motor Oil C24-C36	34	5.0

Surrogate	%REC	Limits
Hexacosane	70	46-128

Field ID: B-12-SS-0.0'
Type: SAMPLE
Lab ID: 198049-002
Batch#: 130316
Analyzed: 10/09/07

Analyte	Result	RL
Diesel C10-C24	10 Y	1.0
Motor Oil C24-C36	60	5.0

Surrogate	%REC	Limits
Hexacosane	81	46-128

Field ID: B-10-SS-0.0'
Type: SAMPLE
Lab ID: 198049-004
Batch#: 130316
Analyzed: 10/09/07

Analyte	Result	RL
Diesel C10-C24	18 Y	2.0
Motor Oil C24-C36	86	10

Surrogate	%REC	Limits
Hexacosane	85	46-128

Field ID: B-10-SS-45'
Type: SAMPLE
Lab ID: 198049-005
Batch#: 130316
Cleanup Method: EPA 3630C

Analyte	Result	RL	Analyzed
Diesel C10-C24	42 Y	1.0	10/09/07
Diesel C10-C24 (SGCU)	29 Y	1.0	11/01/07
Motor Oil C24-C36	190	5.0	10/09/07
Motor Oil C24-C36 (SGCU)	160	5.0	11/01/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	78	46-128	10/09/07
Hexacosane (SGCU)	72	46-128	11/01/07

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

53.2

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	10/01/07
Units:	mg/Kg	Received:	10/03/07
Basis:	as received	Prepared:	10/08/07
Diln Fac:	1.000		

Type:	BLANK	Batch#:	130290
Lab ID:	QC409481	Analyzed:	10/09/07

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
Hexacosane	97	46-128

Type:	BLANK	Analyzed:	10/09/07
Lab ID:	QC409589	Cleanup Method:	EPA 3630C
Batch#:	130316		

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Diesel C10-C24 (SGCU)	ND	1.0
Motor Oil C24-C36	ND	5.0
Motor Oil C24-C36 (SGCU)	ND	5.0

Surrogate	%REC	Limits
Hexacosane	103	46-128
Hexacosane (SGCU)	120	46-128

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409482	Batch#:	130290
Matrix:	Soil	Prepared:	10/08/07
Units:	mg/Kg	Analyzed:	10/08/07
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	50.37	46.78	93	55-131

Surrogate	%REC	Limits
Hexacosane (SGCU)	97	46-128

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130290
MSS Lab ID:	197916-006	Sampled:	09/26/07
Matrix:	Soil	Received:	09/27/07
Units:	mg/Kg	Prepared:	10/08/07
Basis:	as received	Analyzed:	10/09/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC409483

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	26.75	49.78	80.32	108	31-150

Surrogate	%REC	Limits
Hexacosane (SGCU)	102	46-128

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC409484

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	49.77	68.35	84	31-150	16	42

Surrogate	%REC	Limits
Hexacosane (SGCU)	95	46-128

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

55.1

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

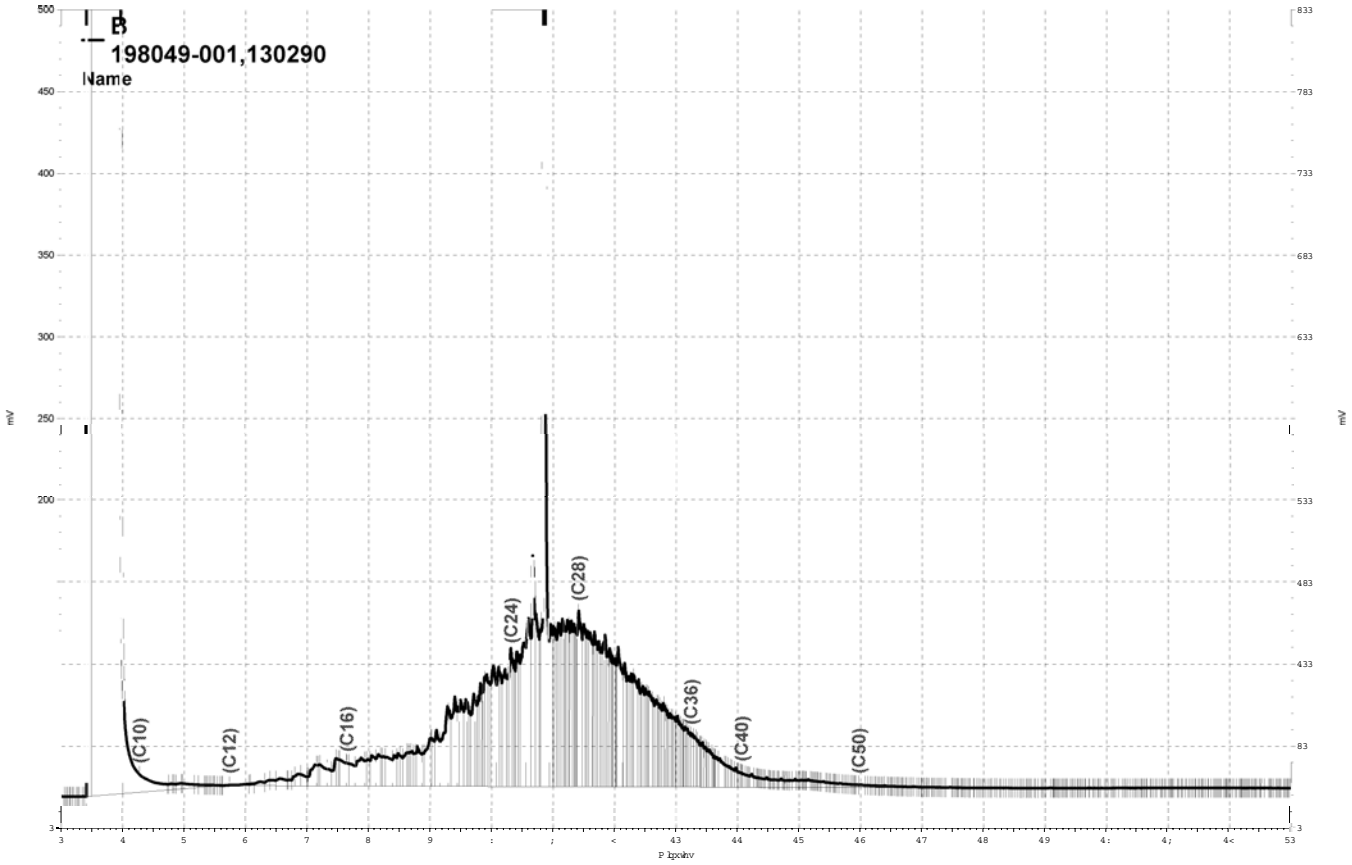
Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409590	Batch#:	130316
Matrix:	Soil	Prepared:	10/08/07
Units:	mg/Kg	Analyzed:	10/09/07
Basis:	as received		

Cleanup Method: EPA 3630C

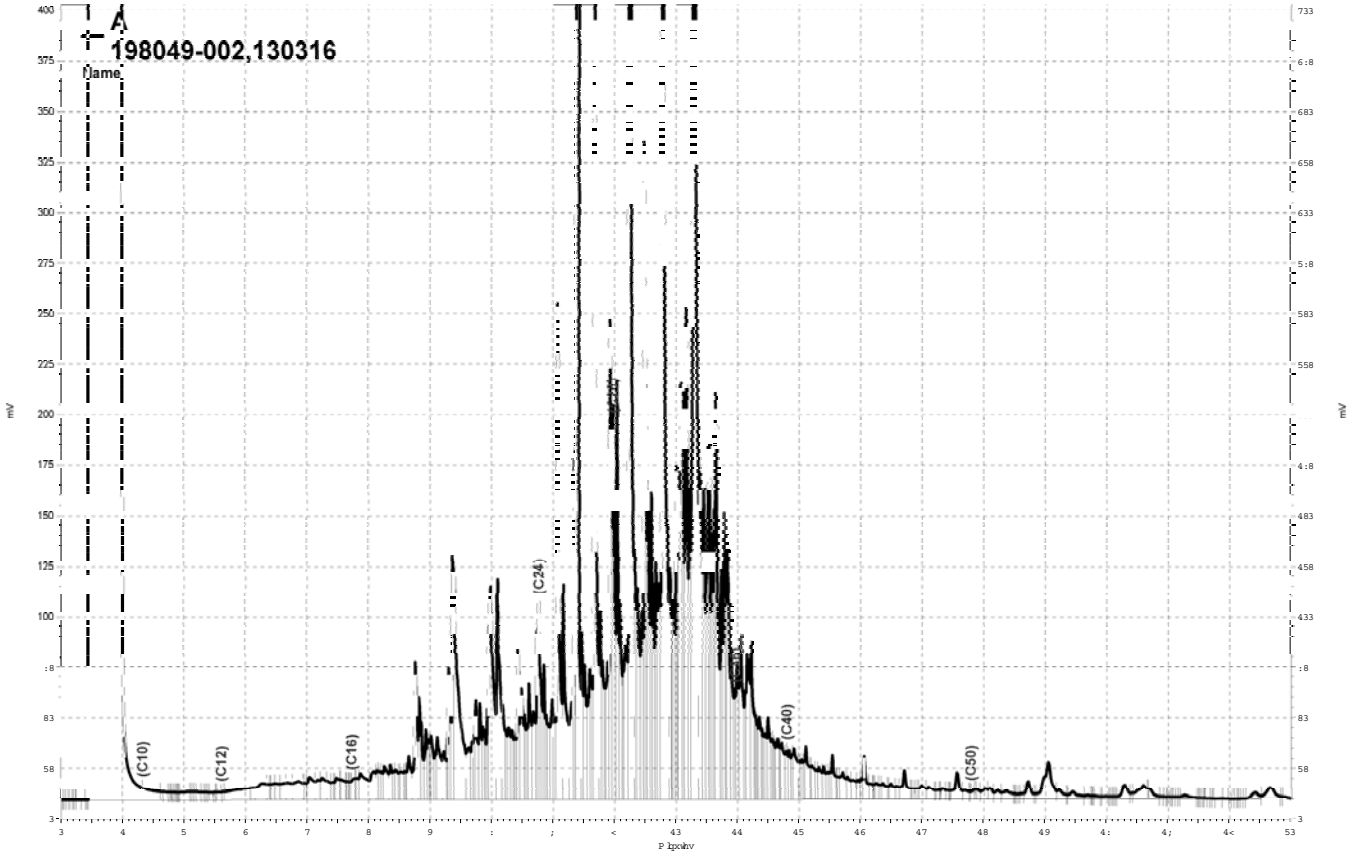
Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	49.96	49.67	99	55-131

Surrogate	%REC	Limits
Hexacosane (SGCU)	104	46-128

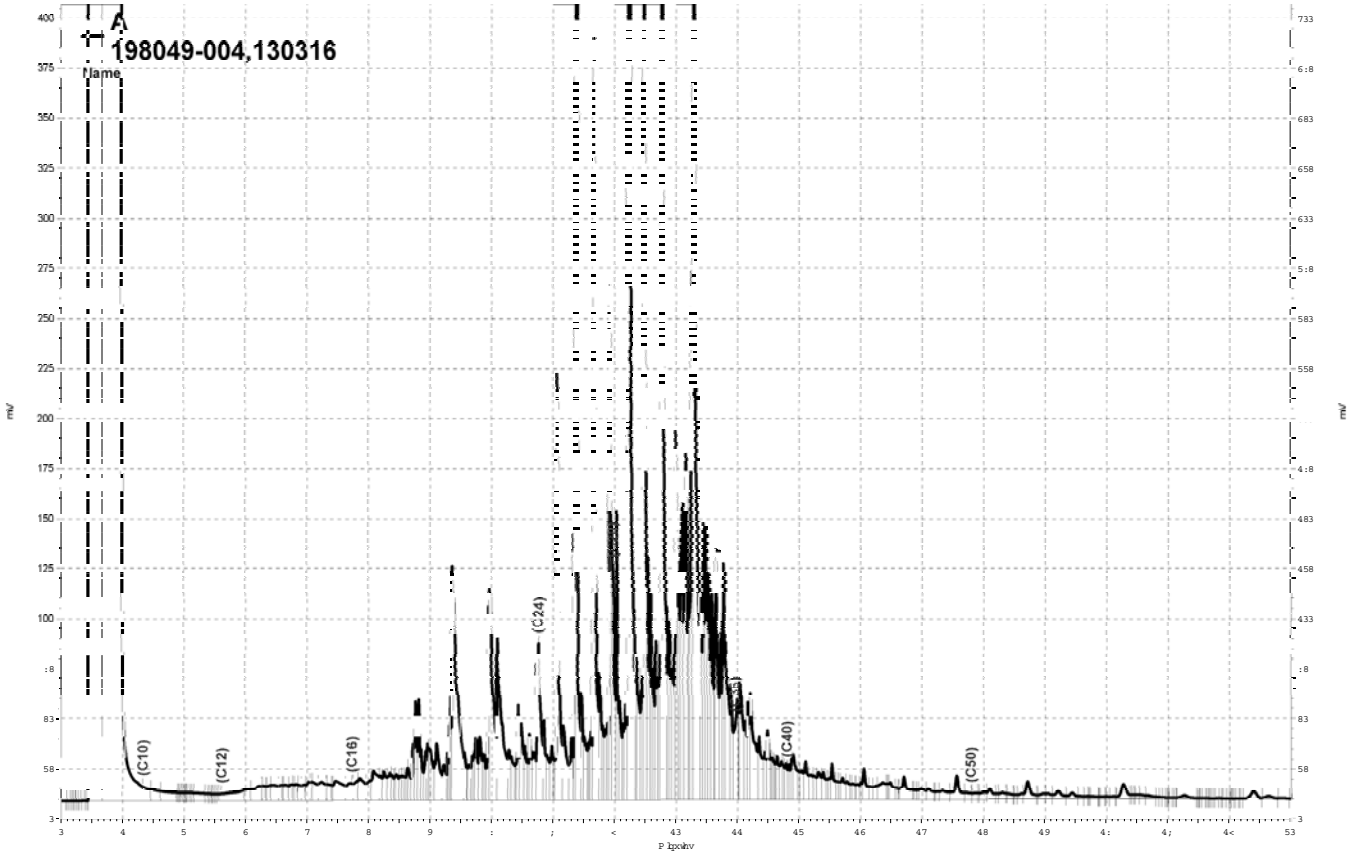
SGCU= Silica gel cleanup



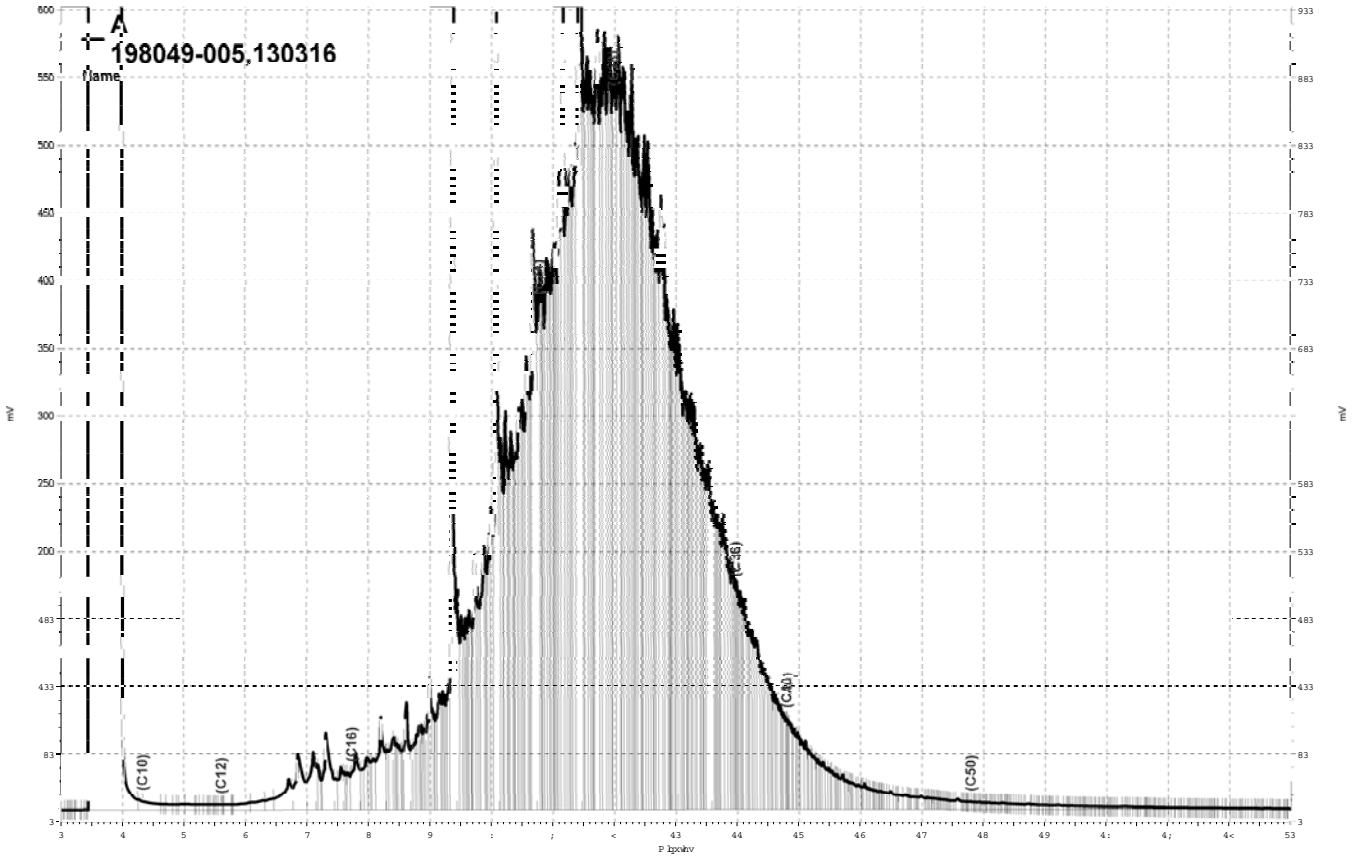
_Olp vjgulyh h}fkurp _Surmfw_J F48E_Gdwd_5;4e346/E



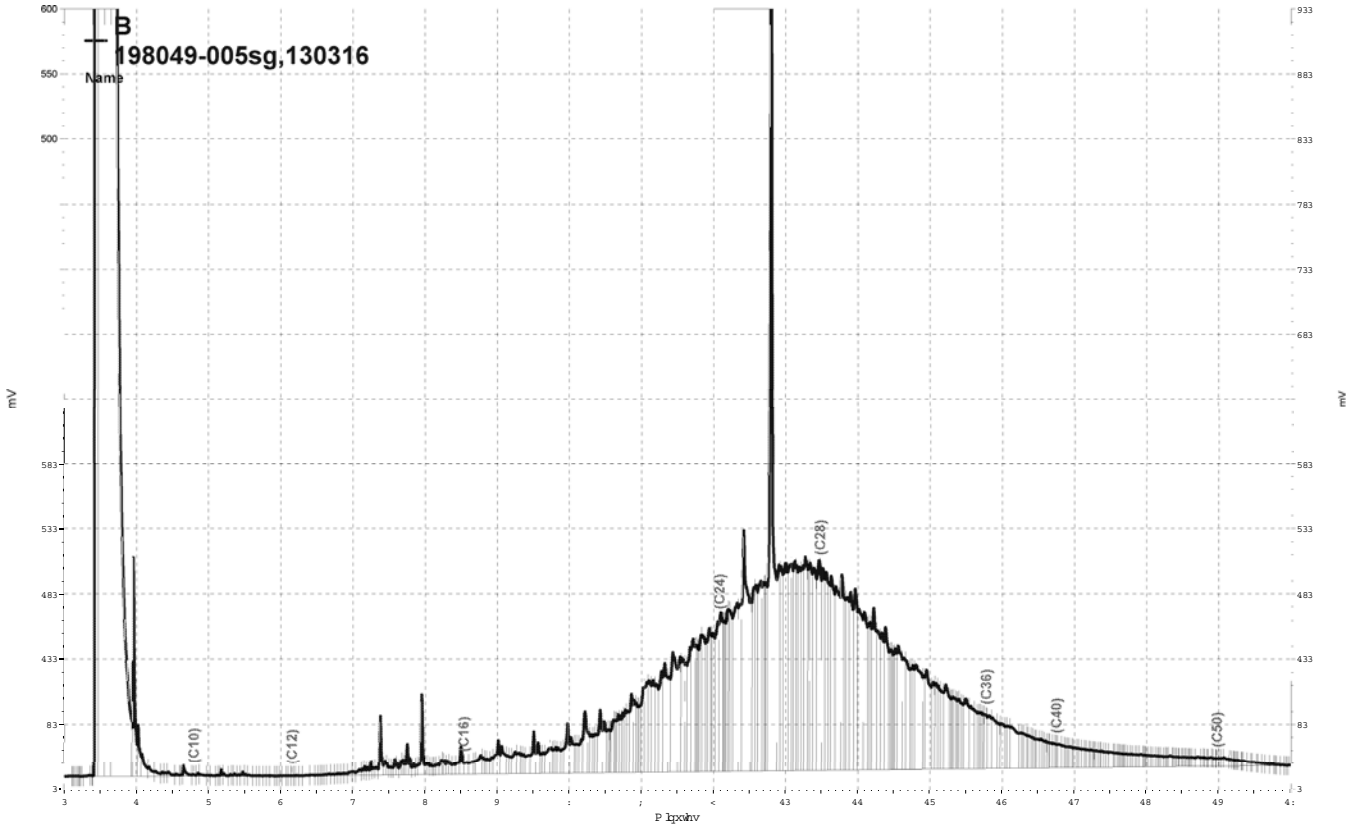
_Olp v jgulyh h}fkurp _Surmfwr J F 44D_Gdwd_5;4d378/D



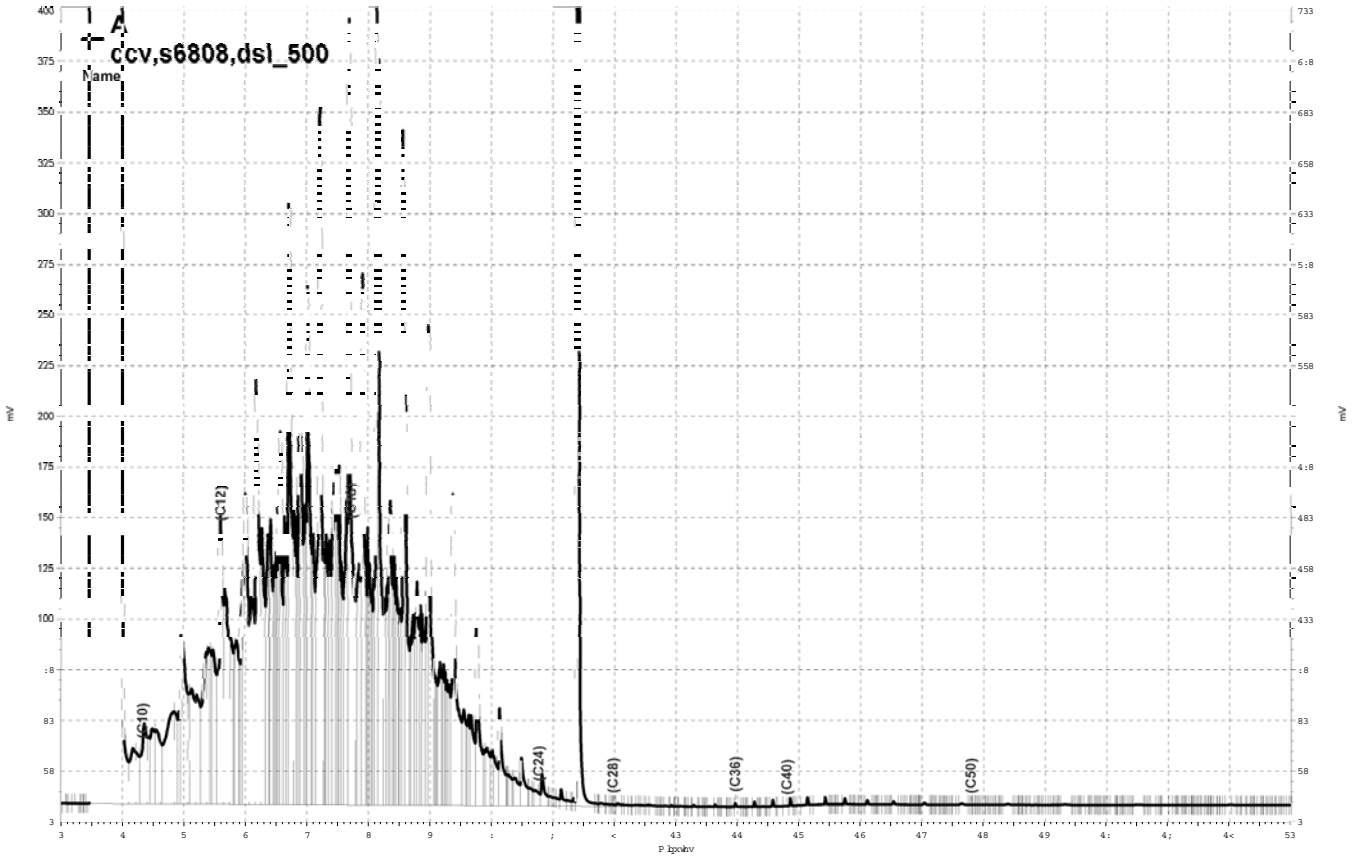
_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5;4d379/D



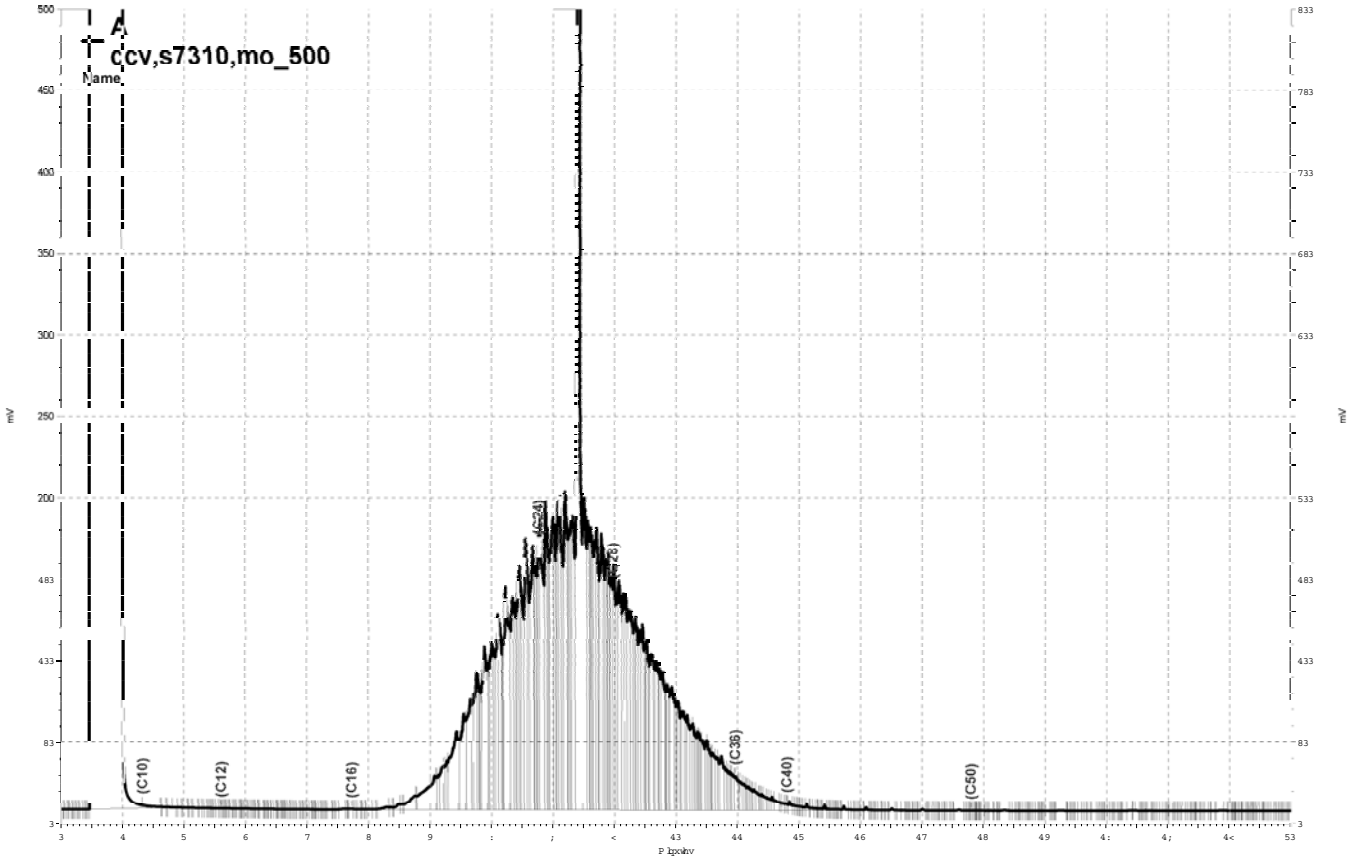
_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5;4d37;/D



_Olp v jgulyh h}fkurp _Surmfw J F59 Gdwd 638e344/E



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5;4d337/D



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5;4d369/D

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-12-GW-33'	Batch#:	130175
Lab ID:	198049-003	Sampled:	10/01/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-12-GW-33'	Batch#:	130175
Lab ID:	198049-003	Sampled:	10/01/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	107	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-10-GW-27.5'	Batch#:	130175
Lab ID:	198049-006	Sampled:	10/01/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-10-GW-27.5'	Batch#:	130175
Lab ID:	198049-006	Sampled:	10/01/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	108	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-10-GW-45'	Batch#:	130175
Lab ID:	198049-007	Sampled:	10/02/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-10-GW-45'	Batch#:	130175
Lab ID:	198049-007	Sampled:	10/02/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-122
1,2-Dichloroethane-d4	107	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	130175
Lab ID:	198049-008	Sampled:	10/02/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	130175
Lab ID:	198049-008	Sampled:	10/02/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-122
1,2-Dichloroethane-d4	107	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	130175
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Type: BS Lab ID: QC409020

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	26.27	105	80-133
Benzene	25.00	24.55	98	80-120
Trichloroethene	25.00	26.68	107	80-120
Toluene	25.00	25.32	101	80-122
Chlorobenzene	25.00	25.45	102	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-122
1,2-Dichloroethane-d4	104	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	100	80-120

Type: BSD Lab ID: QC409021

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	24.12	96	80-133	9	20
Benzene	25.00	23.29	93	80-120	5	20
Trichloroethene	25.00	25.29	101	80-120	5	20
Toluene	25.00	23.58	94	80-122	7	20
Chlorobenzene	25.00	24.63	99	80-120	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-122
1,2-Dichloroethane-d4	103	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	99	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409022	Batch#:	130175
Matrix:	Water	Analyzed:	10/04/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409022	Batch#:	130175
Matrix:	Water	Analyzed:	10/04/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-122
1,2-Dichloroethane-d4	106	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-12-SS-42'	Diln Fac:	0.8929
Lab ID:	198049-001	Batch#:	130136
Matrix:	Soil	Sampled:	10/01/07
Units:	ug/Kg	Received:	10/03/07
Basis:	as received	Analyzed:	10/03/07

Analyte	Result	RL
Freon 12	ND	8.9
Chloromethane	ND	8.9
Vinyl Chloride	ND	8.9
Bromomethane	ND	8.9
Chloroethane	ND	8.9
Trichlorofluoromethane	ND	4.5
Acetone	ND	22
Freon 113	ND	4.5
1,1-Dichloroethene	ND	4.5
Methylene Chloride	ND	18
Carbon Disulfide	ND	4.5
MTBE	ND	4.5
trans-1,2-Dichloroethene	ND	4.5
Vinyl Acetate	ND	45
1,1-Dichloroethane	ND	4.5
2-Butanone	ND	8.9
cis-1,2-Dichloroethene	ND	4.5
2,2-Dichloropropane	ND	4.5
Chloroform	ND	4.5
Bromochloromethane	ND	4.5
1,1,1-Trichloroethane	ND	4.5
1,1-Dichloropropene	ND	4.5
Carbon Tetrachloride	ND	4.5
1,2-Dichloroethane	ND	4.5
Benzene	ND	4.5
Trichloroethene	ND	4.5
1,2-Dichloropropane	ND	4.5
Bromodichloromethane	ND	4.5
Dibromomethane	ND	4.5
4-Methyl-2-Pentanone	ND	8.9
cis-1,3-Dichloropropene	ND	4.5
Toluene	ND	4.5
trans-1,3-Dichloropropene	ND	4.5
1,1,2-Trichloroethane	ND	4.5
2-Hexanone	ND	8.9
1,3-Dichloropropane	ND	4.5
Tetrachloroethene	ND	4.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-12-SS-42'	Diln Fac:	0.8929
Lab ID:	198049-001	Batch#:	130136
Matrix:	Soil	Sampled:	10/01/07
Units:	ug/Kg	Received:	10/03/07
Basis:	as received	Analyzed:	10/03/07

Analyte	Result	RL
Dibromochloromethane	ND	4.5
1,2-Dibromoethane	ND	4.5
Chlorobenzene	ND	4.5
1,1,1,2-Tetrachloroethane	ND	4.5
Ethylbenzene	ND	4.5
m,p-Xylenes	ND	4.5
o-Xylene	ND	4.5
Styrene	ND	4.5
Bromoform	ND	4.5
Isopropylbenzene	ND	4.5
1,1,2,2-Tetrachloroethane	ND	4.5
1,2,3-Trichloropropane	ND	4.5
Propylbenzene	ND	4.5
Bromobenzene	ND	4.5
1,3,5-Trimethylbenzene	ND	4.5
2-Chlorotoluene	ND	4.5
4-Chlorotoluene	ND	4.5
tert-Butylbenzene	ND	4.5
1,2,4-Trimethylbenzene	ND	4.5
sec-Butylbenzene	ND	4.5
para-Isopropyl Toluene	ND	4.5
1,3-Dichlorobenzene	ND	4.5
1,4-Dichlorobenzene	ND	4.5
n-Butylbenzene	ND	4.5
1,2-Dichlorobenzene	ND	4.5
1,2-Dibromo-3-Chloropropane	ND	4.5
1,2,4-Trichlorobenzene	ND	4.5
Hexachlorobutadiene	ND	4.5
Naphthalene	ND	4.5
1,2,3-Trichlorobenzene	ND	4.5

Surrogate	%REC	Limits
Dibromofluoromethane	93	80-124
1,2-Dichloroethane-d4	91	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	103	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-12-SS-0.0'	Diln Fac:	0.9091
Lab ID:	198049-002	Batch#:	130134
Matrix:	Soil	Sampled:	10/01/07
Units:	ug/Kg	Received:	10/03/07
Basis:	as received	Analyzed:	10/03/07

Analyte	Result	RL
Freon 12	ND	9.1
Chloromethane	ND	9.1
Vinyl Chloride	ND	9.1
Bromomethane	ND	9.1
Chloroethane	ND	9.1
Trichlorofluoromethane	ND	4.5
Acetone	ND	23
Freon 113	ND	4.5
1,1-Dichloroethene	ND	4.5
Methylene Chloride	ND	18
Carbon Disulfide	ND	4.5
MTBE	ND	4.5
trans-1,2-Dichloroethene	ND	4.5
Vinyl Acetate	ND	45
1,1-Dichloroethane	ND	4.5
2-Butanone	ND	9.1
cis-1,2-Dichloroethene	ND	4.5
2,2-Dichloropropane	ND	4.5
Chloroform	ND	4.5
Bromochloromethane	ND	4.5
1,1,1-Trichloroethane	ND	4.5
1,1-Dichloropropene	ND	4.5
Carbon Tetrachloride	ND	4.5
1,2-Dichloroethane	ND	4.5
Benzene	ND	4.5
Trichloroethene	ND	4.5
1,2-Dichloropropane	ND	4.5
Bromodichloromethane	ND	4.5
Dibromomethane	ND	4.5
4-Methyl-2-Pentanone	ND	9.1
cis-1,3-Dichloropropene	ND	4.5
Toluene	ND	4.5
trans-1,3-Dichloropropene	ND	4.5
1,1,2-Trichloroethane	ND	4.5
2-Hexanone	ND	9.1
1,3-Dichloropropane	ND	4.5
Tetrachloroethene	ND	4.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-12-SS-0.0'	Diln Fac:	0.9091
Lab ID:	198049-002	Batch#:	130134
Matrix:	Soil	Sampled:	10/01/07
Units:	ug/Kg	Received:	10/03/07
Basis:	as received	Analyzed:	10/03/07

Analyte	Result	RL
Dibromochloromethane	ND	4.5
1,2-Dibromoethane	ND	4.5
Chlorobenzene	ND	4.5
1,1,1,2-Tetrachloroethane	ND	4.5
Ethylbenzene	ND	4.5
m,p-Xylenes	ND	4.5
o-Xylene	ND	4.5
Styrene	ND	4.5
Bromoform	ND	4.5
Isopropylbenzene	ND	4.5
1,1,2,2-Tetrachloroethane	ND	4.5
1,2,3-Trichloropropane	ND	4.5
Propylbenzene	ND	4.5
Bromobenzene	ND	4.5
1,3,5-Trimethylbenzene	ND	4.5
2-Chlorotoluene	ND	4.5
4-Chlorotoluene	ND	4.5
tert-Butylbenzene	ND	4.5
1,2,4-Trimethylbenzene	ND	4.5
sec-Butylbenzene	ND	4.5
para-Isopropyl Toluene	ND	4.5
1,3-Dichlorobenzene	ND	4.5
1,4-Dichlorobenzene	ND	4.5
n-Butylbenzene	ND	4.5
1,2-Dichlorobenzene	ND	4.5
1,2-Dibromo-3-Chloropropane	ND	4.5
1,2,4-Trichlorobenzene	ND	4.5
Hexachlorobutadiene	ND	4.5
Naphthalene	ND	4.5
1,2,3-Trichlorobenzene	ND	4.5

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-124
1,2-Dichloroethane-d4	102	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	104	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-10-SS-0.0'	Diln Fac:	0.9259
Lab ID:	198049-004	Batch#:	130134
Matrix:	Soil	Sampled:	10/01/07
Units:	ug/Kg	Received:	10/03/07
Basis:	as received	Analyzed:	10/03/07

Analyte	Result	RL
Freon 12	ND	9.3
Chloromethane	ND	9.3
Vinyl Chloride	ND	9.3
Bromomethane	ND	9.3
Chloroethane	ND	9.3
Trichlorofluoromethane	ND	4.6
Acetone	ND	23
Freon 113	ND	4.6
1,1-Dichloroethene	ND	4.6
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.6
MTBE	ND	4.6
trans-1,2-Dichloroethene	ND	4.6
Vinyl Acetate	ND	46
1,1-Dichloroethane	ND	4.6
2-Butanone	ND	9.3
cis-1,2-Dichloroethene	ND	4.6
2,2-Dichloropropane	ND	4.6
Chloroform	ND	4.6
Bromochloromethane	ND	4.6
1,1,1-Trichloroethane	ND	4.6
1,1-Dichloropropene	ND	4.6
Carbon Tetrachloride	ND	4.6
1,2-Dichloroethane	ND	4.6
Benzene	ND	4.6
Trichloroethene	ND	4.6
1,2-Dichloropropane	ND	4.6
Bromodichloromethane	ND	4.6
Dibromomethane	ND	4.6
4-Methyl-2-Pentanone	ND	9.3
cis-1,3-Dichloropropene	ND	4.6
Toluene	ND	4.6
trans-1,3-Dichloropropene	ND	4.6
1,1,2-Trichloroethane	ND	4.6
2-Hexanone	ND	9.3
1,3-Dichloropropane	ND	4.6
Tetrachloroethene	ND	4.6

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-10-SS-0.0'	Diln Fac:	0.9259
Lab ID:	198049-004	Batch#:	130134
Matrix:	Soil	Sampled:	10/01/07
Units:	ug/Kg	Received:	10/03/07
Basis:	as received	Analyzed:	10/03/07

Analyte	Result	RL
Dibromochloromethane	ND	4.6
1,2-Dibromoethane	ND	4.6
Chlorobenzene	ND	4.6
1,1,1,2-Tetrachloroethane	ND	4.6
Ethylbenzene	ND	4.6
m,p-Xylenes	ND	4.6
o-Xylene	ND	4.6
Styrene	ND	4.6
Bromoform	ND	4.6
Isopropylbenzene	ND	4.6
1,1,2,2-Tetrachloroethane	ND	4.6
1,2,3-Trichloropropane	ND	4.6
Propylbenzene	ND	4.6
Bromobenzene	ND	4.6
1,3,5-Trimethylbenzene	ND	4.6
2-Chlorotoluene	ND	4.6
4-Chlorotoluene	ND	4.6
tert-Butylbenzene	ND	4.6
1,2,4-Trimethylbenzene	ND	4.6
sec-Butylbenzene	ND	4.6
para-Isopropyl Toluene	ND	4.6
1,3-Dichlorobenzene	ND	4.6
1,4-Dichlorobenzene	ND	4.6
n-Butylbenzene	ND	4.6
1,2-Dichlorobenzene	ND	4.6
1,2-Dibromo-3-Chloropropane	ND	4.6
1,2,4-Trichlorobenzene	ND	4.6
Hexachlorobutadiene	ND	4.6
Naphthalene	ND	4.6
1,2,3-Trichlorobenzene	ND	4.6

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-124
1,2-Dichloroethane-d4	105	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	104	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-10-SS-45'	Diln Fac:	0.9434
Lab ID:	198049-005	Batch#:	130136
Matrix:	Soil	Sampled:	10/01/07
Units:	ug/Kg	Received:	10/03/07
Basis:	as received	Analyzed:	10/03/07

Analyte	Result	RL
Freon 12	ND	9.4
Chloromethane	ND	9.4
Vinyl Chloride	ND	9.4
Bromomethane	ND	9.4
Chloroethane	ND	9.4
Trichlorofluoromethane	ND	4.7
Acetone	ND	24
Freon 113	ND	4.7
1,1-Dichloroethene	ND	4.7
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.7
MTBE	ND	4.7
trans-1,2-Dichloroethene	ND	4.7
Vinyl Acetate	ND	47
1,1-Dichloroethane	ND	4.7
2-Butanone	ND	9.4
cis-1,2-Dichloroethene	ND	4.7
2,2-Dichloropropane	ND	4.7
Chloroform	ND	4.7
Bromochloromethane	ND	4.7
1,1,1-Trichloroethane	ND	4.7
1,1-Dichloropropene	ND	4.7
Carbon Tetrachloride	ND	4.7
1,2-Dichloroethane	ND	4.7
Benzene	ND	4.7
Trichloroethene	ND	4.7
1,2-Dichloropropane	ND	4.7
Bromodichloromethane	ND	4.7
Dibromomethane	ND	4.7
4-Methyl-2-Pentanone	ND	9.4
cis-1,3-Dichloropropene	ND	4.7
Toluene	ND	4.7
trans-1,3-Dichloropropene	ND	4.7
1,1,2-Trichloroethane	ND	4.7
2-Hexanone	ND	9.4
1,3-Dichloropropane	ND	4.7
Tetrachloroethene	ND	4.7

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-10-SS-45'	Diln Fac:	0.9434
Lab ID:	198049-005	Batch#:	130136
Matrix:	Soil	Sampled:	10/01/07
Units:	ug/Kg	Received:	10/03/07
Basis:	as received	Analyzed:	10/03/07

Analyte	Result	RL
Dibromochloromethane	ND	4.7
1,2-Dibromoethane	ND	4.7
Chlorobenzene	ND	4.7
1,1,1,2-Tetrachloroethane	ND	4.7
Ethylbenzene	ND	4.7
m,p-Xylenes	ND	4.7
o-Xylene	ND	4.7
Styrene	ND	4.7
Bromoform	ND	4.7
Isopropylbenzene	ND	4.7
1,1,2,2-Tetrachloroethane	ND	4.7
1,2,3-Trichloropropane	ND	4.7
Propylbenzene	ND	4.7
Bromobenzene	ND	4.7
1,3,5-Trimethylbenzene	ND	4.7
2-Chlorotoluene	ND	4.7
4-Chlorotoluene	ND	4.7
tert-Butylbenzene	ND	4.7
1,2,4-Trimethylbenzene	ND	4.7
sec-Butylbenzene	ND	4.7
para-Isopropyl Toluene	ND	4.7
1,3-Dichlorobenzene	ND	4.7
1,4-Dichlorobenzene	ND	4.7
n-Butylbenzene	ND	4.7
1,2-Dichlorobenzene	ND	4.7
1,2-Dibromo-3-Chloropropane	ND	4.7
1,2,4-Trichlorobenzene	ND	4.7
Hexachlorobutadiene	ND	4.7
Naphthalene	ND	4.7
1,2,3-Trichlorobenzene	ND	4.7

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-124
1,2-Dichloroethane-d4	94	79-136
Toluene-d8	100	80-120
Bromofluorobenzene	92	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC408833	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130134
Units:	ug/Kg	Analyzed:	10/03/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC408833	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130134
Units:	ug/Kg	Analyzed:	10/03/07

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-124
1,2-Dichloroethane-d4	104	79-136
Toluene-d8	100	80-120
Bromofluorobenzene	99	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC408834	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130134
Units:	ug/Kg	Analyzed:	10/03/07

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	24.87	99	74-131
Benzene	25.00	25.32	101	77-121
Trichloroethene	25.00	25.37	101	77-121
Toluene	25.00	24.84	99	79-122
Chlorobenzene	25.00	24.23	97	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-124
1,2-Dichloroethane-d4	99	79-136
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-122

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Matrix:	Soil	Diln Fac:	1.000
Units:	ug/Kg	Batch#:	130136
Basis:	as received	Analyzed:	10/03/07

Type: BS Lab ID: QC408844

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	23.52	94	74-131
Benzene	25.00	26.34	105	77-121
Trichloroethene	25.00	27.49	110	77-121
Toluene	25.00	26.36	105	79-122
Chlorobenzene	25.00	25.06	100	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-124
1,2-Dichloroethane-d4	94	79-136
Toluene-d8	100	80-120
Bromofluorobenzene	95	80-122

Type: BSD Lab ID: QC408845

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	21.96	88	74-131	7	20
Benzene	25.00	25.72	103	77-121	2	20
Trichloroethene	25.00	28.26	113	77-121	3	20
Toluene	25.00	26.50	106	79-122	1	20
Chlorobenzene	25.00	25.24	101	80-120	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-124
1,2-Dichloroethane-d4	92	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	93	80-122

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC408846	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130136
Units:	ug/Kg	Analyzed:	10/03/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC408846	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130136
Units:	ug/Kg	Analyzed:	10/03/07

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	89	80-124
1,2-Dichloroethane-d4	88	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	94	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-10-SS-45'	Diln Fac:	0.9434
MSS Lab ID:	198049-005	Batch#:	130136
Matrix:	Soil	Sampled:	10/01/07
Units:	ug/Kg	Received:	10/03/07
Basis:	as received	Analyzed:	10/03/07

Type: MS Lab ID: QC408915

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.4568	47.17	41.48	88	61-145
Benzene	<0.6685	47.17	44.03	93	57-123
Trichloroethene	<0.7018	47.17	47.92	102	52-141
Toluene	<0.4930	47.17	45.17	96	53-126
Chlorobenzene	<0.5639	47.17	42.09	89	49-121

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-124
1,2-Dichloroethane-d4	84	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	91	80-122

Type: MSD Lab ID: QC408916

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	47.17	38.79	82	61-145	7	26
Benzene	47.17	39.40	84	57-123	11	25
Trichloroethene	47.17	42.70	91	52-141	12	26
Toluene	47.17	41.21	87	53-126	9	27
Chlorobenzene	47.17	36.20	77	49-121	15	27

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-124
1,2-Dichloroethane-d4	89	79-136
Toluene-d8	103	80-120
Bromofluorobenzene	97	80-122

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-10-SS-0.0'	Diln Fac:	0.9259
MSS Lab ID:	198049-004	Batch#:	130134
Matrix:	Soil	Sampled:	10/01/07
Units:	ug/Kg	Received:	10/03/07
Basis:	as received	Analyzed:	10/03/07

Type: MS Lab ID: QC408954

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.3308	46.30	42.28	91	61-145
Benzene	<0.4265	46.30	36.48	79	57-123
Trichloroethene	<0.2546	46.30	33.29	72	52-141
Toluene	<0.4615	46.30	30.75	66	53-126
Chlorobenzene	<0.2978	46.30	26.00	56	49-121

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-124
1,2-Dichloroethane-d4	101	79-136
Toluene-d8	100	80-120
Bromofluorobenzene	104	80-122

Type: MSD Lab ID: QC408955

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	46.30	33.43	72	61-145	23	26
Benzene	46.30	27.54	59	57-123	28 *	25
Trichloroethene	46.30	25.14	54	52-141	28 *	26
Toluene	46.30	23.40	51 *	53-126	27	27
Chlorobenzene	46.30	19.88	43 *	49-121	27	27

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-124
1,2-Dichloroethane-d4	103	79-136
Toluene-d8	101	80-120
Bromofluorobenzene	104	80-122

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-GW-33'	Batch#:	130279
Lab ID:	198049-003	Sampled:	10/01/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Prepared:	10/07/07
Diln Fac:	1.000	Analyzed:	10/12/07

Analyte	Result	RL
alpha-BHC	ND	0.05
beta-BHC	ND	0.05
gamma-BHC	ND	0.05
delta-BHC	ND	0.05
Heptachlor	ND	0.05
Aldrin	ND	0.05
Heptachlor epoxide	ND	0.05
Endosulfan I	ND	0.05
Dieldrin	ND	0.1
4,4'-DDE	ND	0.1
Endrin	ND	0.1
Endosulfan II	ND	0.1
Endosulfan sulfate	ND	0.1
4,4'-DDD	ND	0.1
Endrin aldehyde	ND	0.1
4,4'-DDT	ND #	0.1
alpha-Chlordane	ND	0.05
gamma-Chlordane	ND	0.05
Methoxychlor	ND	0.5
Toxaphene	ND	1.0

Surrogate	%REC	Limits
TCMX	81	43-120
Decachlorobiphenyl	67	39-135

#= CCV drift outside limits; average CCV drift within limits per method requirements
ND= Not Detected
RL= Reporting Limit

62.0

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409446	Batch#:	130279
Matrix:	Water	Prepared:	10/07/07
Units:	ug/L	Analyzed:	10/11/07

Analyte	Result	RL
alpha-BHC	ND	0.05
beta-BHC	ND	0.05
gamma-BHC	ND	0.05
delta-BHC	ND	0.05
Heptachlor	ND	0.05
Aldrin	ND	0.05
Heptachlor epoxide	ND	0.05
Endosulfan I	ND	0.05
Dieldrin	ND	0.1
4,4'-DDE	ND	0.1
Endrin	ND	0.1
Endosulfan II	ND	0.1
Endosulfan sulfate	ND	0.1
4,4'-DDD	ND	0.1
Endrin aldehyde	ND	0.1
4,4'-DDT	ND	0.1
alpha-Chlordane	ND	0.05
gamma-Chlordane	ND	0.05
Methoxychlor	ND	0.5
Toxaphene	ND	1.0

Surrogate	%REC	Limits
TCMX	79	43-120
Decachlorobiphenyl	59	39-135

ND= Not Detected
RL= Reporting Limit

63.0

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409447	Batch#:	130279
Matrix:	Water	Prepared:	10/07/07
Units:	ug/L	Analyzed:	10/11/07

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	0.2000	0.1571	79	64-126
Heptachlor	0.2000	0.1434	72	50-124
Aldrin	0.2000	0.1380	69	48-123
Dieldrin	0.4000	0.3100	78	59-131
Endrin	0.4000	0.3722	93	54-129
4,4'-DDT	0.4000	0.3534	88	39-140

Surrogate	%REC	Limits
TCMX	70	43-120
Decachlorobiphenyl	44	39-135

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	ZZZZZZZZZZ	Batch#:	130279
MSS Lab ID:	198061-003	Sampled:	10/03/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Prepared:	10/07/07
Diln Fac:	1.000	Analyzed:	10/12/07

Type: MS Lab ID: QC409448

Analyte	MSS Result	Spiked	Result	%REC	Limits
gamma-BHC	<0.005430	0.1905	0.1701	89	68-120
Heptachlor	<0.005230	0.1905	0.1618	85	56-120
Aldrin	<0.005225	0.1905	0.1513	79	61-120
Dieldrin	<0.01031	0.3810	0.3229 #	85	59-121
Endrin	<0.01092	0.3810	0.3454	91	65-120
4,4'-DDT	<0.01445	0.3810	0.2898 # b	76	42-126

Surrogate	%REC	Limits
TCMX	81	43-120
Decachlorobiphenyl	48	39-135

Type: MSD Lab ID: QC409449

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
gamma-BHC	0.1905	0.1588	83	68-120	7	30
Heptachlor	0.1905	0.1587	83	56-120	2	33
Aldrin	0.1905	0.1508	79	61-120	0	30
Dieldrin	0.3810	0.3388 #	89	59-121	5	32
Endrin	0.3810	0.3611	95	65-120	4	36
4,4'-DDT	0.3810	0.3216 # b	84	42-126	10	40

Surrogate	%REC	Limits
TCMX	77	43-120
Decachlorobiphenyl	55	39-135

#= CCV drift outside limits; average CCV drift within limits per method requirements
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-SS-0.0'	Batch#:	130274
Lab ID:	198049-002	Sampled:	10/01/07
Matrix:	Soil	Received:	10/03/07
Units:	ug/Kg	Prepared:	10/07/07
Basis:	as received	Analyzed:	10/11/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	7.6	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	84	54-120
Decachlorobiphenyl	115	49-142

ND= Not Detected
RL= Reporting Limit

58.0

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-10-SS-0.0'	Batch#:	130274
Lab ID:	198049-004	Sampled:	10/01/07
Matrix:	Soil	Received:	10/03/07
Units:	ug/Kg	Prepared:	10/07/07
Basis:	as received	Analyzed:	10/11/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	75	54-120
Decachlorobiphenyl	100	49-142

ND= Not Detected
RL= Reporting Limit

59.0

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409432	Batch#:	130274
Matrix:	Soil	Prepared:	10/07/07
Units:	ug/Kg	Analyzed:	10/11/07
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	58	54-120
Decachlorobiphenyl	57	49-142

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409433	Batch#:	130274
Matrix:	Soil	Prepared:	10/07/07
Units:	ug/Kg	Analyzed:	10/11/07
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	13.23	13.69	104	44-120
Heptachlor	13.23	10.56	80	44-120
Aldrin	13.23	10.41	79	47-120
Dieldrin	26.46	30.57	116	50-120
Endrin	26.46	30.91	117	27-128
4,4'-DDT	26.46	33.21	126	42-128

Surrogate	%REC	Limits
TCMX	101	54-120
Decachlorobiphenyl	79	49-142

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-SS-0.0'	Batch#:	130274
MSS Lab ID:	198049-002	Sampled:	10/01/07
Matrix:	Soil	Received:	10/03/07
Units:	ug/Kg	Prepared:	10/07/07
Basis:	as received	Analyzed:	10/12/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3620B
Lab ID: QC409434

Analyte	MSS Result	Spiked	Result	%REC	Limits
gamma-BHC	<0.3690	13.28	9.105	69	45-122
Heptachlor	<0.4798	13.28	9.355	70	49-125
Aldrin	<0.3153	13.28	9.232	70	48-120
Dieldrin	<0.9915	26.56	19.07	72	50-121
Endrin	<1.176	26.56	18.43	69	42-123
4,4'-DDT	<1.267	26.56	22.21 #	84	29-135

Surrogate	%REC	Limits
TCMX	74	54-120
Decachlorobiphenyl	73	49-142

Type: MSD Cleanup Method: EPA 3620B
Lab ID: QC409435

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
gamma-BHC	13.31	10.67	80	45-122	16	40
Heptachlor	13.31	11.13	84	49-125	17	42
Aldrin	13.31	10.67	80	48-120	14	37
Dieldrin	26.62	22.92	86	50-121	18	34
Endrin	26.62	22.52	85	42-123	20	39
4,4'-DDT	26.62	23.64 #	89	29-135	6	51

Surrogate	%REC	Limits
TCMX	82	54-120
Decachlorobiphenyl	84	49-142

#= CCV drift outside limits; average CCV drift within limits per method requirements
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8082
Field ID:	B-12-GW-33'	Sampled:	10/01/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Prepared:	10/07/07
Diln Fac:	1.000	Analyzed:	10/11/07
Batch#:	130281		

Type: SAMPLE Cleanup Method: EPA 3665A
Lab ID: 198049-003

Analyte	Result	RL
Aroclor-1016	ND	0.50
Aroclor-1221	ND	1.0
Aroclor-1232	ND	0.50
Aroclor-1242	ND	0.50
Aroclor-1248	ND	0.50
Aroclor-1254	ND	0.50
Aroclor-1260	ND	0.50

Surrogate	%REC	Limits
TCMX	73	54-128
Decachlorobiphenyl	49	25-122

Type: BLANK Cleanup Method: EPA 3665A
Lab ID: QC409453

Analyte	Result	RL
Aroclor-1016	ND	0.50
Aroclor-1221	ND	1.0
Aroclor-1232	ND	0.50
Aroclor-1242	ND	0.50
Aroclor-1248	ND	0.50
Aroclor-1254	ND	0.50
Aroclor-1260	ND	0.50

Surrogate	%REC	Limits
TCMX	110	54-128
Decachlorobiphenyl	79	25-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8082
Matrix:	Water	Batch#:	130281
Units:	ug/L	Prepared:	10/07/07
Diln Fac:	1.000	Analyzed:	10/11/07

Type: BS Cleanup Method: EPA 3665A
Lab ID: QC409454

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	5.000	6.108	122	71-140
Aroclor-1260	5.000	6.128	123	68-150

Surrogate	%REC	Limits
TCMX	111	54-128
Decachlorobiphenyl	68	25-122

Type: BSD Cleanup Method: EPA 3665A
Lab ID: QC409455

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	5.000	5.548	111	71-140	10	21
Aroclor-1260	5.000	5.494	110	68-150	11	27

Surrogate	%REC	Limits
TCMX	116	54-128
Decachlorobiphenyl	92	25-122

RPD= Relative Percent Difference

66.0

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	10/01/07
Units:	ug/Kg	Received:	10/03/07
Basis:	as received	Prepared:	10/07/07
Diln Fac:	1.000	Analyzed:	10/08/07
Batch#:	130274		

Field ID: B-12-SS-0.0' Lab ID: 198049-002
Type: SAMPLE Cleanup Method: EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	114	66-140
Decachlorobiphenyl	111	51-152

Field ID: B-10-SS-0.0' Lab ID: 198049-004
Type: SAMPLE Cleanup Method: EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	125	66-140
Decachlorobiphenyl	126	51-152

Type: BLANK Cleanup Method: EPA 3665A
Lab ID: QC409432

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	94	66-140
Decachlorobiphenyl	105	51-152

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409436	Batch#:	130274
Matrix:	Soil	Prepared:	10/07/07
Units:	ug/Kg	Analyzed:	10/08/07
Basis:	as received		

Cleanup Method: EPA 3665A

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	164.1	195.3	119	69-142
Aroclor-1260	164.1	191.7	117	69-155

Surrogate	%REC	Limits
TCMX	99	66-140
Decachlorobiphenyl	110	51-152

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Field ID:	ZZZZZZZZZZ	Batch#:	130274
MSS Lab ID:	198070-005	Sampled:	10/02/07
Matrix:	Soil	Received:	10/03/07
Units:	ug/Kg	Prepared:	10/07/07
Basis:	as received	Analyzed:	10/08/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3665A
Lab ID: QC409437

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1016	<2.656	166.2	186.7	112	62-139
Aroclor-1260	<2.695	166.2	176.7	106	54-143

Surrogate	%REC	Limits
TCMX	102	66-140
Decachlorobiphenyl	107	51-152

Type: MSD Cleanup Method: EPA 3665A
Lab ID: QC409438

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	166.2	197.8	119	62-139	6	33
Aroclor-1260	166.2	193.3	116	54-143	9	34

Surrogate	%REC	Limits
TCMX	102	66-140
Decachlorobiphenyl	106	51-152

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198049	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-12-SS-0.0'	Basis:	as received
Lab ID:	198049-002	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/01/07
Units:	mg/Kg	Received:	10/03/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	0.85	0.50	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Arsenic	6.8	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Barium	73	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Beryllium	0.33	0.10	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Chromium	63	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Cobalt	17	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Copper	24	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Lead	33	0.20	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Mercury	0.19	0.020	130233	10/05/07	10/05/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Nickel	83	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Selenium	1.5	0.50	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Vanadium	40	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Zinc	54	1.0	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198049	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-10-SS-0.0'	Basis:	as received
Lab ID:	198049-004	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/01/07
Units:	mg/Kg	Received:	10/03/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	0.57	0.50	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Arsenic	4.9	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Barium	110	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Beryllium	0.37	0.10	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Cadmium	0.95	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Chromium	71	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Cobalt	15	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Copper	16	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Lead	15	0.22	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Mercury	0.28	0.020	130233	10/05/07	10/05/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Nickel	72	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Selenium	1.5	0.50	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Vanadium	49	0.25	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B
Zinc	340	1.0	130163	10/03/07	10/04/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC408958	Batch#:	130163
Matrix:	Soil	Prepared:	10/03/07
Units:	mg/Kg	Analyzed:	10/04/07
Basis:	as received		

Analyte	Result	RL
Antimony	ND	0.50
Arsenic	ND	0.25
Barium	ND	0.25
Beryllium	ND	0.10
Cadmium	ND	0.25
Chromium	ND	0.25
Cobalt	ND	0.25
Copper	ND	0.25
Lead	ND	0.23
Molybdenum	ND	0.25
Nickel	ND	0.25
Selenium	ND	0.50
Silver	ND	0.25
Thallium	ND	0.50
Vanadium	ND	0.25
Zinc	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	130163
Units:	mg/Kg	Prepared:	10/03/07
Basis:	as received	Analyzed:	10/04/07
Diln Fac:	1.000		

Type: BS Lab ID: QC408959

Analyte	Spiked	Result	%REC	Limits
Antimony	100.0	89.84	90	80-120
Arsenic	50.00	46.30	93	80-120
Barium	100.0	93.18	93	80-120
Beryllium	2.500	2.581	103	80-120
Cadmium	10.00	9.464	95	80-120
Chromium	100.0	90.54	91	80-120
Cobalt	25.00	22.36	89	80-120
Copper	12.50	11.18	89	80-120
Lead	100.0	89.81	90	80-120
Molybdenum	20.00	19.07	95	80-120
Nickel	25.00	22.67	91	80-120
Selenium	50.00	45.65	91	80-120
Silver	10.00	8.798	88	80-120
Thallium	50.00	44.84	90	80-120
Vanadium	25.00	22.68	91	80-120
Zinc	25.00	23.16	93	80-120

Type: BSD Lab ID: QC408960

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	100.0	97.01	97	80-120	8	20
Arsenic	50.00	49.44	99	80-120	7	20
Barium	100.0	100.3	100	80-120	7	20
Beryllium	2.500	2.797	112	80-120	8	20
Cadmium	10.00	10.16	102	80-120	7	20
Chromium	100.0	97.72	98	80-120	8	20
Cobalt	25.00	24.06	96	80-120	7	20
Copper	12.50	12.09	97	80-120	8	20
Lead	100.0	98.03	98	80-120	9	20
Molybdenum	20.00	20.44	102	80-120	7	20
Nickel	25.00	24.43	98	80-120	7	20
Selenium	50.00	48.51	97	80-120	6	20
Silver	10.00	9.519	95	80-120	8	20
Thallium	50.00	47.71	95	80-120	6	20
Vanadium	25.00	24.57	98	80-120	8	20
Zinc	25.00	24.99	100	80-120	8	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130163
MSS Lab ID:	197858-001	Sampled:	09/25/07
Matrix:	Soil	Received:	09/25/07
Units:	mg/Kg	Prepared:	10/03/07
Basis:	as received	Analyzed:	10/04/07
Diln Fac:	1.000		

Type: MS Lab ID: QC408961

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	1.684	90.09	33.45	35	1-122
Arsenic	4.564	45.05	45.74	91	72-120
Barium	74.89	90.09	162.7	97	49-139
Beryllium	0.2614	2.252	2.493	99	80-120
Cadmium	0.01386	9.009	7.800	86	74-120
Chromium	122.6	90.09	188.1	73	65-120
Cobalt	18.09	22.52	37.95	88	60-120
Copper	37.49	11.26	53.55	143	47-146
Lead	20.85	90.09	95.97	83	53-123
Molybdenum	<0.02165	18.02	15.40	85	66-120
Nickel	237.4	22.52	266.7	130 NM	43-142
Selenium	1.641	45.05	41.01	87	71-120
Silver	0.2256	9.009	8.444	91	66-120
Thallium	<0.03334	45.05	34.30	76	62-120
Vanadium	34.95	22.52	53.45	82	52-139
Zinc	72.51	22.52	97.30	110	42-147

Type: MSD Lab ID: QC408962

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	99.01	37.22	36	1-122	1	30
Arsenic	49.50	48.47	89	72-120	3	20
Barium	99.01	166.6	93	49-139	3	23
Beryllium	2.475	2.689	98	80-120	1	20
Cadmium	9.901	8.523	86	74-120	1	20
Chromium	99.01	187.0	65	65-120	5	20
Cobalt	24.75	40.59	91	60-120	1	24
Copper	12.38	53.87	132	47-146	2	21
Lead	99.01	98.93	79	53-123	5	28
Molybdenum	19.80	16.77	85	66-120	1	20
Nickel	24.75	275.5	154 NM	43-142	2	26
Selenium	49.50	43.61	85	71-120	3	20
Silver	9.901	9.030	89	66-120	3	20
Thallium	49.50	37.90	77	62-120	1	20
Vanadium	24.75	59.39	99	52-139	7	20
Zinc	24.75	121.4	197 *	42-147	20	27

*= Value outside of QC limits; see narrative
NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409274	Batch#:	130233
Matrix:	Soil	Prepared:	10/05/07
Units:	mg/Kg	Analyzed:	10/05/07

Result	RL
ND	0.020

ND= Not Detected
RL= Reporting Limit

45.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130233
Units:	mg/Kg	Prepared:	10/05/07
Basis:	as received	Analyzed:	10/05/07

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC409275	0.5000	0.5480	110	80-120		
BSD	QC409276	0.5000	0.5340	107	80-120	3	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	130233
MSS Lab ID:	198062-001	Sampled:	10/03/07
Matrix:	Soil	Received:	10/03/07
Units:	mg/Kg	Prepared:	10/05/07
Basis:	as received	Analyzed:	10/05/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC409278	0.01765	0.4545	0.5164	110	70-143		
MSD	QC409279		0.4386	0.4974	109	70-143	0	22

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	198049	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-12-GW-33'	Sampled:	10/01/07
Lab ID:	198049-003	Received:	10/03/07
Matrix:	Filtrate	Prepared:	10/04/07
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Analyte	Result	RL	Batch#	Prep	Analysis
Antimony	ND	10	130186	EPA 3010A	EPA 6010B
Arsenic	ND	5.0	130186	EPA 3010A	EPA 6010B
Barium	160	5.0	130186	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130186	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130186	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130186	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130186	EPA 3010A	EPA 6010B
Copper	ND	5.0	130186	EPA 3010A	EPA 6010B
Lead	ND	3.4	130186	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130181	METHOD	EPA 7470A
Molybdenum	23	5.0	130186	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130186	EPA 3010A	EPA 6010B
Selenium	ND	10	130186	EPA 3010A	EPA 6010B
Silver	ND	5.0	130186	EPA 3010A	EPA 6010B
Thallium	ND	10	130186	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130186	EPA 3010A	EPA 6010B
Zinc	ND	20	130186	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	198049	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-10-GW-27.5'	Sampled:	10/01/07
Lab ID:	198049-006	Received:	10/03/07
Matrix:	Filtrate	Prepared:	10/04/07
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Analyte	Result	RL	Batch#	Prep	Analysis
Antimony	ND	10	130186	EPA 3010A	EPA 6010B
Arsenic	ND	5.0	130186	EPA 3010A	EPA 6010B
Barium	85	5.0	130186	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130186	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130186	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130186	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130186	EPA 3010A	EPA 6010B
Copper	ND	5.0	130186	EPA 3010A	EPA 6010B
Lead	ND	3.4	130186	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130181	METHOD	EPA 7470A
Molybdenum	10	5.0	130186	EPA 3010A	EPA 6010B
Nickel	12	5.0	130186	EPA 3010A	EPA 6010B
Selenium	ND	10	130186	EPA 3010A	EPA 6010B
Silver	ND	5.0	130186	EPA 3010A	EPA 6010B
Thallium	ND	10	130186	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130186	EPA 3010A	EPA 6010B
Zinc	ND	20	130186	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	198049	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-10-GW-45'	Sampled:	10/02/07
Lab ID:	198049-007	Received:	10/03/07
Matrix:	Filtrate	Prepared:	10/04/07
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Analyte	Result	RL	Batch#	Prep	Analysis
Antimony	ND	10	130186	EPA 3010A	EPA 6010B
Arsenic	ND	5.0	130186	EPA 3010A	EPA 6010B
Barium	210	5.0	130186	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130186	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130186	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130186	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130186	EPA 3010A	EPA 6010B
Copper	ND	5.0	130186	EPA 3010A	EPA 6010B
Lead	ND	3.4	130186	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130181	METHOD	EPA 7470A
Molybdenum	8.3	5.0	130186	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130186	EPA 3010A	EPA 6010B
Selenium	ND	10	130186	EPA 3010A	EPA 6010B
Silver	ND	5.0	130186	EPA 3010A	EPA 6010B
Thallium	ND	10	130186	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130186	EPA 3010A	EPA 6010B
Zinc	ND	20	130186	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	130181
Lab ID:	QC409045	Prepared:	10/04/07
Matrix:	Water	Analyzed:	10/04/07
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130181
Matrix:	Water	Prepared:	10/04/07
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC409046	5.000	5.310	106	80-120		
BSD	QC409047	5.000	5.260	105	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130181
Field ID:	ZZZZZZZZZZ	Sampled:	09/27/07
MSS Lab ID:	197934-009	Received:	09/27/07
Matrix:	Filtrate	Prepared:	10/04/07
Units:	ug/L	Analyzed:	10/04/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC409049	<0.04502	5.000	5.260	105	79-125		
MSD	QC409050		5.000	5.170	103	79-125	2	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409069	Batch#:	130186
Matrix:	Water	Prepared:	10/04/07
Units:	ug/L	Analyzed:	10/04/07

Analyte	Result	RL
Antimony	ND	10
Arsenic	ND	5.0
Barium	ND	5.0
Beryllium	ND	2.0
Cadmium	ND	5.0
Chromium	ND	5.0
Cobalt	ND	5.0
Copper	ND	5.0
Lead	ND	3.4
Molybdenum	ND	5.0
Nickel	ND	5.0
Selenium	ND	10
Silver	ND	5.0
Thallium	ND	10
Vanadium	ND	5.0
Zinc	ND	20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Water	Batch#:	130186
Units:	ug/L	Prepared:	10/04/07
Diln Fac:	1.000	Analyzed:	10/04/07

Type: BS Lab ID: QC409070

Analyte	Spiked	Result	%REC	Limits
Antimony	500.0	439.1	88	80-120
Arsenic	100.0	92.45	92	80-120
Barium	2,000	1,828	91	80-120
Beryllium	50.00	54.71	109	80-120
Cadmium	50.00	47.01	94	80-120
Chromium	200.0	183.8	92	80-120
Cobalt	500.0	442.4	88	80-120
Copper	250.0	228.0	91	80-120
Lead	100.0	89.13	89	80-120
Molybdenum	400.0	377.9	94	80-120
Nickel	500.0	450.6	90	80-120
Selenium	100.0	89.79	90	80-120
Silver	50.00	46.13	92	80-120
Thallium	100.0	90.80	91	80-120
Vanadium	500.0	468.4	94	80-120
Zinc	500.0	470.8	94	80-120

Type: BSD Lab ID: QC409071

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	458.8	92	80-120	4	20
Arsenic	100.0	96.06	96	80-120	4	20
Barium	2,000	1,903	95	80-120	4	20
Beryllium	50.00	56.93	114	80-120	4	20
Cadmium	50.00	48.50	97	80-120	3	20
Chromium	200.0	190.5	95	80-120	4	20
Cobalt	500.0	459.6	92	80-120	4	20
Copper	250.0	238.3	95	80-120	4	20
Lead	100.0	92.12	92	80-120	3	20
Molybdenum	400.0	392.3	98	80-120	4	20
Nickel	500.0	473.4	95	80-120	5	20
Selenium	100.0	93.23	93	80-120	4	20
Silver	50.00	48.21	96	80-120	4	20
Thallium	100.0	94.69	95	80-120	4	20
Vanadium	500.0	490.7	98	80-120	5	20
Zinc	500.0	492.4	98	80-120	4	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130186
MSS Lab ID:	198047-002	Sampled:	10/02/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Prepared:	10/04/07
Diln Fac:	1.000	Analyzed:	10/04/07

Type: MS Lab ID: QC409072

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	7.130	500.0	469.9	93	80-120
Arsenic	<1.387	100.0	97.99	98	80-127
Barium	65.57	2,000	2,022	98	80-120
Beryllium	0.2382	50.00	57.61	115	80-120
Cadmium	<0.3555	50.00	49.09	98	80-120
Chromium	4.728	200.0	197.3	96	80-120
Cobalt	<0.3112	500.0	454.8	91	80-120
Copper	3.587	250.0	241.0	95	80-120
Lead	<1.150	100.0	91.61	92	76-120
Molybdenum	1.761	400.0	395.7	98	80-120
Nickel	0.7375	500.0	461.1	92	80-120
Selenium	<1.986	100.0	96.41	96	80-128
Silver	<0.7500	50.00	48.73	97	73-122
Thallium	<1.131	100.0	93.72	94	78-120
Vanadium	17.92	500.0	514.7	99	80-120
Zinc	6.129	500.0	495.1	98	80-123

Type: MSD Lab ID: QC409073

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	471.0	93	80-120	0	20
Arsenic	100.0	98.71	99	80-127	1	20
Barium	2,000	2,031	98	80-120	0	20
Beryllium	50.00	57.95	115	80-120	1	20
Cadmium	50.00	48.77	98	80-120	1	20
Chromium	200.0	196.5	96	80-120	0	20
Cobalt	500.0	457.2	91	80-120	1	20
Copper	250.0	242.4	96	80-120	1	20
Lead	100.0	89.30	89	76-120	3	20
Molybdenum	400.0	395.3	98	80-120	0	20
Nickel	500.0	464.1	93	80-120	1	20
Selenium	100.0	95.50	95	80-128	1	20
Silver	50.00	49.21	98	73-122	1	20
Thallium	100.0	94.68	95	78-120	1	20
Vanadium	500.0	517.4	100	80-120	1	20
Zinc	500.0	498.9	99	80-123	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Batch#:	130142
Matrix:	Water	Received:	10/03/07
Units:	mg/L		

Field ID	Type	Lab ID	Result	RL	Diln Fac	Sampled	Analyzed
B-12-GW-33'	SAMPLE	198049-003	0.15	0.05	1.000	10/01/07 11:08	10/03/07 14:29
B-10-GW-27.5'	SAMPLE	198049-006	5.4	0.10	2.000	10/01/07 16:30	10/03/07 14:12
B-10-GW-45'	SAMPLE	198049-007	0.13	0.05	1.000	10/02/07 10:30	10/03/07 14:47
	BLANK	QC408878	ND	0.05	1.000		10/03/07 12:59

ND= Not Detected
RL= Reporting Limit

2.0

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	B-12-GW-33'	Batch#:	130142
MSS Lab ID:	198049-003	Sampled:	10/01/07 11:08
Matrix:	Water	Received:	10/03/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC408879		1.000	0.9887	99	80-120			1.000	10/03/07 13:16
BSD	QC408880		1.000	0.9999	100	80-120	1	20	1.000	10/03/07 13:34
MS	QC408952	0.1491	2.500	2.824	107	80-120			5.000	10/03/07 18:06
MSD	QC408953		2.500	2.445	92	80-120	14	20	5.000	10/03/07 18:23

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130304
Units:	mg/Kg	Received:	10/03/07
Basis:	as received		

Field ID	Type	Lab ID	Result	RL	Sampled	Analyzed
B-12-SS-42'	SAMPLE	198049-001	ND	0.5	10/01/07 11:00	10/08/07 14:19
B-12-SS-0.0'	SAMPLE	198049-002	2.3	0.5	10/01/07 09:00	10/08/07 13:59
B-10-SS-45'	SAMPLE	198049-005	0.7	0.5	10/01/07 08:30	10/08/07 14:40
	BLANK	QC409544	ND	0.5		10/08/07 12:58

ND= Not Detected
RL= Reporting Limit

48.0

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198049	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Basis:	as received
Field ID:	B-12-SS-0.0'	Batch#:	130304
MSS Lab ID:	198049-002	Sampled:	10/01/07 09:00
Matrix:	Soil	Received:	10/03/07
Units:	mg/Kg		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC409545		10.00	10.34	103	80-120			1.000	10/08/07 13:15
BSD	QC409546		10.00	9.983	100	80-120	3	20	1.000	10/08/07 13:33
MS	QC409587	2.349	5.100	6.705	85	50-120			1.020	10/08/07 16:52
MSD	QC409588		5.100	6.956	90	50-120	4	30	1.020	10/08/07 17:10

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

198049

Chain of Custody Record

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 10/1/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier: UPS 9X3164
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☐ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15-E
1 of 2 COCs
Job No. 379-1827-15-02
SDG No.

	Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
1	B-12-SS-42'	10/1/07	11:00	poly	SO	1	✓		✓	✓	✓			
2	B-12-SS-0.0'	10/1/07	9:00	poly	SO	1	✓	✓	✓	✓		✓	✓	
3	B-12-GW-33'	10/1/07	11:08	VOA	GW	3	✓							
				VOA	GW	3				✓				
				1L amber	GW	2			✓					
				750 ml poly	GW	1	✓	✓						
				250 ml poly	GW	1					✓			

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Robert K. [illegible]	Weiss Associates	10/2/07, 13:00	[illegible]	C&T	10-3-07 1115
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

198049

Chain of Custody Record

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 10/2/07	1827-15 - E
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier: UPS 9X3169	2 of 2 COCs
5801 Christie Avenue, Suite 600	Analysis Turnaround Time			Job No. 379-1827-15-02
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days			
(510) - 450 - 6000 Phone	TAT if different from above: 5 days			
(510) - 547 - 5043 FAX	☐ 2 weeks			SDG No.
Project Name: Cloverdale Project	☐ 1 week			
Site: Cloverdale, Ca	☐ 2 days			
C&T-WO-07-002	☐ 1 day			

	Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
4	B-10-SS-0.0'	10/1/07	9:30	poly	SO	1	✓	✓	✓	✓		✓	✓	
5	B-10-SS-45'	10/2/07	08:30	poly	SO	1	✓		✓	✓	✓			
6	B-10-GW-27.5'	10/1/07	16:30	VOA	GW	3	✓							
				VOA	GW	3				✓				
				1L amber	GW	2			✓					
				750 ml poly	GW	1	✓	✓						
				250 ml poly	GW	1					✓			
7	B-10-GW-45'	10/2/07	10:30	VOA	GW	3	✓							
				VOA	GW	3				✓				
				1L amber	GW	2			✓					
				750 ml poly	GW	1	✓	✓						
				250 ml poly	GW	1					✓			

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Robert K. [illegible]	Weiss Associates	10/2/07, 13:00	[illegible]	C&T	10-3-07 1115
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Subject: Re: 379-1827-15-02 - C&T Login Summary (198049)
From: "Joyce E. Adams" <jea@weiss.com>
Date: Wed, 03 Oct 2007 15:51:03 -0700
To: "Anne Kathain" <Anne@ctberk.com>

Hi Anne,
Thanks for the info. Please run the trip blank.

Also how are the first results coming along. Is it possible to get preliminary data without an increase charge. Please advise.

Thank you,
Joyce

Joyce Adams
Sr. Project Geologist, P.G.
Weiss Associates
5801 Christie Ave. Suite 600
Emeryville, CA 94608

Ph. 510-450-6162
Fax 510-547-5043

The information and/or attachments contained herein may be privileged, confidential, and protected from disclosure. If you are not the intended recipient, any dissemination or copying is strictly prohibited. If you think or know that you have received this mail in error, please notify the sender, delete all copies and discard any printouts without reading the information contained within.

"Anne Kathain" <Anne@ctberk.com> 10/3/2007 3:38:12 pm >>>

The TRIP BLANK was not listed on the COC, please confirm analysis
C&T Login Summary for 198049

Project:379-1827-15-02
Site:Cloverdale Project
Lab Login #:198049
Report Due:10/10/07
PO#:
C&T Proj Mgr:Anne Kathain

Report To:Weiss Associates

350 East Middlefield Rd

Mountain View, CA 94043

ATTN: Joyce Adams

(650) 968-7000

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates 5801 Christie Avenue Emeryville, CA 94608	Project : 379-1827-15-02 Location : Cloverdale Project Level : II

Sample ID	Lab ID
B-1-SS-0.0'	198088-001
B-1-SS-36'	198088-002
B-1-GW-24'	198088-003
TRIP BLANK	198088-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/30/2007
Project Manager

Signature: _____ Date: 10/30/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198088**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/04/07**
Samples Received:	**10/04/07**

This hardcopy data package contains sample and QC results for two soil samples and two water samples, requested for the above referenced project on 10/04/07. The samples were received intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:
High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the LCS/MS/MSD for batch 130251. No other analytical problems were encountered.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Soil:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Water:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Soil:
No analytical problems were encountered.

Pesticides (EPA 8081A):
No analytical problems were encountered.

Polychlorinated Biphenyls (PCBs) (EPA 8082):
No analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A) Soil:
Low recovery was observed for mercury in the MS for batch 130306; the parent sample was not a project sample, the BS/BSD were within limits, and the associated RPD was within limits. No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7470A) Filtrate:
No analytical problems were encountered.

Ion Chromatography (EPA 300.0) Water:
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198088**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/04/07**
Samples Received:	**10/04/07**

Ion Chromatography (EPA 300.0) Soil:
No analytical problems were encountered.

Asbestos PLM (EPA 600/R-93-116):
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-1-GW-24'	Batch#:	130251
Matrix:	Water	Sampled:	10/02/07
Units:	ug/L	Received:	10/04/07
Diln Fac:	1.000		

Type:	SAMPLE	Analyzed:	10/06/07
Lab ID:	198088-003		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	123	73-134
Bromofluorobenzene (FID)	125	77-140

Type:	BLANK	Analyzed:	10/05/07
Lab ID:	QC409333		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	73-134
Bromofluorobenzene (FID)	99	77-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409335	Batch#:	130251
Matrix:	Water	Analyzed:	10/05/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	988.1	99	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	139 *	73-134
Bromofluorobenzene (FID)	139	77-140

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130251
MSS Lab ID:	198112-004	Sampled:	10/03/07
Matrix:	Water	Received:	10/04/07
Units:	ug/L	Analyzed:	10/05/07
Diln Fac:	1.000		

Type: MS Lab ID: QC409336

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	18.77	2,000	1,926	95	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	153 *	73-134
Bromofluorobenzene (FID)	148 *	77-140

Type: MSD Lab ID: QC409337

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,962	97	72-120	2	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	160 *	73-134
Bromofluorobenzene (FID)	160 *	77-140

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Diln Fac:	1.000
Units:	mg/Kg	Batch#:	130246
Basis:	as received	Received:	10/04/07

Field ID:	B-1-SS-0.0'	Sampled:	10/02/07
Type:	SAMPLE	Analyzed:	10/06/07
Lab ID:	198088-001		

Analyte	Result	RL
Gasoline C7-C12	ND	0.97

Surrogate	%REC	Limits
Trifluorotoluene (FID)	86	71-132
Bromofluorobenzene (FID)	98	69-145

Field ID:	B-1-SS-36'	Sampled:	10/03/07
Type:	SAMPLE	Analyzed:	10/06/07
Lab ID:	198088-002		

Analyte	Result	RL
Gasoline C7-C12	ND	1.1

Surrogate	%REC	Limits
Trifluorotoluene (FID)	90	71-132
Bromofluorobenzene (FID)	98	69-145

Type:	BLANK	Analyzed:	10/05/07
Lab ID:	QC409318		

Analyte	Result	RL
Gasoline C7-C12	ND	0.20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	88	71-132
Bromofluorobenzene (FID)	95	69-145

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC409320	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130246
Units:	mg/Kg	Analyzed:	10/05/07

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	5.000	5.059	101	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	71-132
Bromofluorobenzene (FID)	99	69-145

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	197959-002	Batch#:	130246
Matrix:	Soil	Sampled:	09/28/07
Units:	mg/Kg	Received:	09/28/07
Basis:	as received	Analyzed:	10/06/07

Type: MS Lab ID: QC409321

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.2565	10.10	7.144	68	43-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	71-132
Bromofluorobenzene (FID)	98	69-145

Type: MSD Lab ID: QC409322

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.10	6.202	59	43-120	14	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	97	71-132
Bromofluorobenzene (FID)	97	69-145

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-1-GW-24'	Batch#:	130305
Matrix:	Water	Sampled:	10/02/07
Units:	ug/L	Received:	10/04/07
Diln Fac:	1.000	Prepared:	10/08/07

Type: SAMPLE Analyzed: 10/10/07
Lab ID: 198088-003

Analyte	Result	RL	MDL
Diesel C10-C24	53 Y	50	
Motor Oil C24-C36	ND	300	85

Surrogate	%REC	Limits
Hexacosane	87	61-133

Type: BLANK Analyzed: 10/09/07
Lab ID: QC409547

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	ND	300	85

Surrogate	%REC	Limits
Hexacosane	95	61-133

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130305
Units:	ug/L	Prepared:	10/08/07
Diln Fac:	1.000	Analyzed:	10/09/07

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC409548

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,872	75	58-128

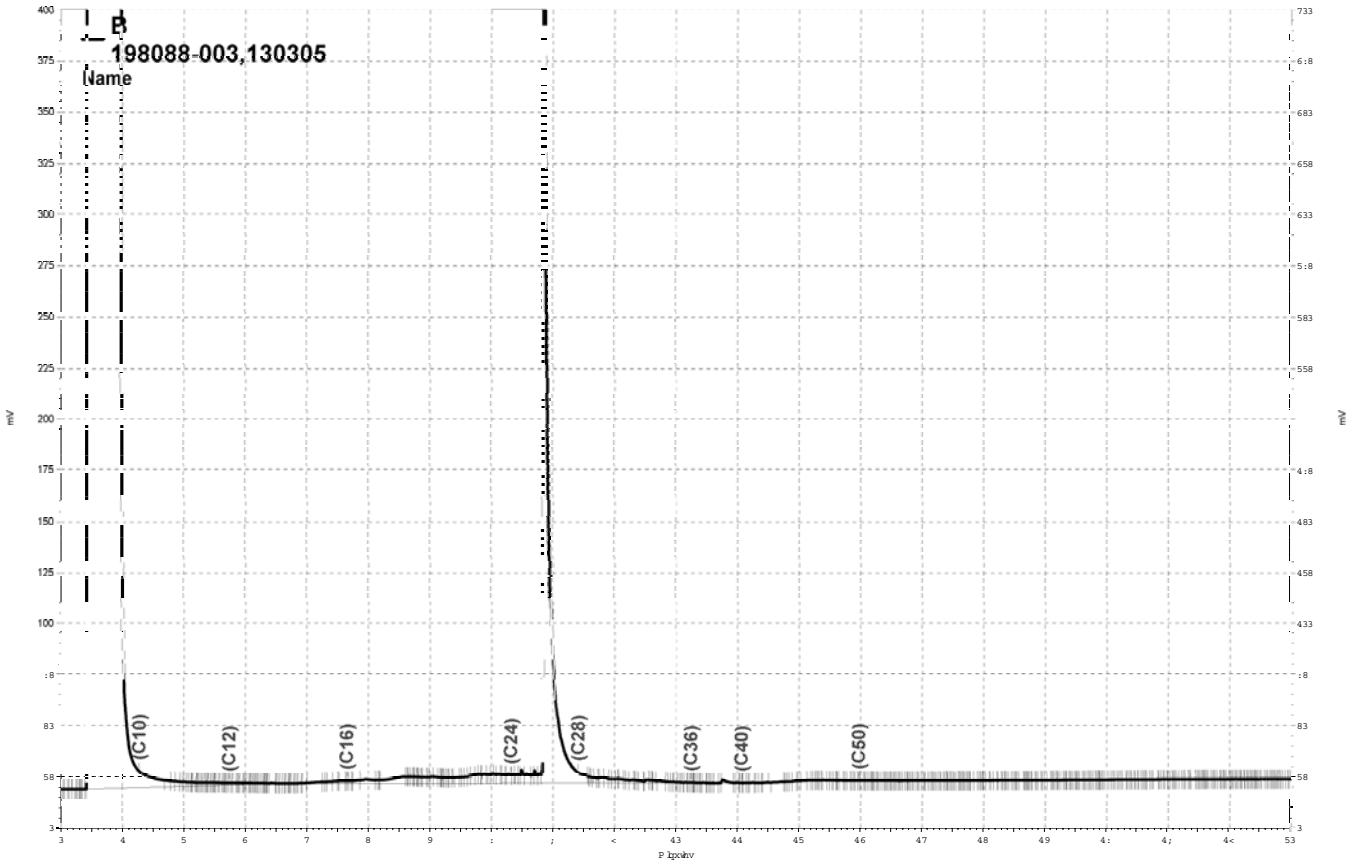
Surrogate	%REC	Limits
Hexacosane	85	61-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC409549

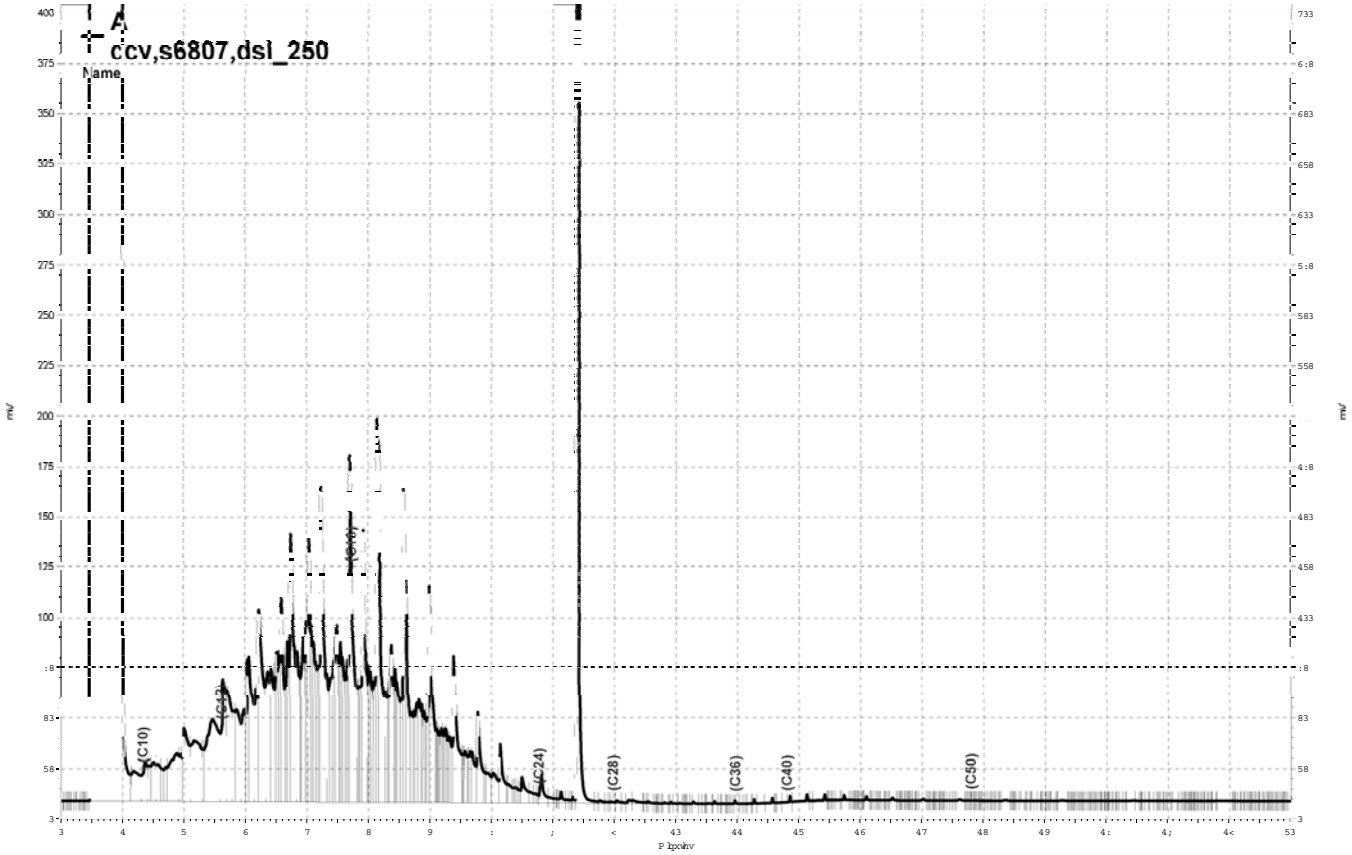
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,070	83	58-128	10	29

Surrogate	%REC	Limits
Hexacosane	92	61-133

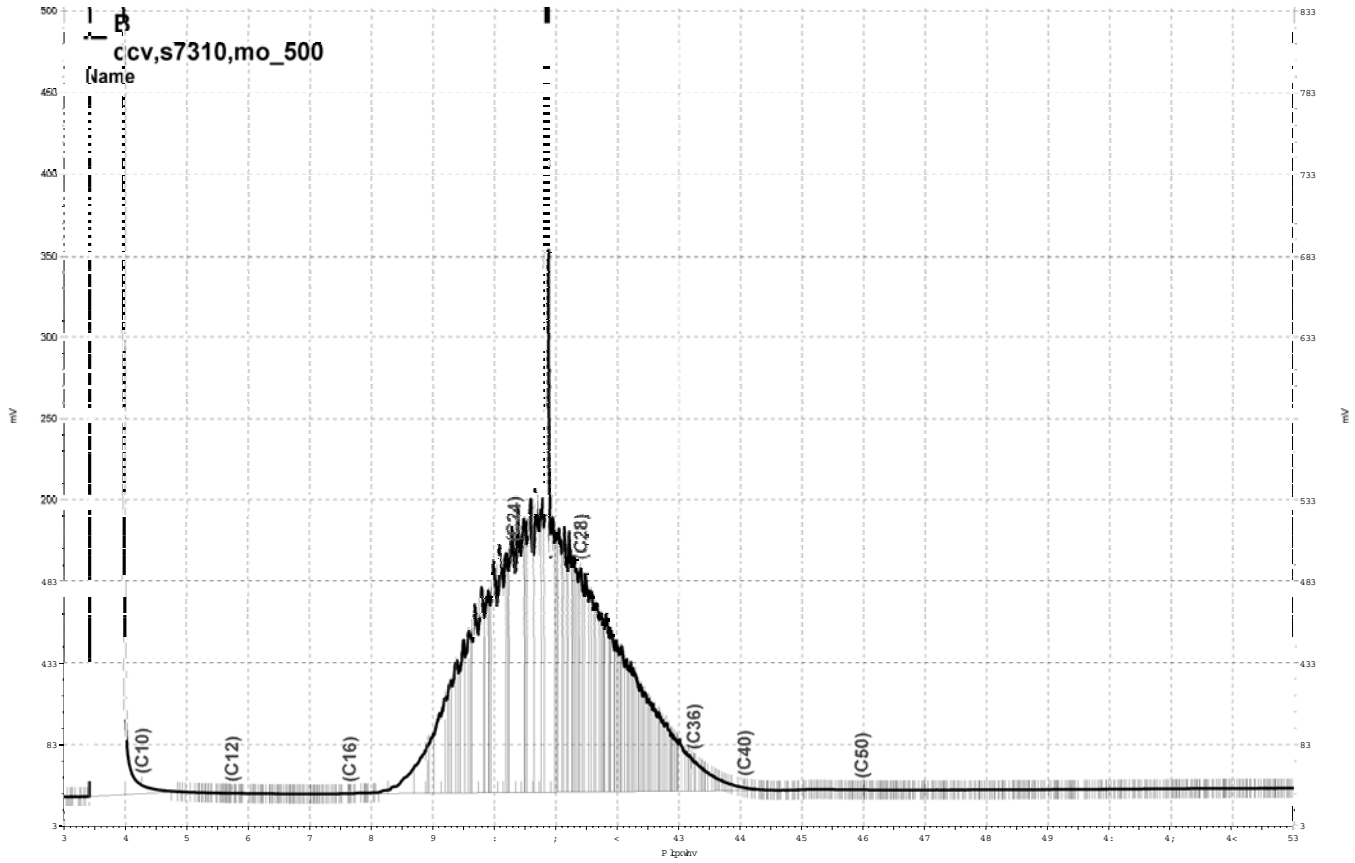
RPD= Relative Percent Difference



_Olp vjgulyh h}fkurp _Surmfw_J F48E_Gdwd_5;4e393/E



_Olp v jgulyh h}fkurp _Surmnfw J F44D_Gdwd_5;4d354/D



_Olp v jgulyh h}fkurp _Surmfw J F48E_Gdwd_5;4e36</E

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Diln Fac:	1.000
Units:	mg/Kg	Received:	10/04/07
Basis:	as received	Prepared:	10/11/07

Field ID:	B-1-SS-0.0'	Batch#:	130417
Type:	SAMPLE	Sampled:	10/02/07
Lab ID:	198088-001	Cleanup Method:	EPA 3630C

Analyte	Result	RL	Analyzed
Diesel C10-C24	34 Y	1.0	10/11/07
Diesel C10-C24 (SGCU)	16 Y	1.0	11/01/07
Motor Oil C24-C36	100	5.0	10/11/07
Motor Oil C24-C36 (SGCU)	89	5.0	11/01/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	100	46-128	10/11/07
Hexacosane (SGCU)	87	46-128	11/01/07

Field ID:	B-1-SS-36'	Batch#:	130444
Type:	SAMPLE	Sampled:	10/03/07
Lab ID:	198088-002	Analyzed:	10/15/07

Analyte	Result	RL
Diesel C10-C24	17 Y	1.0
Motor Oil C24-C36	53	5.0

Surrogate	%REC	Limits
Hexacosane	89	46-128

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Diln Fac:	1.000
Units:	mg/Kg	Received:	10/04/07
Basis:	as received	Prepared:	10/11/07

Type:	BLANK	Analyzed:	10/11/07
Lab ID:	QC409994	Cleanup Method:	EPA 3630C
Batch#:	130417		

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Diesel C10-C24 (SGCU)	ND	1.0
Motor Oil C24-C36	ND	5.0
Motor Oil C24-C36 (SGCU)	ND	5.0

Surrogate	%REC	Limits
Hexacosane	96	46-128
Hexacosane (SGCU)	78	46-128

Type:	BLANK	Batch#:	130444
Lab ID:	QC410132	Analyzed:	10/15/07

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
Hexacosane	92	46-128

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

52.1

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409995	Batch#:	130417
Matrix:	Soil	Prepared:	10/11/07
Units:	mg/Kg	Analyzed:	10/11/07
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	49.53	42.88	87	55-131

Surrogate	%REC	Limits
Hexacosane (SGCU)	82	46-128

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-1-SS-0.0'	Diln Fac:	1.000
MSS Lab ID:	198088-001	Batch#:	130417
Matrix:	Soil	Sampled:	10/02/07
Units:	mg/Kg	Received:	10/04/07
Basis:	as received	Prepared:	10/11/07

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC409996

Analyte	MSS Result	Spiked	Result	%REC	Limits	Analyzed
Diesel C10-C24	34.47	50.38	86.91	104	31-150	10/11/07
Diesel C10-C24 (SGCU)	16.36	50.38	57.68	82	31-150	11/02/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	106	46-128	10/11/07
Hexacosane (SGCU)	85	46-128	11/02/07

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC409997

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
Diesel C10-C24	50.14	81.61	94	31-150	6	42	10/11/07
Diesel C10-C24 (SGCU)	50.14	60.47	88	31-150	5	42	11/02/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	103	46-128	10/11/07
Hexacosane (SGCU)	90	46-128	11/02/07

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC410133	Batch#:	130444
Matrix:	Soil	Prepared:	10/11/07
Units:	mg/Kg	Analyzed:	10/15/07
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	49.83	42.51	85	55-131

Surrogate	%REC	Limits
Hexacosane (SGCU)	89	46-128

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130444
MSS Lab ID:	197998-001	Sampled:	10/01/07
Matrix:	Soil	Received:	10/01/07
Units:	mg/Kg	Prepared:	10/11/07
Basis:	as received	Analyzed:	10/14/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410134

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	1.750	49.94	41.72	80	31-150

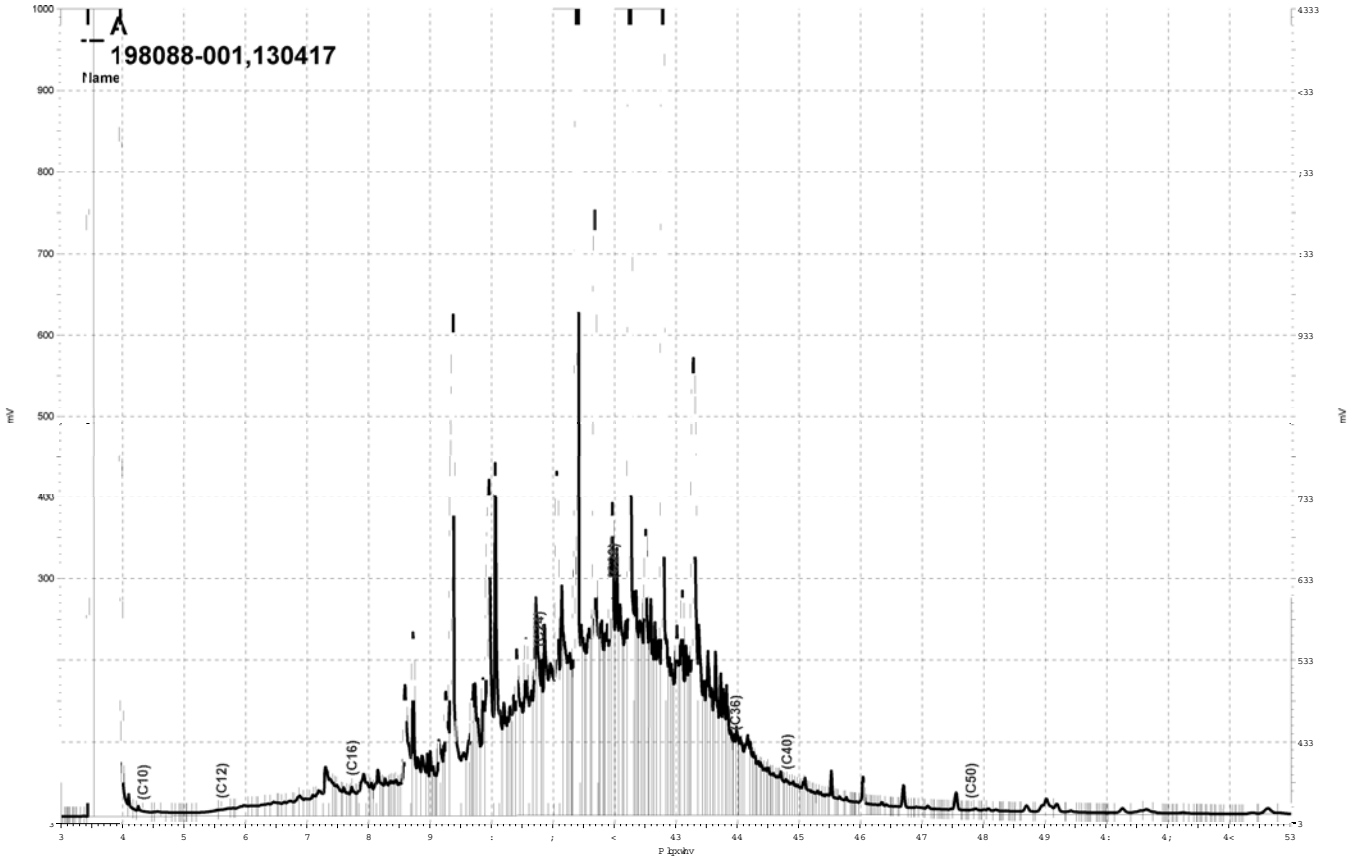
Surrogate	%REC	Limits
Hexacosane (SGCU)	90	46-128

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410135

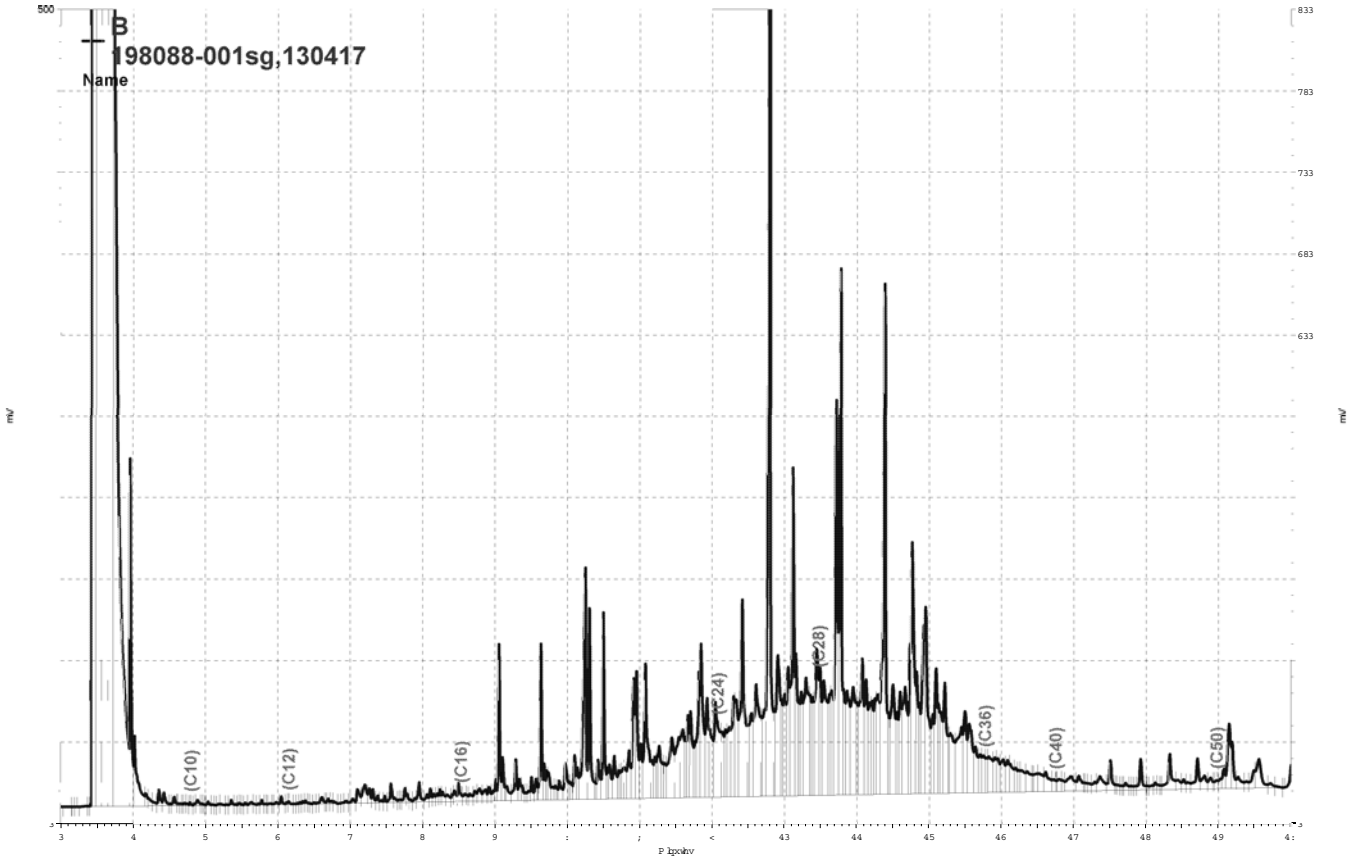
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	49.84	47.34	91	31-150	13	42

Surrogate	%REC	Limits
Hexacosane (SGCU)	98	46-128

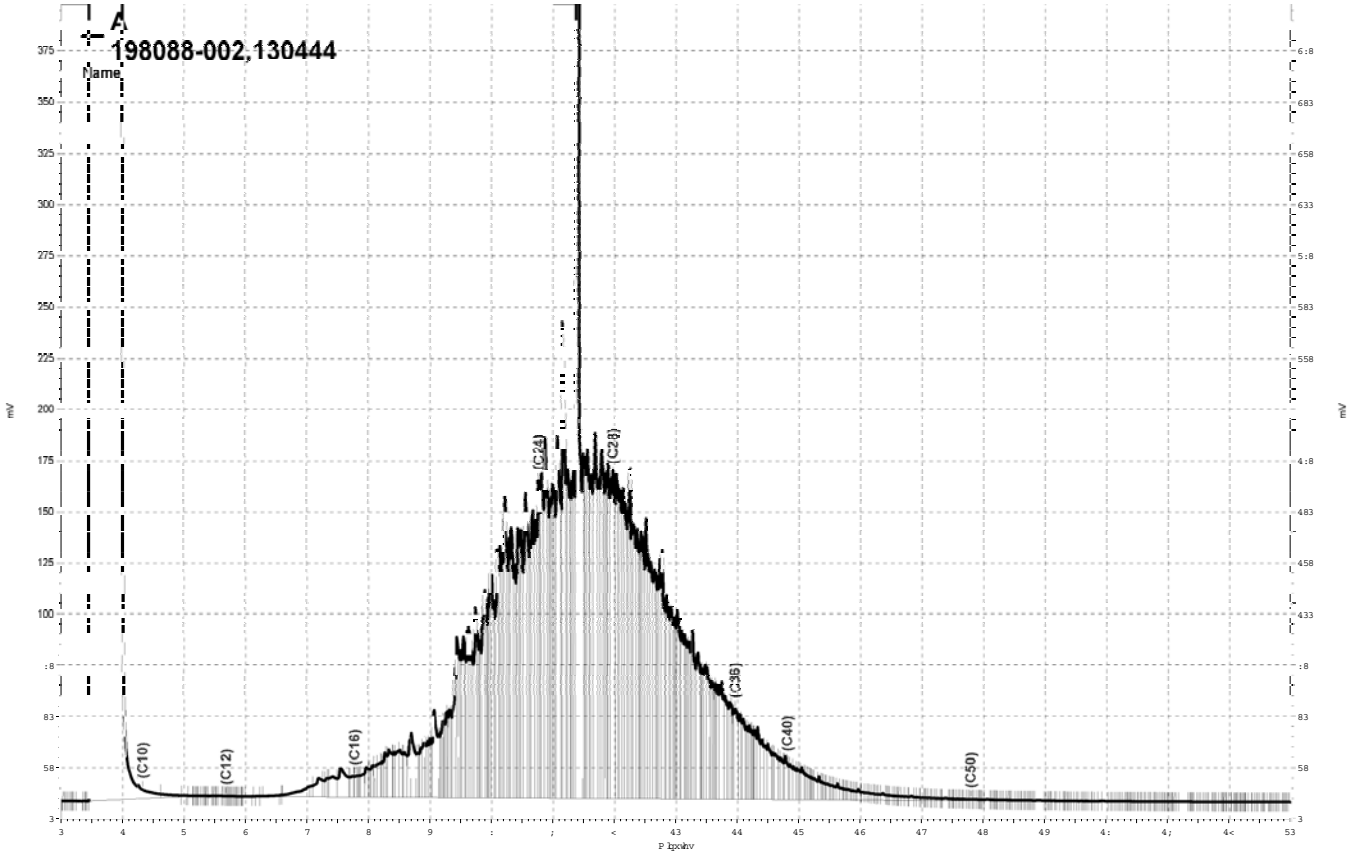
RPD= Relative Percent Difference
SGCU= Silica gel cleanup



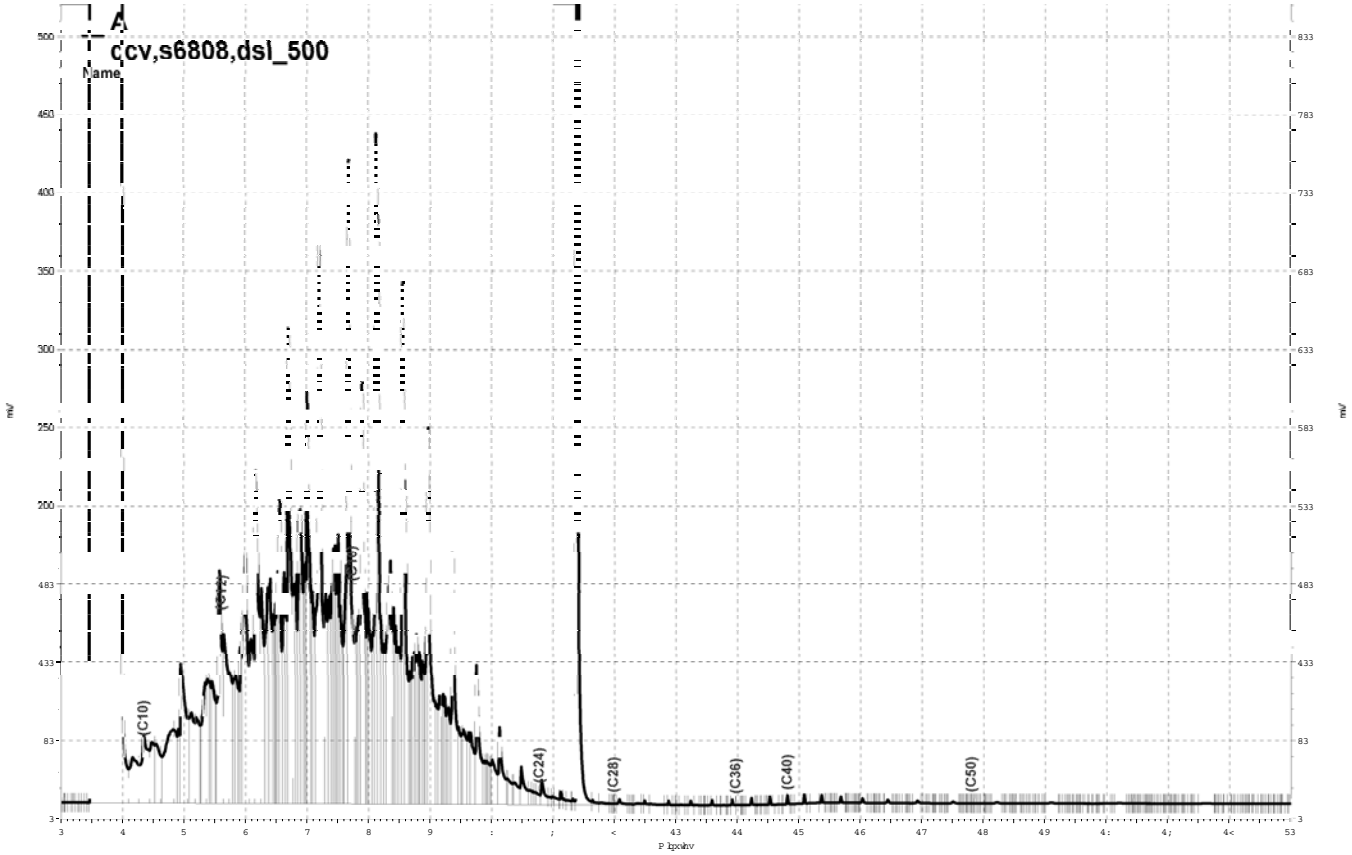
_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5;7d344/D



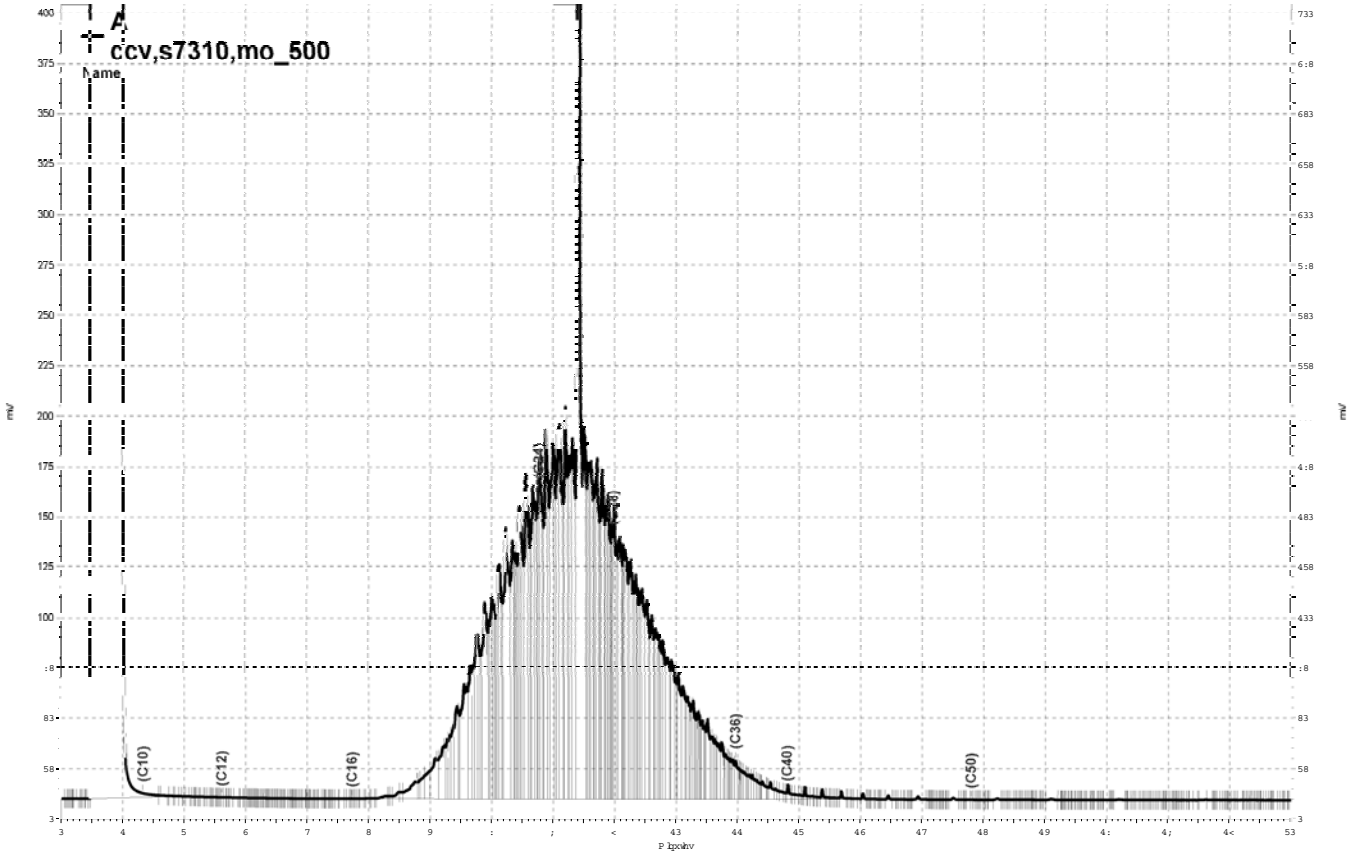
_Olp v jgulyh h}fkurp _Surmfw J F59 Gdwd 638e347/E



_Olp v jgulyh h}fkurp _Surmnfwr J F44D_Gdwd_5;:d365/D



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5;7d337/D



_Olp v jgulyh h}fkurp _Surmnfw J F44D_Gdwd_5;7d338/D

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-1-GW-24'	Batch#:	130225
Lab ID:	198088-003	Sampled:	10/02/07
Matrix:	Water	Received:	10/04/07
Units:	ug/L	Analyzed:	10/05/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-1-GW-24'	Batch#:	130225
Lab ID:	198088-003	Sampled:	10/02/07
Matrix:	Water	Received:	10/04/07
Units:	ug/L	Analyzed:	10/05/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	107	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	130226
Lab ID:	198088-004	Sampled:	10/02/07
Matrix:	Water	Received:	10/04/07
Units:	ug/L	Analyzed:	10/05/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	130226
Lab ID:	198088-004	Sampled:	10/02/07
Matrix:	Water	Received:	10/04/07
Units:	ug/L	Analyzed:	10/05/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	114	80-122
1,2-Dichloroethane-d4	117	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	114	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409232	Batch#:	130225
Matrix:	Water	Analyzed:	10/05/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	29.26	117	80-133
Benzene	25.00	24.81	99	80-120
Trichloroethene	25.00	25.26	101	80-120
Toluene	25.00	24.96	100	80-122
Chlorobenzene	25.00	25.69	103	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-122
1,2-Dichloroethane-d4	102	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	103	80-120

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409233	Batch#:	130225
Matrix:	Water	Analyzed:	10/05/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409233	Batch#:	130225
Matrix:	Water	Analyzed:	10/05/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-122
1,2-Dichloroethane-d4	105	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409234	Batch#:	130225
Matrix:	Water	Analyzed:	10/05/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409234	Batch#:	130225
Matrix:	Water	Analyzed:	10/05/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	106	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	130226
Units:	ug/L	Analyzed:	10/05/07
Diln Fac:	1.000		

Type: BS Lab ID: QC409235

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	29.66	119	80-133
Benzene	25.00	27.37	109	80-120
Trichloroethene	25.00	29.06	116	80-120
Toluene	25.00	28.23	113	80-122
Chlorobenzene	25.00	26.23	105	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-122
1,2-Dichloroethane-d4	99	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	96	80-120

Type: BSD Lab ID: QC409236

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	28.37	113	80-133	4	20
Benzene	25.00	26.37	105	80-120	4	20
Trichloroethene	25.00	27.70	111	80-120	5	20
Toluene	25.00	27.16	109	80-122	4	20
Chlorobenzene	25.00	25.65	103	80-120	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-122
1,2-Dichloroethane-d4	96	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	95	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409237	Batch#:	130226
Matrix:	Water	Analyzed:	10/05/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409237	Batch#:	130226
Matrix:	Water	Analyzed:	10/05/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-122
1,2-Dichloroethane-d4	100	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	197922-009	Batch#:	130225
Matrix:	Water	Sampled:	09/25/07
Units:	ug/L	Received:	09/27/07

Type: MS Analyzed: 10/05/07
Lab ID: QC409263

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.1169	25.00	27.71	111	80-141
Benzene	<0.06286	25.00	24.61	98	80-123
Trichloroethene	0.1816	25.00	24.83	99	73-129
Toluene	<0.1220	25.00	24.16	97	80-124
Chlorobenzene	<0.1069	25.00	24.26	97	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-122
1,2-Dichloroethane-d4	113	74-137
Toluene-d8	104	80-120
Bromofluorobenzene	105	80-120

Type: MSD Analyzed: 10/06/07
Lab ID: QC409264

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	28.86	115	80-141	4	20
Benzene	25.00	25.34	101	80-123	3	20
Trichloroethene	25.00	25.53	101	73-129	3	20
Toluene	25.00	25.02	100	80-124	3	20
Chlorobenzene	25.00	24.68	99	80-120	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-122
1,2-Dichloroethane-d4	113	74-137
Toluene-d8	104	80-120
Bromofluorobenzene	102	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	130226
MSS Lab ID:	198112-003	Sampled:	10/03/07
Matrix:	Water	Received:	10/04/07
Units:	ug/L	Analyzed:	10/05/07
Diln Fac:	1.000		

Type: MS Lab ID: QC409269

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.07091	25.00	30.22	121	80-141
Benzene	0.2054	25.00	29.03	115	80-123
Trichloroethene	0.3157	25.00	31.26	124	73-129
Toluene	0.1827	25.00	29.37	117	80-124
Chlorobenzene	<0.03402	25.00	26.07	104	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	114	80-122
1,2-Dichloroethane-d4	120	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	96	80-120

Type: MSD Lab ID: QC409270

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	29.70	119	80-141	2	20
Benzene	25.00	27.85	111	80-123	4	20
Trichloroethene	25.00	29.97	119	73-129	4	20
Toluene	25.00	28.03	111	80-124	5	20
Chlorobenzene	25.00	25.61	102	80-120	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-122
1,2-Dichloroethane-d4	112	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	93	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-1-SS-0.0'	Diln Fac:	0.9804
Lab ID:	198088-001	Batch#:	130182
Matrix:	Soil	Sampled:	10/02/07
Units:	ug/Kg	Received:	10/04/07
Basis:	as received	Analyzed:	10/04/07

Analyte	Result	RL
Freon 12	ND	9.8
Chloromethane	ND	9.8
Vinyl Chloride	ND	9.8
Bromomethane	ND	9.8
Chloroethane	ND	9.8
Trichlorofluoromethane	ND	4.9
Acetone	ND	25
Freon 113	ND	4.9
1,1-Dichloroethene	ND	4.9
Methylene Chloride	ND	20
Carbon Disulfide	ND	4.9
MTBE	ND	4.9
trans-1,2-Dichloroethene	ND	4.9
Vinyl Acetate	ND	49
1,1-Dichloroethane	ND	4.9
2-Butanone	ND	9.8
cis-1,2-Dichloroethene	ND	4.9
2,2-Dichloropropane	ND	4.9
Chloroform	ND	4.9
Bromochloromethane	ND	4.9
1,1,1-Trichloroethane	ND	4.9
1,1-Dichloropropene	ND	4.9
Carbon Tetrachloride	ND	4.9
1,2-Dichloroethane	ND	4.9
Benzene	ND	4.9
Trichloroethene	ND	4.9
1,2-Dichloropropane	ND	4.9
Bromodichloromethane	ND	4.9
Dibromomethane	ND	4.9
4-Methyl-2-Pentanone	ND	9.8
cis-1,3-Dichloropropene	ND	4.9
Toluene	ND	4.9
trans-1,3-Dichloropropene	ND	4.9
1,1,2-Trichloroethane	ND	4.9
2-Hexanone	ND	9.8
1,3-Dichloropropane	ND	4.9
Tetrachloroethene	ND	4.9

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-1-SS-0.0'	Diln Fac:	0.9804
Lab ID:	198088-001	Batch#:	130182
Matrix:	Soil	Sampled:	10/02/07
Units:	ug/Kg	Received:	10/04/07
Basis:	as received	Analyzed:	10/04/07

Analyte	Result	RL
Dibromochloromethane	ND	4.9
1,2-Dibromoethane	ND	4.9
Chlorobenzene	ND	4.9
1,1,1,2-Tetrachloroethane	ND	4.9
Ethylbenzene	ND	4.9
m,p-Xylenes	ND	4.9
o-Xylene	ND	4.9
Styrene	ND	4.9
Bromoform	ND	4.9
Isopropylbenzene	ND	4.9
1,1,2,2-Tetrachloroethane	ND	4.9
1,2,3-Trichloropropane	ND	4.9
Propylbenzene	ND	4.9
Bromobenzene	ND	4.9
1,3,5-Trimethylbenzene	ND	4.9
2-Chlorotoluene	ND	4.9
4-Chlorotoluene	ND	4.9
tert-Butylbenzene	ND	4.9
1,2,4-Trimethylbenzene	ND	4.9
sec-Butylbenzene	ND	4.9
para-Isopropyl Toluene	ND	4.9
1,3-Dichlorobenzene	ND	4.9
1,4-Dichlorobenzene	ND	4.9
n-Butylbenzene	ND	4.9
1,2-Dichlorobenzene	ND	4.9
1,2-Dibromo-3-Chloropropane	ND	4.9
1,2,4-Trichlorobenzene	ND	4.9
Hexachlorobutadiene	ND	4.9
Naphthalene	ND	4.9
1,2,3-Trichlorobenzene	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	91	80-124
1,2-Dichloroethane-d4	93	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	90	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-1-SS-36'	Diln Fac:	0.9615
Lab ID:	198088-002	Batch#:	130182
Matrix:	Soil	Sampled:	10/03/07
Units:	ug/Kg	Received:	10/04/07
Basis:	as received	Analyzed:	10/04/07

Analyte	Result	RL
Freon 12	ND	9.6
Chloromethane	ND	9.6
Vinyl Chloride	ND	9.6
Bromomethane	ND	9.6
Chloroethane	ND	9.6
Trichlorofluoromethane	ND	4.8
Acetone	ND	24
Freon 113	ND	4.8
1,1-Dichloroethene	ND	4.8
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.8
MTBE	ND	4.8
trans-1,2-Dichloroethene	ND	4.8
Vinyl Acetate	ND	48
1,1-Dichloroethane	ND	4.8
2-Butanone	ND	9.6
cis-1,2-Dichloroethene	ND	4.8
2,2-Dichloropropane	ND	4.8
Chloroform	ND	4.8
Bromochloromethane	ND	4.8
1,1,1-Trichloroethane	ND	4.8
1,1-Dichloropropene	ND	4.8
Carbon Tetrachloride	ND	4.8
1,2-Dichloroethane	ND	4.8
Benzene	ND	4.8
Trichloroethene	ND	4.8
1,2-Dichloropropane	ND	4.8
Bromodichloromethane	ND	4.8
Dibromomethane	ND	4.8
4-Methyl-2-Pentanone	ND	9.6
cis-1,3-Dichloropropene	ND	4.8
Toluene	ND	4.8
trans-1,3-Dichloropropene	ND	4.8
1,1,2-Trichloroethane	ND	4.8
2-Hexanone	ND	9.6
1,3-Dichloropropane	ND	4.8
Tetrachloroethene	ND	4.8

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-1-SS-36'	Diln Fac:	0.9615
Lab ID:	198088-002	Batch#:	130182
Matrix:	Soil	Sampled:	10/03/07
Units:	ug/Kg	Received:	10/04/07
Basis:	as received	Analyzed:	10/04/07

Analyte	Result	RL
Dibromochloromethane	ND	4.8
1,2-Dibromoethane	ND	4.8
Chlorobenzene	ND	4.8
1,1,1,2-Tetrachloroethane	ND	4.8
Ethylbenzene	ND	4.8
m,p-Xylenes	ND	4.8
o-Xylene	ND	4.8
Styrene	ND	4.8
Bromoform	ND	4.8
Isopropylbenzene	ND	4.8
1,1,2,2-Tetrachloroethane	ND	4.8
1,2,3-Trichloropropane	ND	4.8
Propylbenzene	ND	4.8
Bromobenzene	ND	4.8
1,3,5-Trimethylbenzene	ND	4.8
2-Chlorotoluene	ND	4.8
4-Chlorotoluene	ND	4.8
tert-Butylbenzene	ND	4.8
1,2,4-Trimethylbenzene	ND	4.8
sec-Butylbenzene	ND	4.8
para-Isopropyl Toluene	ND	4.8
1,3-Dichlorobenzene	ND	4.8
1,4-Dichlorobenzene	ND	4.8
n-Butylbenzene	ND	4.8
1,2-Dichlorobenzene	ND	4.8
1,2-Dibromo-3-Chloropropane	ND	4.8
1,2,4-Trichlorobenzene	ND	4.8
Hexachlorobutadiene	ND	4.8
Naphthalene	ND	4.8
1,2,3-Trichlorobenzene	ND	4.8

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-124
1,2-Dichloroethane-d4	88	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	91	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Matrix:	Soil	Diln Fac:	1.000
Units:	ug/Kg	Batch#:	130182
Basis:	as received	Analyzed:	10/04/07

Type: BS Lab ID: QC409051

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	23.74	95	74-131
Benzene	25.00	25.82	103	77-121
Trichloroethene	25.00	26.70	107	77-121
Toluene	25.00	26.36	105	79-122
Chlorobenzene	25.00	25.38	102	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	87	80-124
1,2-Dichloroethane-d4	86	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	91	80-122

Type: BSD Lab ID: QC409052

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	20.51	82	74-131	15	20
Benzene	25.00	25.03	100	77-121	3	20
Trichloroethene	25.00	27.13	109	77-121	2	20
Toluene	25.00	26.37	105	79-122	0	20
Chlorobenzene	25.00	24.25	97	80-120	5	20

Surrogate	%REC	Limits
Dibromofluoromethane	85	80-124
1,2-Dichloroethane-d4	87	79-136
Toluene-d8	103	80-120
Bromofluorobenzene	88	80-122

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC409053	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130182
Units:	ug/Kg	Analyzed:	10/04/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC409053	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130182
Units:	ug/Kg	Analyzed:	10/04/07

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	87	80-124
1,2-Dichloroethane-d4	85	79-136
Toluene-d8	100	80-120
Bromofluorobenzene	92	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Diln Fac:	0.9259
MSS Lab ID:	198082-007	Batch#:	130182
Matrix:	Soil	Sampled:	10/02/07
Units:	ug/Kg	Received:	10/03/07
Basis:	as received	Analyzed:	10/04/07

Type: MS Lab ID: QC409115

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.4483	46.30	40.67	88	61-145
Benzene	<0.6561	46.30	43.10	93	57-123
Trichloroethene	<0.6888	46.30	48.43	105	52-141
Toluene	<0.4839	46.30	44.15	95	53-126
Chlorobenzene	<0.5534	46.30	41.78	90	49-121

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-124
1,2-Dichloroethane-d4	87	79-136
Toluene-d8	97	80-120
Bromofluorobenzene	89	80-122

Type: MSD Lab ID: QC409116

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	46.30	41.79	90	61-145	3	26
Benzene	46.30	44.06	95	57-123	2	25
Trichloroethene	46.30	49.06	106	52-141	1	26
Toluene	46.30	45.35	98	53-126	3	27
Chlorobenzene	46.30	40.52	88	49-121	3	27

Surrogate	%REC	Limits
Dibromofluoromethane	93	80-124
1,2-Dichloroethane-d4	91	79-136
Toluene-d8	104	80-120
Bromofluorobenzene	89	80-122

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-1-SS-0.0'	Batch#:	130274
Lab ID:	198088-001	Sampled:	10/02/07
Matrix:	Soil	Received:	10/04/07
Units:	ug/Kg	Prepared:	10/07/07
Basis:	as received	Analyzed:	10/11/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	17	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	5.7	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	94	3.3
alpha-Chlordane	6.1 C	1.7
gamma-Chlordane	15 C	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	79	54-120
Decachlorobiphenyl	91	49-142

C= Presence confirmed, but RPD between columns exceeds 40%
ND= Not Detected
RL= Reporting Limit

49.0

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409432	Batch#:	130274
Matrix:	Soil	Prepared:	10/07/07
Units:	ug/Kg	Analyzed:	10/11/07
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	58	54-120
Decachlorobiphenyl	57	49-142

ND= Not Detected
RL= Reporting Limit

50.0

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409433	Batch#:	130274
Matrix:	Soil	Prepared:	10/07/07
Units:	ug/Kg	Analyzed:	10/11/07
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	13.23	13.69	104	44-120
Heptachlor	13.23	10.56	80	44-120
Aldrin	13.23	10.41	79	47-120
Dieldrin	26.46	30.57	116	50-120
Endrin	26.46	30.91	117	27-128
4,4'-DDT	26.46	33.21	126	42-128

Surrogate	%REC	Limits
TCMX	101	54-120
Decachlorobiphenyl	79	49-142

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-SS-0.0'	Batch#:	130274
MSS Lab ID:	198049-002	Sampled:	10/01/07
Matrix:	Soil	Received:	10/03/07
Units:	ug/Kg	Prepared:	10/07/07
Basis:	as received	Analyzed:	10/12/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3620B
Lab ID: QC409434

Analyte	MSS Result	Spiked	Result	%REC	Limits
gamma-BHC	<0.3690	13.28	9.105	69	45-122
Heptachlor	<0.4798	13.28	9.355	70	49-125
Aldrin	<0.3153	13.28	9.232	70	48-120
Dieldrin	<0.9915	26.56	19.07	72	50-121
Endrin	<1.176	26.56	18.43	69	42-123
4,4'-DDT	<1.267	26.56	22.21 #	84	29-135

Surrogate	%REC	Limits
TCMX	74	54-120
Decachlorobiphenyl	73	49-142

Type: MSD Cleanup Method: EPA 3620B
Lab ID: QC409435

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
gamma-BHC	13.31	10.67	80	45-122	16	40
Heptachlor	13.31	11.13	84	49-125	17	42
Aldrin	13.31	10.67	80	48-120	14	37
Dieldrin	26.62	22.92	86	50-121	18	34
Endrin	26.62	22.52	85	42-123	20	39
4,4'-DDT	26.62	23.64 #	89	29-135	6	51

Surrogate	%REC	Limits
TCMX	82	54-120
Decachlorobiphenyl	84	49-142

#= CCV drift outside limits; average CCV drift within limits per method requirements
RPD= Relative Percent Difference

58.0

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Field ID:	B-1-SS-0.0'	Batch#:	130274
Matrix:	Soil	Sampled:	10/02/07
Units:	ug/Kg	Received:	10/04/07
Basis:	as received	Prepared:	10/07/07
Diln Fac:	1.000	Analyzed:	10/08/07

Type: SAMPLE Cleanup Method: EPA 3665A
Lab ID: 198088-001

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	107	66-140
Decachlorobiphenyl	107	51-152

Type: BLANK Cleanup Method: EPA 3665A
Lab ID: QC409432

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	94	66-140
Decachlorobiphenyl	105	51-152

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409436	Batch#:	130274
Matrix:	Soil	Prepared:	10/07/07
Units:	ug/Kg	Analyzed:	10/08/07
Basis:	as received		

Cleanup Method: EPA 3665A

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	164.1	195.3	119	69-142
Aroclor-1260	164.1	191.7	117	69-155

Surrogate	%REC	Limits
TCMX	99	66-140
Decachlorobiphenyl	110	51-152

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Field ID:	ZZZZZZZZZZ	Batch#:	130274
MSS Lab ID:	198070-005	Sampled:	10/02/07
Matrix:	Soil	Received:	10/03/07
Units:	ug/Kg	Prepared:	10/07/07
Basis:	as received	Analyzed:	10/08/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3665A
Lab ID: QC409437

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1016	<2.656	166.2	186.7	112	62-139
Aroclor-1260	<2.695	166.2	176.7	106	54-143

Surrogate	%REC	Limits
TCMX	102	66-140
Decachlorobiphenyl	107	51-152

Type: MSD Cleanup Method: EPA 3665A
Lab ID: QC409438

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	166.2	197.8	119	62-139	6	33
Aroclor-1260	166.2	193.3	116	54-143	9	34

Surrogate	%REC	Limits
TCMX	102	66-140
Decachlorobiphenyl	106	51-152

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198088	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-1-SS-0.0'	Basis:	as received
Lab ID:	198088-001	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/02/07
Units:	mg/Kg	Received:	10/04/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	1.2	0.50	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Arsenic	7.3	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Barium	200	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Beryllium	0.68	0.10	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Chromium	52	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Cobalt	20	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Copper	27	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Lead	19	0.21	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Mercury	0.084	0.020	130306	10/08/07	10/08/07	METHOD	EPA 7471A
Molybdenum	0.31	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Nickel	89	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Selenium	1.9	0.50	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Vanadium	47	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Zinc	87	1.0	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

38.0

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198088	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-1-SS-36'	Basis:	as received
Lab ID:	198088-002	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/03/07
Units:	mg/Kg	Received:	10/04/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	0.50	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Arsenic	8.7	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Barium	110	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Beryllium	0.34	0.10	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Chromium	170	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Cobalt	29	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Copper	31	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Lead	4.4	0.23	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Mercury	0.17	0.020	130306	10/08/07	10/08/07	METHOD	EPA 7471A
Molybdenum	0.59	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Nickel	350	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Selenium	3.7	0.50	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Vanadium	43	0.25	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B
Zinc	42	1.0	130212	10/04/07	10/05/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

39.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409171	Batch#:	130212
Matrix:	Soil	Prepared:	10/04/07
Units:	mg/Kg	Analyzed:	10/04/07
Basis:	as received		

Analyte	Result	RL
Antimony	ND	0.50
Arsenic	ND	0.25
Barium	ND	0.25
Beryllium	ND	0.10
Cadmium	ND	0.25
Chromium	ND	0.25
Cobalt	ND	0.25
Copper	ND	0.25
Lead	ND	0.23
Molybdenum	ND	0.25
Nickel	ND	0.25
Selenium	ND	0.50
Silver	ND	0.25
Thallium	ND	0.50
Vanadium	ND	0.25
Zinc	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	130212
Units:	mg/Kg	Prepared:	10/04/07
Basis:	as received	Analyzed:	10/05/07
Diln Fac:	1.000		

Type: BS Lab ID: QC409172

Analyte	Spiked	Result	%REC	Limits
Antimony	100.0	93.96	94	80-120
Arsenic	50.00	49.52	99	80-120
Barium	100.0	95.05	95	80-120
Beryllium	2.500	2.567	103	80-120
Cadmium	10.00	9.755	98	80-120
Chromium	100.0	92.21	92	80-120
Cobalt	25.00	22.50	90	80-120
Copper	12.50	11.56	93	80-120
Lead	100.0	91.68	92	80-120
Molybdenum	20.00	19.47	97	80-120
Nickel	25.00	23.06	92	80-120
Selenium	50.00	47.59	95	80-120
Silver	10.00	9.009	90	80-120
Thallium	50.00	45.18	90	80-120
Vanadium	25.00	23.19	93	80-120
Zinc	25.00	24.58	98	80-120

Type: BSD Lab ID: QC409173

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	100.0	93.75	94	80-120	0	20
Arsenic	50.00	49.07	98	80-120	1	20
Barium	100.0	93.76	94	80-120	1	20
Beryllium	2.500	2.538	102	80-120	1	20
Cadmium	10.00	9.647	96	80-120	1	20
Chromium	100.0	91.42	91	80-120	1	20
Cobalt	25.00	22.33	89	80-120	1	20
Copper	12.50	11.41	91	80-120	1	20
Lead	100.0	90.92	91	80-120	1	20
Molybdenum	20.00	19.26	96	80-120	1	20
Nickel	25.00	22.99	92	80-120	0	20
Selenium	50.00	47.25	94	80-120	1	20
Silver	10.00	8.893	89	80-120	1	20
Thallium	50.00	44.81	90	80-120	1	20
Vanadium	25.00	23.06	92	80-120	1	20
Zinc	25.00	24.50	98	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130212
MSS Lab ID:	198070-005	Sampled:	10/02/07
Matrix:	Soil	Received:	10/03/07
Units:	mg/Kg	Prepared:	10/04/07
Basis:	as received	Analyzed:	10/05/07
Diln Fac:	1.000		

Type: MS Lab ID: QC409174

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	2.073	100.0	54.37	52	1-122
Arsenic	3.064	50.00	52.01	98	72-120
Barium	62.53	100.0	155.5	93	49-139
Beryllium	0.2224	2.500	2.744	101	80-120
Cadmium	<0.002548	10.00	9.574	96	74-120
Chromium	16.86	100.0	108.0	91	65-120
Cobalt	6.855	25.00	27.27	82	60-120
Copper	5.646	12.50	17.63	96	47-146
Lead	2.656	100.0	91.26	89	53-123
Molybdenum	0.1062	20.00	18.18	90	66-120
Nickel	21.68	25.00	43.43	87	43-142
Selenium	0.8830	50.00	47.36	93	71-120
Silver	<0.01748	10.00	9.065	91	66-120
Thallium	<0.03302	50.00	42.44	85	62-120
Vanadium	28.18	25.00	50.42	89	52-139
Zinc	23.82	25.00	48.02	97	42-147

Type: MSD Lab ID: QC409175

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	99.01	52.99	51	1-122	2	30
Arsenic	49.50	50.35	96	72-120	2	20
Barium	99.01	149.5	88	49-139	3	23
Beryllium	2.475	2.647	98	80-120	3	20
Cadmium	9.901	9.179	93	74-120	3	20
Chromium	99.01	104.7	89	65-120	2	20
Cobalt	24.75	26.44	79	60-120	2	24
Copper	12.38	16.98	92	47-146	3	21
Lead	99.01	88.53	87	53-123	2	28
Molybdenum	19.80	17.63	88	66-120	2	20
Nickel	24.75	42.50	84	43-142	2	26
Selenium	49.50	45.82	91	71-120	2	20
Silver	9.901	8.672	88	66-120	3	20
Thallium	49.50	40.24	81	62-120	4	20
Vanadium	24.75	49.75	87	52-139	1	20
Zinc	24.75	46.59	92	42-147	3	27

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409550	Batch#:	130306
Matrix:	Soil	Prepared:	10/08/07
Units:	mg/Kg	Analyzed:	10/08/07

Result	RL
ND	0.020

ND= Not Detected
RL= Reporting Limit

41.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130306
Units:	mg/Kg	Prepared:	10/08/07
Basis:	as received	Analyzed:	10/08/07

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC409551	0.5000	0.5020	100	80-120		
BSD	QC409552	0.5000	0.5090	102	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	2.000
Field ID:	ZZZZZZZZZZ	Batch#:	130306
MSS Lab ID:	198150-001	Sampled:	10/05/07
Matrix:	Soil	Received:	10/05/07
Units:	mg/Kg	Prepared:	10/08/07
Basis:	as received	Analyzed:	10/08/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC409554	0.5858	0.4630	0.8926	66 *	70-143		
MSD	QC409555		0.4808	1.056	98	70-143	15	22

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	198088	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-1-GW-24'	Sampled:	10/02/07
Lab ID:	198088-003	Received:	10/04/07
Matrix:	Filtrate	Prepared:	10/05/07
Units:	ug/L	Analyzed:	10/05/07
Diln Fac:	1.000		

Analyte	Result	RL	Batch#	Prep	Analysis
Antimony	ND	10	130221	EPA 3010A	EPA 6010B
Arsenic	ND	5.0	130221	EPA 3010A	EPA 6010B
Barium	610	5.0	130221	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130221	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130221	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130221	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130221	EPA 3010A	EPA 6010B
Copper	ND	5.0	130221	EPA 3010A	EPA 6010B
Lead	ND	3.4	130221	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130230	METHOD	EPA 7470A
Molybdenum	40	5.0	130221	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130221	EPA 3010A	EPA 6010B
Selenium	ND	10	130221	EPA 3010A	EPA 6010B
Silver	ND	5.0	130221	EPA 3010A	EPA 6010B
Thallium	ND	10	130221	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130221	EPA 3010A	EPA 6010B
Zinc	ND	20	130221	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409216	Batch#:	130221
Matrix:	Filtrate	Prepared:	10/05/07
Units:	ug/L	Analyzed:	10/05/07

Analyte	Result	RL
Antimony	ND	10
Arsenic	ND	5.0
Barium	ND	5.0
Beryllium	ND	2.0
Cadmium	ND	5.0
Chromium	ND	5.0
Cobalt	ND	5.0
Copper	ND	5.0
Lead	ND	3.4
Molybdenum	ND	5.0
Nickel	ND	5.0
Selenium	ND	10
Silver	ND	5.0
Thallium	ND	10
Vanadium	ND	5.0
Zinc	ND	20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Filtrate	Batch#:	130221
Units:	ug/L	Prepared:	10/05/07
Diln Fac:	1.000	Analyzed:	10/05/07

Type: BS Lab ID: QC409217

Analyte	Spiked	Result	%REC	Limits
Antimony	500.0	511.5	102	80-120
Arsenic	100.0	106.9	107	80-120
Barium	2,000	1,930	96	80-120
Beryllium	50.00	53.87	108	80-120
Cadmium	50.00	51.89	104	80-120
Chromium	200.0	195.0	98	80-120
Cobalt	500.0	472.1	94	80-120
Copper	250.0	243.0	97	80-120
Lead	100.0	96.18	96	80-120
Molybdenum	400.0	397.1	99	80-120
Nickel	500.0	485.7	97	80-120
Selenium	100.0	101.2	101	80-120
Silver	50.00	46.79	94	80-120
Thallium	100.0	98.30	98	80-120
Vanadium	500.0	494.6	99	80-120
Zinc	500.0	513.2	103	80-120

Type: BSD Lab ID: QC409218

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	512.0	102	80-120	0	20
Arsenic	100.0	105.0	105	80-120	2	20
Barium	2,000	1,920	96	80-120	0	20
Beryllium	50.00	53.77	108	80-120	0	20
Cadmium	50.00	51.53	103	80-120	1	20
Chromium	200.0	194.5	97	80-120	0	20
Cobalt	500.0	470.3	94	80-120	0	20
Copper	250.0	240.8	96	80-120	1	20
Lead	100.0	94.87	95	80-120	1	20
Molybdenum	400.0	395.0	99	80-120	1	20
Nickel	500.0	485.8	97	80-120	0	20
Selenium	100.0	100.5	100	80-120	1	20
Silver	50.00	47.19	94	80-120	1	20
Thallium	100.0	97.43	97	80-120	1	20
Vanadium	500.0	496.2	99	80-120	0	20
Zinc	500.0	512.9	103	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130221
MSS Lab ID:	198115-002	Sampled:	10/03/07
Matrix:	Filtrate	Received:	10/04/07
Units:	ug/L	Prepared:	10/05/07
Diln Fac:	1.000	Analyzed:	10/05/07

Type: MS Lab ID: QC409219

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	1.093	500.0	522.0	104	80-120
Arsenic	<1.387	100.0	110.2	110	80-127
Barium	195.8	2,000	2,118	96	80-120
Beryllium	0.2716	50.00	55.20	110	80-120
Cadmium	<0.3555	50.00	51.00	102	80-120
Chromium	1.684	200.0	194.4	96	80-120
Cobalt	2.049	500.0	464.0	92	80-120
Copper	8.343	250.0	250.4	97	80-120
Lead	<1.150	100.0	95.14	95	76-120
Molybdenum	1.887	400.0	398.5	99	80-120
Nickel	4.787	500.0	473.9	94	80-120
Selenium	<1.986	100.0	104.0	104	80-128
Silver	<0.7500	50.00	47.88	96	73-122
Thallium	<1.131	100.0	95.79	96	78-120
Vanadium	3.357	500.0	504.7	100	80-120
Zinc	27.62	500.0	540.8	103	80-123

Type: MSD Lab ID: QC409220

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	531.5	106	80-120	2	20
Arsenic	100.0	112.5	113	80-127	2	20
Barium	2,000	2,159	98	80-120	2	20
Beryllium	50.00	56.14	112	80-120	2	20
Cadmium	50.00	52.11	104	80-120	2	20
Chromium	200.0	198.5	98	80-120	2	20
Cobalt	500.0	470.8	94	80-120	1	20
Copper	250.0	254.3	98	80-120	2	20
Lead	100.0	97.28	97	76-120	2	20
Molybdenum	400.0	407.6	101	80-120	2	20
Nickel	500.0	478.4	95	80-120	1	20
Selenium	100.0	107.0	107	80-128	3	20
Silver	50.00	49.37	99	73-122	3	20
Thallium	100.0	98.12	98	78-120	2	20
Vanadium	500.0	511.0	102	80-120	1	20
Zinc	500.0	546.7	104	80-123	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	130230
Lab ID:	QC409253	Prepared:	10/05/07
Matrix:	Water	Analyzed:	10/05/07
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130230
Matrix:	Water	Prepared:	10/05/07
Units:	ug/L	Analyzed:	10/05/07
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC409254	5.000	5.460	109	80-120		
BSD	QC409255	5.000	5.390	108	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130230
Field ID:	ZZZZZZZZZZ	Sampled:	10/02/07
MSS Lab ID:	198043-005	Received:	10/02/07
Matrix:	Filtrate	Prepared:	10/05/07
Units:	ug/L	Analyzed:	10/05/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC409260	<0.04502	5.000	5.510	110	79-125		
MSD	QC409261		5.000	5.580	112	79-125	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Field ID:	B-1-GW-24'	Batch#:	130187
Matrix:	Water	Sampled:	10/02/07 16:30
Units:	mg/L	Received:	10/04/07

Type	Lab ID	Result	RL	Analyzed
SAMPLE	198088-003	ND	0.05	10/04/07 12:06
BLANK	QC409076	ND	0.05	10/04/07 11:45

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	ZZZZZZZZZZ	Batch#:	130187
MSS Lab ID:	198096-003	Sampled:	10/03/07 08:00
Matrix:	Water	Received:	10/04/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC409077		1.000	0.9556	96	80-120			1.000	10/04/07 14:36
BSD	QC409078		1.000	0.9764	98	80-120	2	20	1.000	10/04/07 14:54
MS	QC409131	12.37	10.00	23.09	107	80-120			20.00	10/04/07 15:29
MSD	QC409132		10.00	23.05	107	80-120	0	20	20.00	10/04/07 15:46

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Field ID:	B-1-SS-36'	Batch#:	130304
Matrix:	Soil	Sampled:	10/03/07 08:00
Units:	mg/Kg	Received:	10/04/07
Basis:	as received		

Type	Lab ID	Result	RL	Analyzed
SAMPLE	198088-002	ND	0.5	10/08/07 14:58
BLANK	QC409544	ND	0.5	10/08/07 12:58

ND= Not Detected
RL= Reporting Limit

31.0

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198088	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Basis:	as received
Field ID:	B-12-SS-0.0'	Batch#:	130304
MSS Lab ID:	198049-002	Sampled:	10/01/07 09:00
Matrix:	Soil	Received:	10/03/07
Units:	mg/Kg		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC409545		10.00	10.34	103	80-120			1.000	10/08/07 13:15
BSD	QC409546		10.00	9.983	100	80-120	3	20	1.000	10/08/07 13:33
MS	QC409587	2.349	5.100	6.705	85	50-120			1.020	10/08/07 16:52
MSD	QC409588		5.100	6.956	90	50-120	4	30	1.020	10/08/07 17:10

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

198088

Chain of Custody Record

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 10/3/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier: UPS-9X3169
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☐ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15 -F
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	Filtered Sample	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
B-1-SS-0.0'	10/2/07	14:00	poly	SO	1		✓	✓	✓	✓		✓	✓	
B-1-SS-36'	10/3/07	8:00	poly	SO	1		✓	✓	✓	✓	✓			
B-1-GW-24'	10/2/07	16:30	VOA	GW	3		✓							
			VOA		3					✓				
			1L poly		2				✓					
			750ml poly		1	✓		✓						
			250 ml poly		1						✓			

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Robert K. [illegible]	Weiss Associates	10/3/07 14:30	[illegible]	C&T	10/3/07 17:32
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates 5801 Christie Avenue Emeryville, CA 94608	Project : 379-1827-15-02 Location : Cloverdale Project Level : II

Sample ID	Lab ID
B-6-SS-0.0'	198121-001
B-6-SS-25'	198121-002
B-6-GW-17'	198121-003
B-5-SS-0.0'	198121-004
B-5-SS-46'	198121-005
B-5-GW-45'	198121-006
B-4-SS-0.0'	198121-007

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/29/2007
Project Manager

Signature: _____ Date: 10/29/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198121**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/05/07**
Samples Received:	**10/05/07**

This hardcopy data package contains sample and QC results for five soil samples and two water samples, requested for the above referenced project on 10/05/07. The samples were received cold. Sample B-6-GW-17'(1980121-003) was receieved with a one liter amber broken.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:
High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the MSs/MSDs for batch 130357; the parent sample was not a project sample. No other analytical problems were encountered.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:
High surrogate recoveries were observed for trifluorotoluene (FID) in the LCS/MSD for batch 130351; the corresponding bromofluorobenzene (FID) surrogate recoveries were within limits. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Soil:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Water:
Low recoveries were observed for trichloroethene in the MS/MSD for batch 130284; the parent sample was not a project sample, the BS/BSD were within limits, and the associated RPD was within limits. No other analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Soil:
Low recoveries were observed for toluene and chlorobenzene in the MS of B-4-SS-0.0' (lab # 198121-007); the LCS was within limits. High RPD was also observed for toluene and chlorobenzene in the MS/MSD of B-4-SS-0.0' (lab # 198121-007); these analytes were not detected at or above the RL in the associated samples. No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A) Soil:
No analytical problems were encountered.

Metals (EPA 6010B and EPA 7470A) Filtrate:
High recovery was observed for arsenic in the MS for batch 130292; the parent sample was not a project sample, the associated RPD was within limits, and

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198121**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/05/07**
Samples Received:	**10/05/07**

Metals (EPA 6010B and EPA 7470A) Filtrate:
this analyte was not detected at or above the RL in the associated samples.
No other analytical problems were encountered.

Ion Chromatography (EPA 300.0) Water:
No analytical problems were encountered.

Ion Chromatography (EPA 300.0) Soil:
No analytical problems were encountered.

Asbestos PLM (EPA 600/R-93-116):
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130357
Units:	ug/L	Received:	10/05/07
Diln Fac:	1.000	Analyzed:	10/09/07

Field ID: B-6-GW-17' Lab ID: 198121-003
Type: SAMPLE Sampled: 10/04/07

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	117	73-134
Bromofluorobenzene (FID)	115	77-140

Field ID: B-5-GW-45' Lab ID: 198121-006
Type: SAMPLE Sampled: 10/03/07

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	113	73-134
Bromofluorobenzene (FID)	112	77-140

Type: BLANK Lab ID: QC409759

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	106	73-134
Bromofluorobenzene (FID)	105	77-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409760	Batch#:	130357
Matrix:	Water	Analyzed:	10/09/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,786	89	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	133	73-134
Bromofluorobenzene (FID)	125	77-140

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130357
MSS Lab ID:	198043-005	Sampled:	10/02/07
Matrix:	Water	Received:	10/02/07
Units:	ug/L	Analyzed:	10/10/07
Diln Fac:	1.000		

Type: MS Lab ID: QC409761

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	21.62	2,000	1,874	93	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	149 *	73-134
Bromofluorobenzene (FID)	155 *	77-140

Type: MSD Lab ID: QC409762

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,832	91	72-120	2	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	149 *	73-134
Bromofluorobenzene (FID)	154 *	77-140

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130357
MSS Lab ID:	198043-017	Sampled:	10/02/07
Matrix:	Water	Received:	10/02/07
Units:	ug/L	Analyzed:	10/10/07
Diln Fac:	1.000		

Type: MS Lab ID: QC409763

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	36.63	2,000	1,823	89	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	150 *	73-134
Bromofluorobenzene (FID)	156 *	77-140

Type: MSD Lab ID: QC409764

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,853	91	72-120	2	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	155 *	73-134
Bromofluorobenzene (FID)	159 *	77-140

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130351
Units:	mg/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/09/07
Diln Fac:	1.000		

Field ID: B-6-SS-0.0' Lab ID: 198121-001
Type: SAMPLE Sampled: 10/04/07

Analyte	Result	RL
Gasoline C7-C12	ND	0.96

Surrogate	%REC	Limits
Trifluorotoluene (FID)	87	71-132
Bromofluorobenzene (FID)	77	69-145

Field ID: B-6-SS-25' Lab ID: 198121-002
Type: SAMPLE Sampled: 10/04/07

Analyte	Result	RL
Gasoline C7-C12	ND	0.96

Surrogate	%REC	Limits
Trifluorotoluene (FID)	98	71-132
Bromofluorobenzene (FID)	87	69-145

Field ID: B-5-SS-0.0' Lab ID: 198121-004
Type: SAMPLE Sampled: 10/03/07

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	96	71-132
Bromofluorobenzene (FID)	85	69-145

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130351
Units:	mg/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/09/07
Diln Fac:	1.000		

Field ID: B-5-SS-46' Lab ID: 198121-005
Type: SAMPLE Sampled: 10/03/07

Analyte	Result	RL
Gasoline C7-C12	ND	0.99

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	71-132
Bromofluorobenzene (FID)	89	69-145

Field ID: B-4-SS-0.0' Lab ID: 198121-007
Type: SAMPLE Sampled: 10/03/07

Analyte	Result	RL
Gasoline C7-C12	ND	0.98

Surrogate	%REC	Limits
Trifluorotoluene (FID)	99	71-132
Bromofluorobenzene (FID)	91	69-145

Type: BLANK Lab ID: QC409729

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	93	71-132
Bromofluorobenzene (FID)	90	69-145

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC409730	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130351
Units:	mg/Kg	Analyzed:	10/09/07

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	10.00	9.211	92	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	141 *	71-132
Bromofluorobenzene (FID)	101	69-145

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	198196-003	Batch#:	130351
Matrix:	Soil	Sampled:	10/09/07
Units:	mg/Kg	Received:	10/09/07
Basis:	as received	Analyzed:	10/09/07

Type: MS Lab ID: QC409731

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<0.07746	9.615	6.586	68	43-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	131	71-132
Bromofluorobenzene (FID)	99	69-145

Type: MSD Lab ID: QC409732

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	9.901	6.842	69	43-120	1	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	133 *	71-132
Bromofluorobenzene (FID)	101	69-145

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130305
Units:	ug/L	Received:	10/05/07
Diln Fac:	1.000	Prepared:	10/08/07

Field ID:	B-6-GW-17'	Sampled:	10/04/07
Type:	SAMPLE	Analyzed:	10/10/07
Lab ID:	198121-003		

Analyte	Result	RL	MDL
Diesel C10-C24	77 Y	50	
Motor Oil C24-C36	110 J	300	56

Surrogate	%REC	Limits
Hexacosane	98	61-133

Field ID:	B-5-GW-45'	Sampled:	10/03/07
Type:	SAMPLE	Cleanup Method:	EPA 3630C
Lab ID:	198121-006		

Analyte	Result	RL	MDL	Analyzed
Diesel C10-C24	260 Y	50		10/10/07
Diesel C10-C24 (SGCU)	160 Y	50		11/02/07
Motor Oil C24-C36	290 J	300	56	10/10/07
Motor Oil C24-C36 (SGCU)	190 J	300	130	11/02/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	90	61-133	10/10/07
Hexacosane (SGCU)	81	61-133	11/02/07

Type:	BLANK	Analyzed:	10/09/07
Lab ID:	QC409547	Cleanup Method:	EPA 3630C

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Diesel C10-C24 (SGCU)	ND	50	
Motor Oil C24-C36	ND	300	85
Motor Oil C24-C36 (SGCU)	ND	300	56

Surrogate	%REC	Limits
Hexacosane	95	61-133
Hexacosane (SGCU)	92	61-133

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130305
Units:	ug/L	Prepared:	10/08/07
Diln Fac:	1.000	Analyzed:	10/09/07

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC409548

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	2,500	1,872	75	58-128

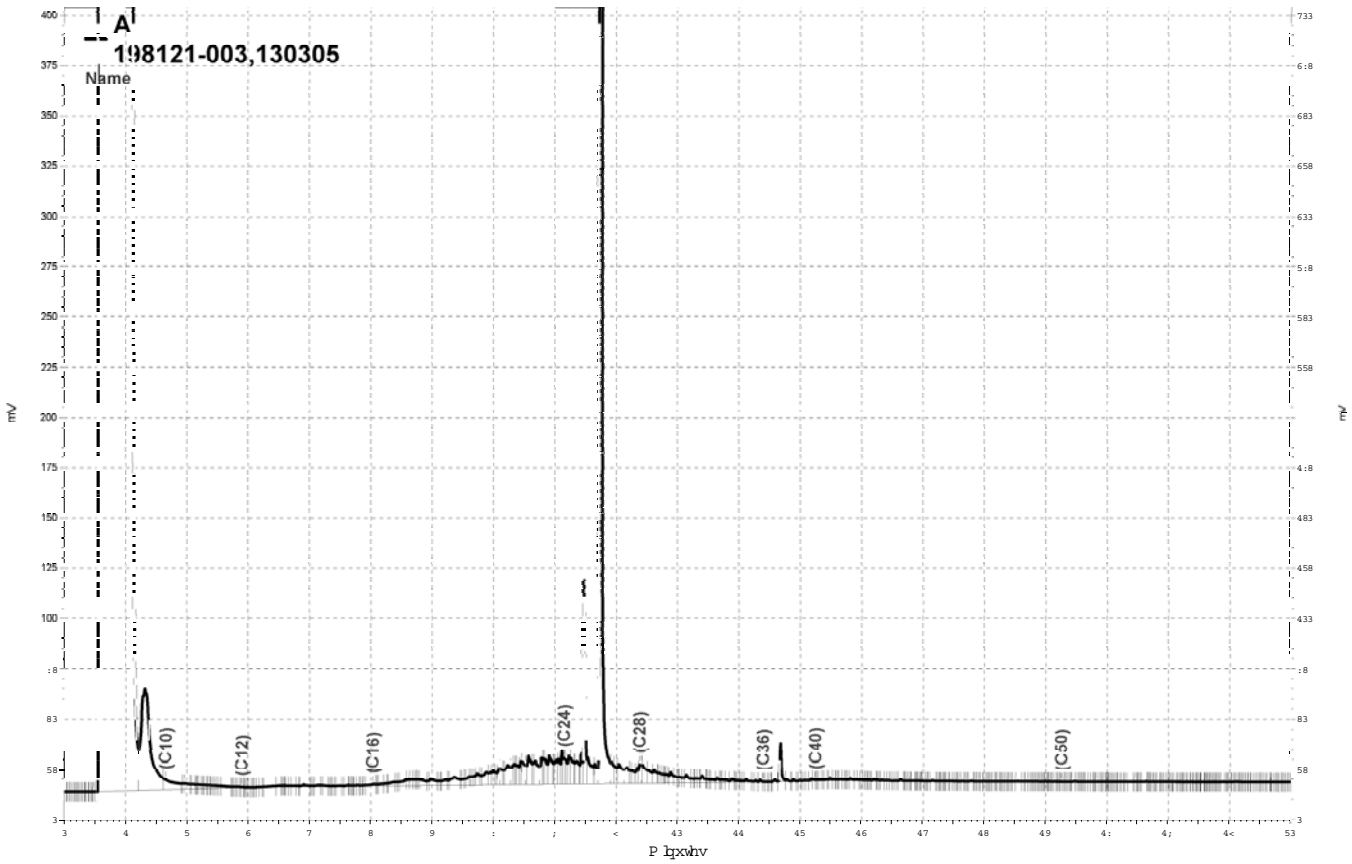
Surrogate	%REC	Limits
Hexacosane (SGCU)	85	61-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC409549

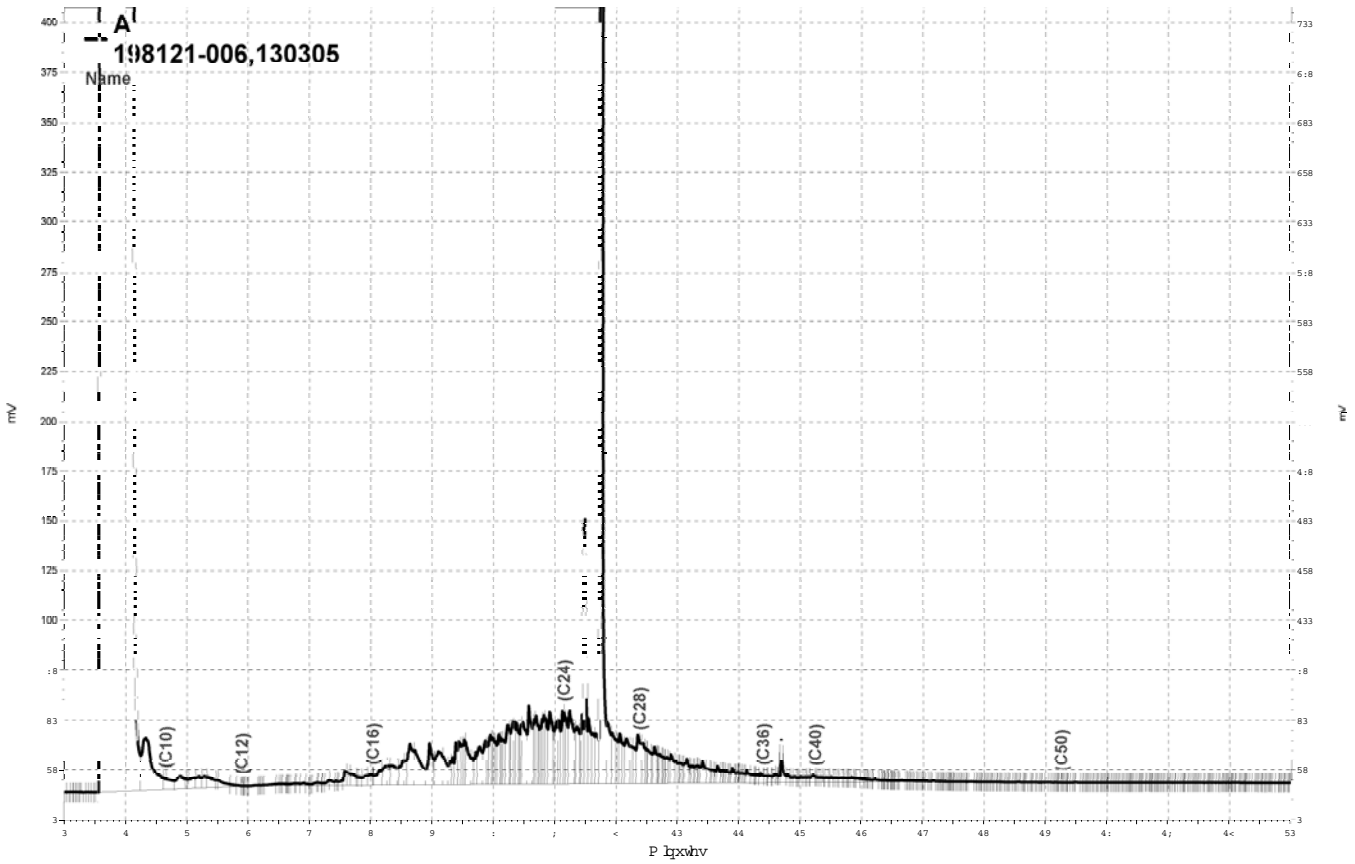
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	2,500	2,070	83	58-128	10	29

Surrogate	%REC	Limits
Hexacosane (SGCU)	92	61-133

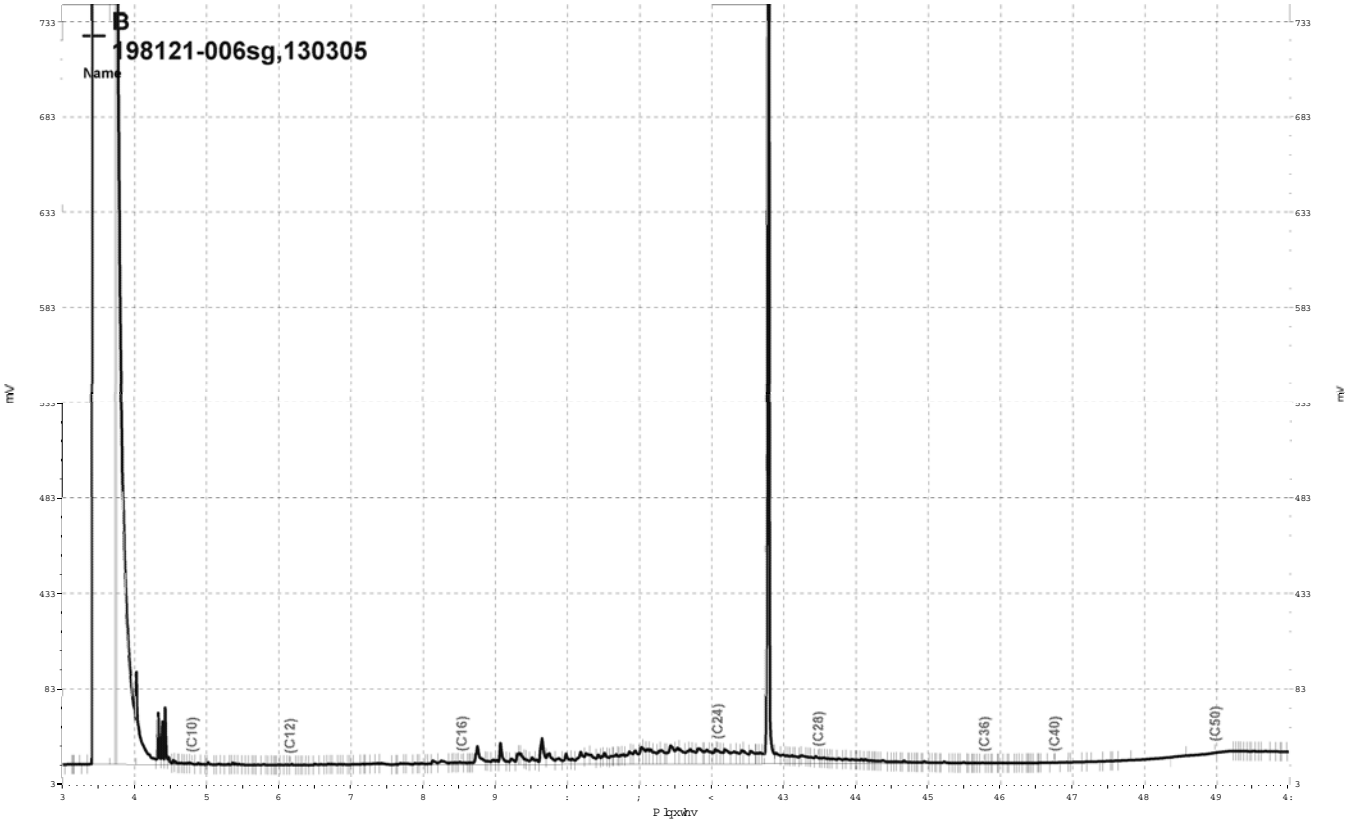
RPD= Relative Percent Difference
SGCU= Silica gel cleanup



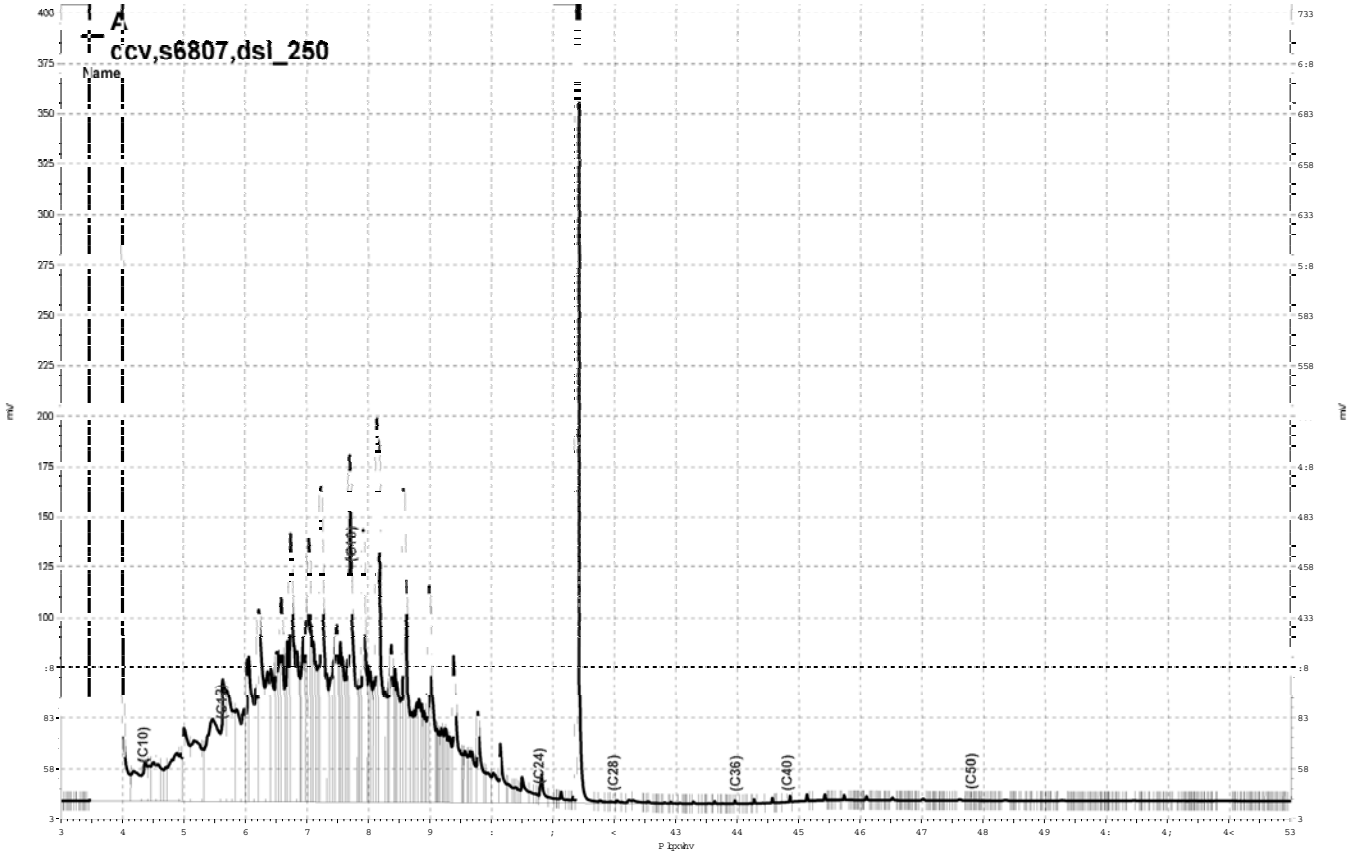
_Olpvjgulyh_h}fkurp_Surmfw_JF4:D_Gdwd_5;4d39;/D



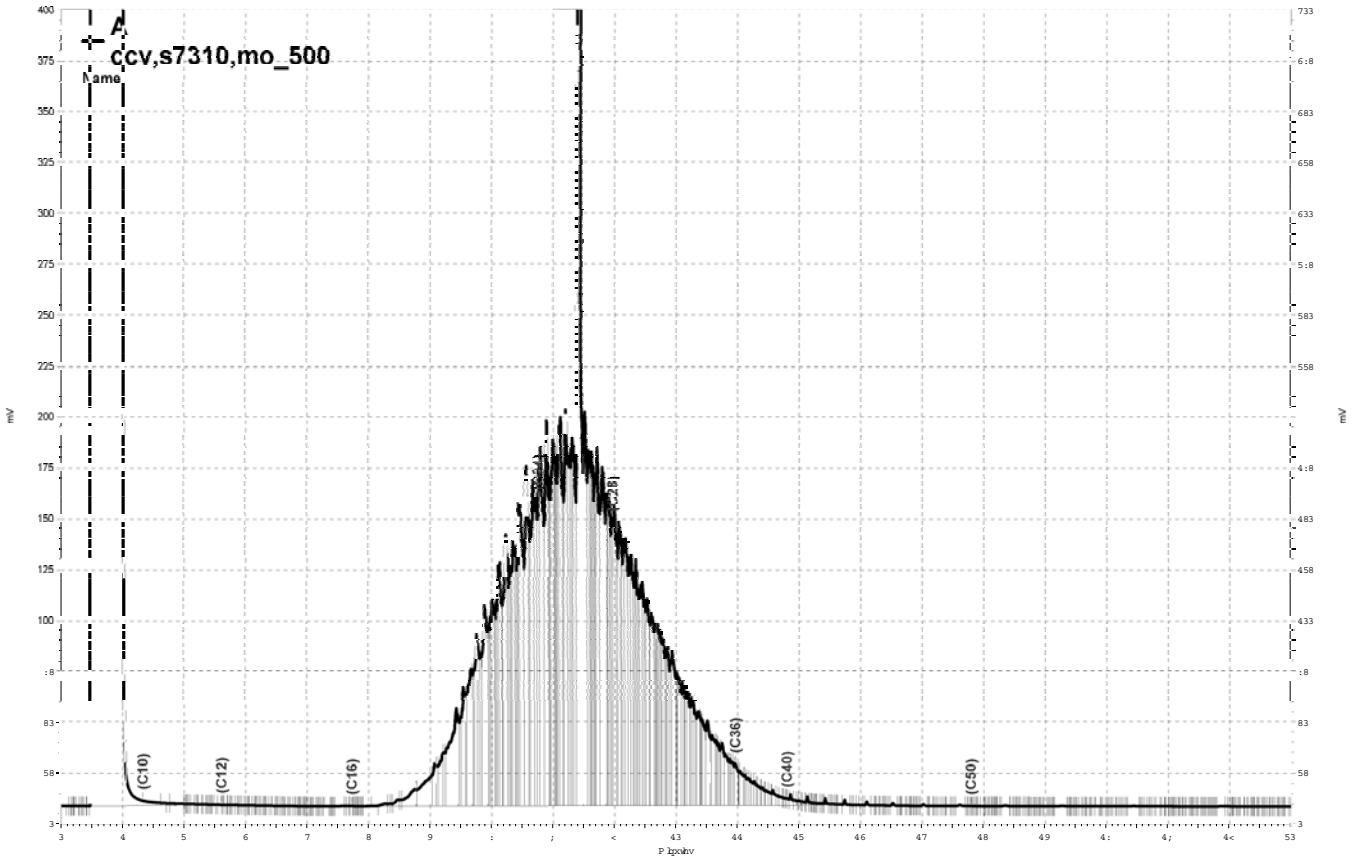
_Olpvjgulyh_h}fkurp_Surmfwv_JF4:D_Gdwd_5;4d39</D



_Olp v jgulyh h}fkurp _Surmfw J F59 Gdwd 639e353/E



_Olp v jgulyh h}fkurp _Surmnfw J F44D_Gdwd_5;4d354/D



_Olp v jgulyh h}fkurp _Surmfwr J F44D_Gdwd_5;4d355/D

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130444
Units:	mg/Kg	Received:	10/05/07
Basis:	as received	Prepared:	10/11/07
Dilu Fac:	1.000		

Field ID: B-6-SS-0.0' Sampled: 10/04/07
Type: SAMPLE Analyzed: 10/15/07
Lab ID: 198121-001

Analyte	Result	RL
Diesel C10-C24	23 Y	0.99
Motor Oil C24-C36	69	5.0

Surrogate	%REC	Limits
Hexacosane	116	46-128

Field ID: B-6-SS-25' Sampled: 10/04/07
Type: SAMPLE Analyzed: 10/15/07
Lab ID: 198121-002

Analyte	Result	RL
Diesel C10-C24	7.3 Y	1.0
Motor Oil C24-C36	8.3	5.0

Surrogate	%REC	Limits
Hexacosane	82	46-128

Field ID: B-5-SS-0.0' Sampled: 10/03/07
Type: SAMPLE Cleanup Method: EPA 3630C
Lab ID: 198121-004

Analyte	Result	RL	Analyzed
Diesel C10-C24	26 Y	1.0	10/15/07
Diesel C10-C24 (SGCU)	11 Y	1.0	11/02/07
Motor Oil C24-C36	110	5.0	10/15/07
Motor Oil C24-C36 (SGCU)	85	5.0	11/02/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	88	46-128	10/15/07
Hexacosane (SGCU)	73	46-128	11/02/07

Field ID: B-5-SS-46' Sampled: 10/03/07
Type: SAMPLE Analyzed: 10/15/07
Lab ID: 198121-005

Analyte	Result	RL
Diesel C10-C24	3.7 Y	1.0
Motor Oil C24-C36	7.4	5.0

Surrogate	%REC	Limits
Hexacosane	60	46-128

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130444
Units:	mg/Kg	Received:	10/05/07
Basis:	as received	Prepared:	10/11/07
Diln Fac:	1.000		

Field ID:	B-4-SS-0.0'	Sampled:	10/03/07
Type:	SAMPLE	Cleanup Method:	EPA 3630C
Lab ID:	198121-007		

Analyte	Result	RL	Analyzed
Diesel C10-C24	21 Y	0.99	10/15/07
Diesel C10-C24 (SGCU)	6.1 Y	0.99	11/02/07
Motor Oil C24-C36	100	5.0	10/15/07
Motor Oil C24-C36 (SGCU)	44 Y	5.0	11/02/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	68	46-128	10/15/07
Hexacosane (SGCU)	57	46-128	11/02/07

Type:	BLANK	Analyzed:	10/15/07
Lab ID:	QC410132	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Diesel C10-C24 (SGCU)	ND	1.0
Motor Oil C24-C36	ND	5.0
Motor Oil C24-C36 (SGCU)	ND	5.0

Surrogate	%REC	Limits
Hexacosane	92	46-128
Hexacosane (SGCU)	99	46-128

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC410133	Batch#:	130444
Matrix:	Soil	Prepared:	10/11/07
Units:	mg/Kg	Analyzed:	10/15/07
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	49.83	42.51	85	55-131

Surrogate	%REC	Limits
Hexacosane (SGCU)	89	46-128

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130444
MSS Lab ID:	197998-001	Sampled:	10/01/07
Matrix:	Soil	Received:	10/01/07
Units:	mg/Kg	Prepared:	10/11/07
Basis:	as received	Analyzed:	10/14/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410134

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	1.750	49.94	41.72	80	31-150

Surrogate	%REC	Limits
Hexacosane (SGCU)	90	46-128

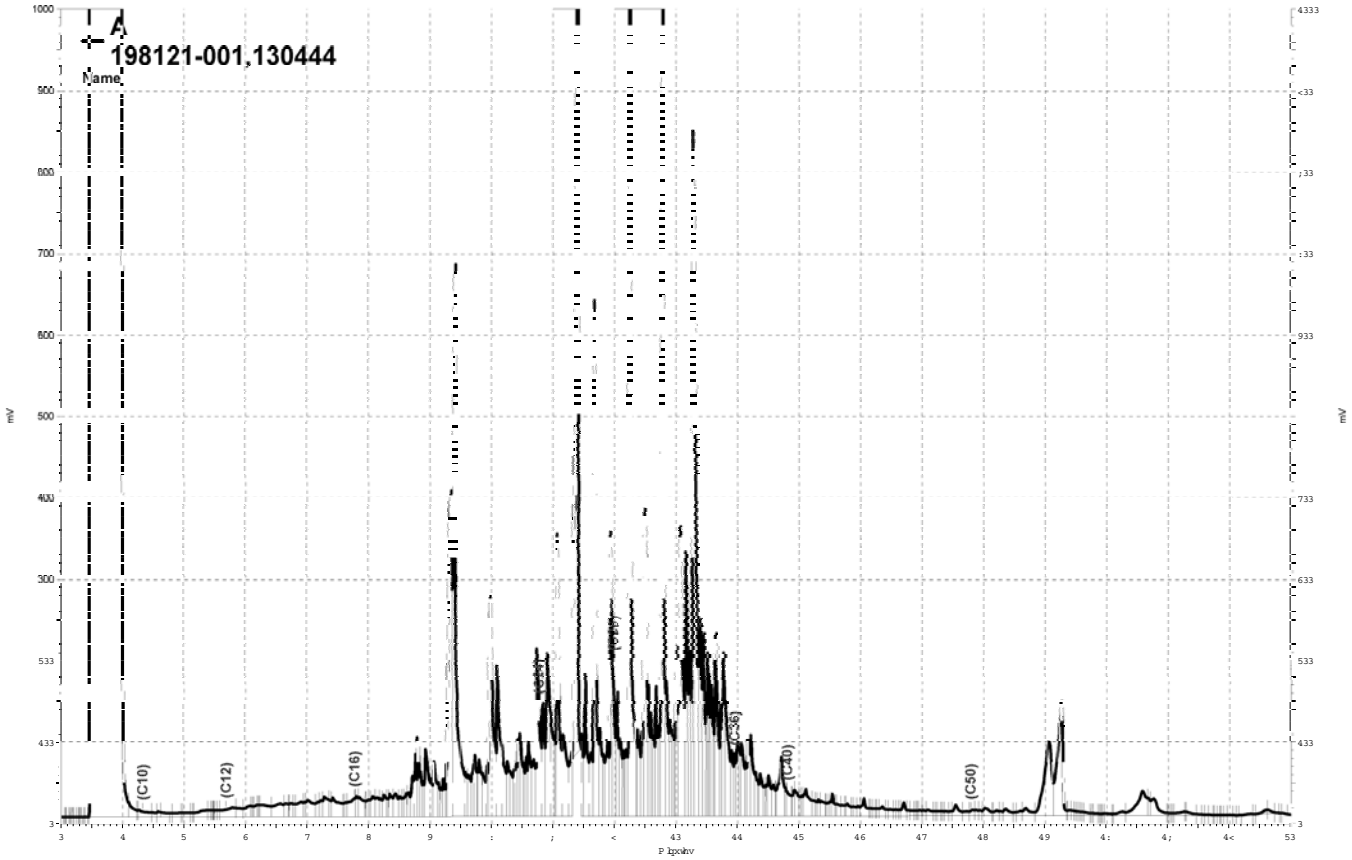
Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410135

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	49.84	47.34	91	31-150	13	42

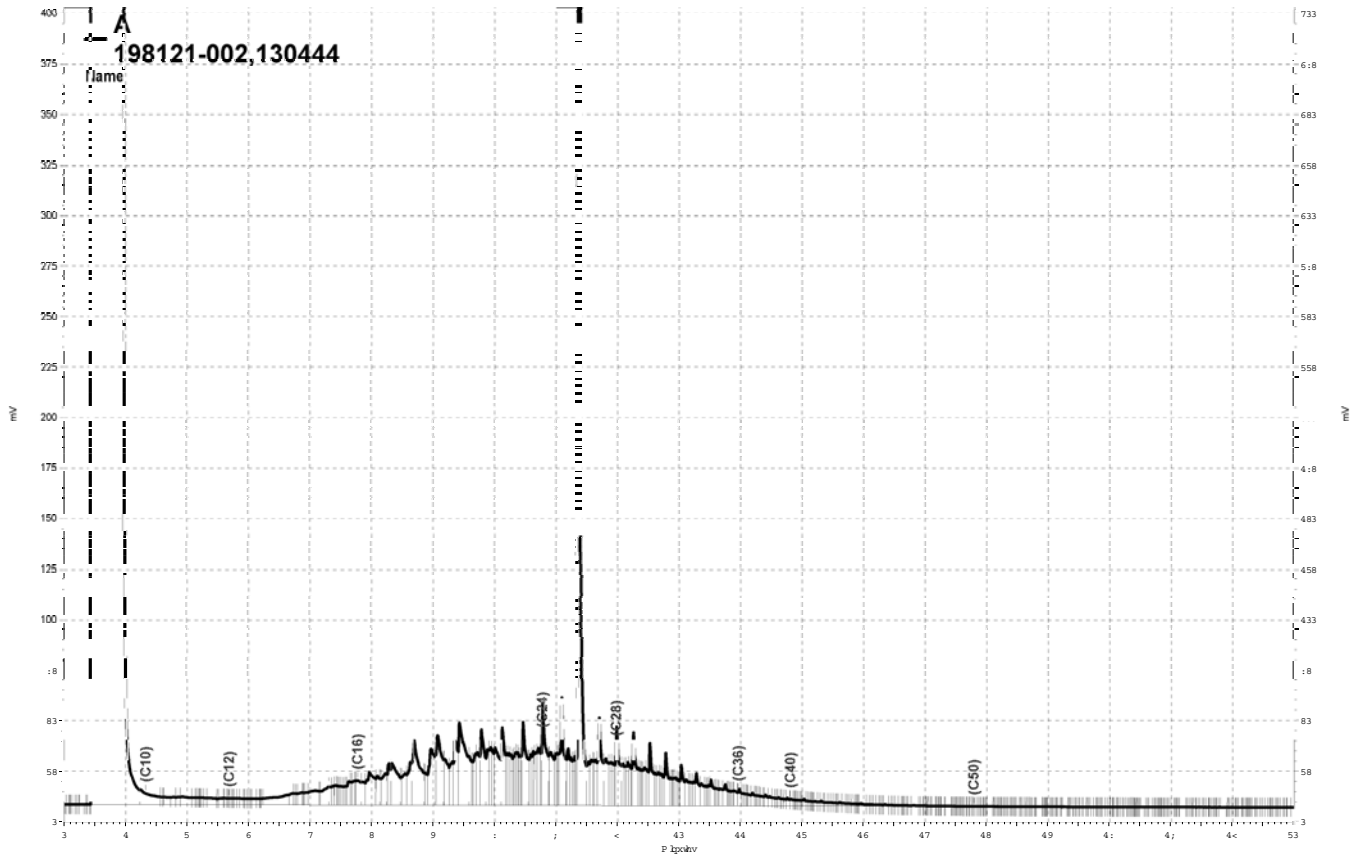
Surrogate	%REC	Limits
Hexacosane (SGCU)	98	46-128

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

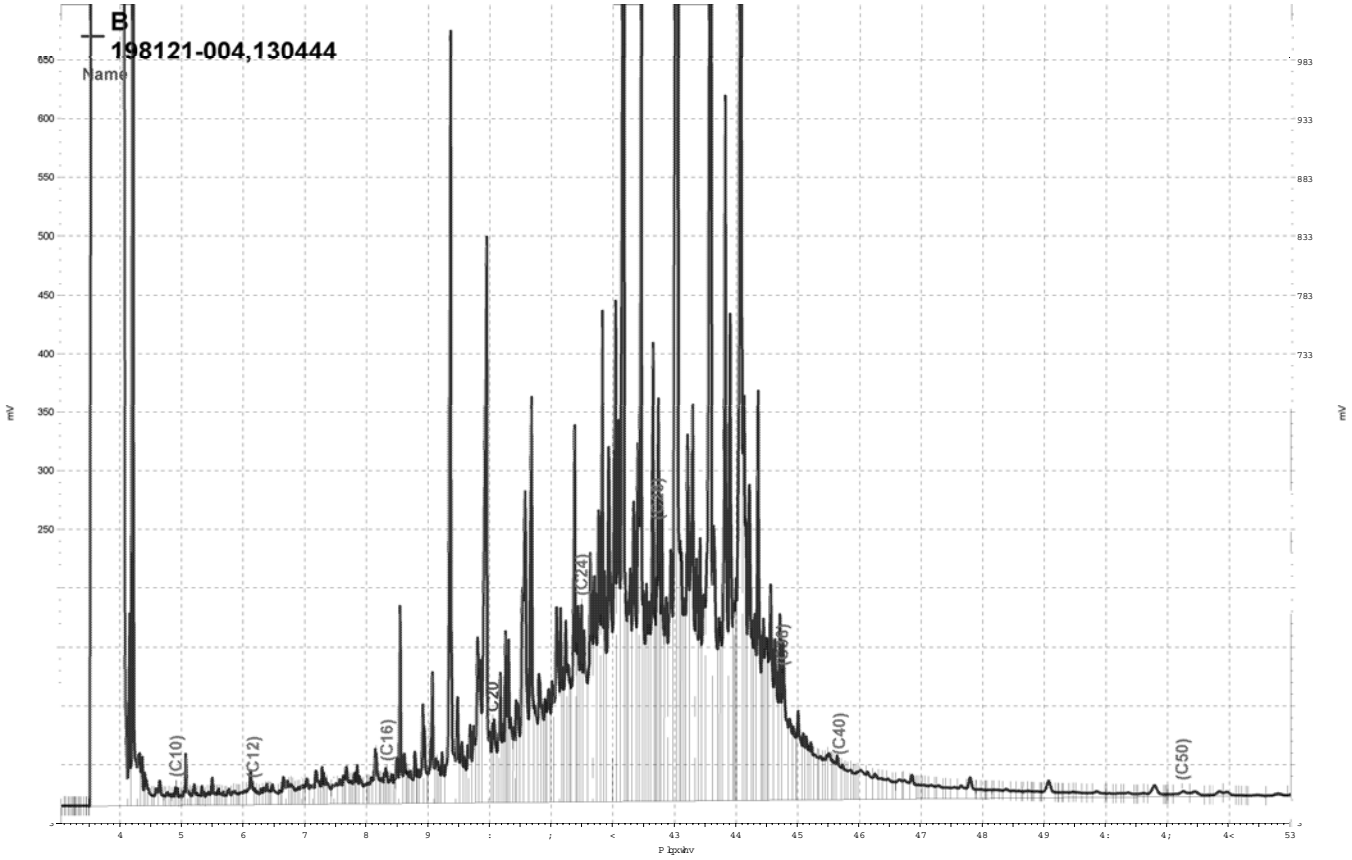
52.1



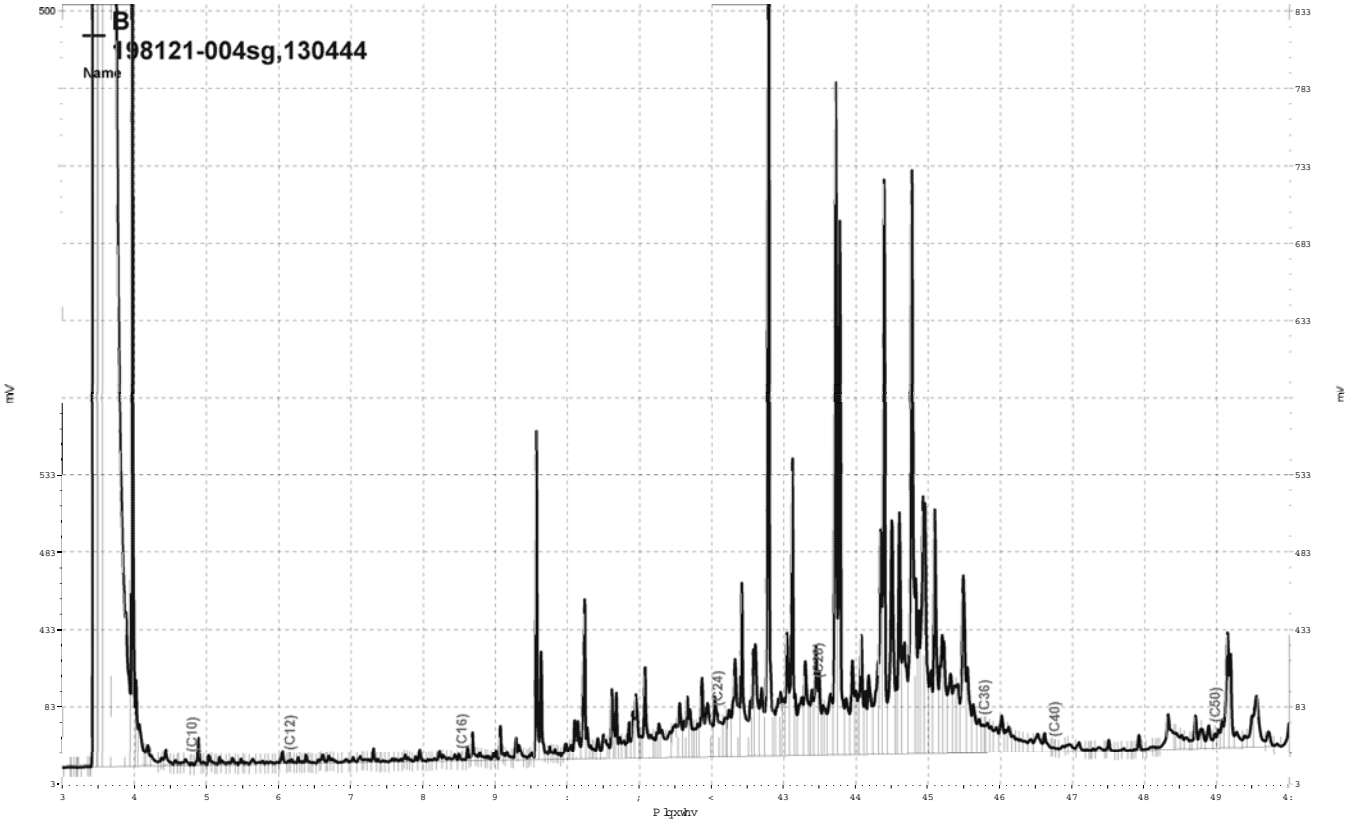
_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5;:d35</D



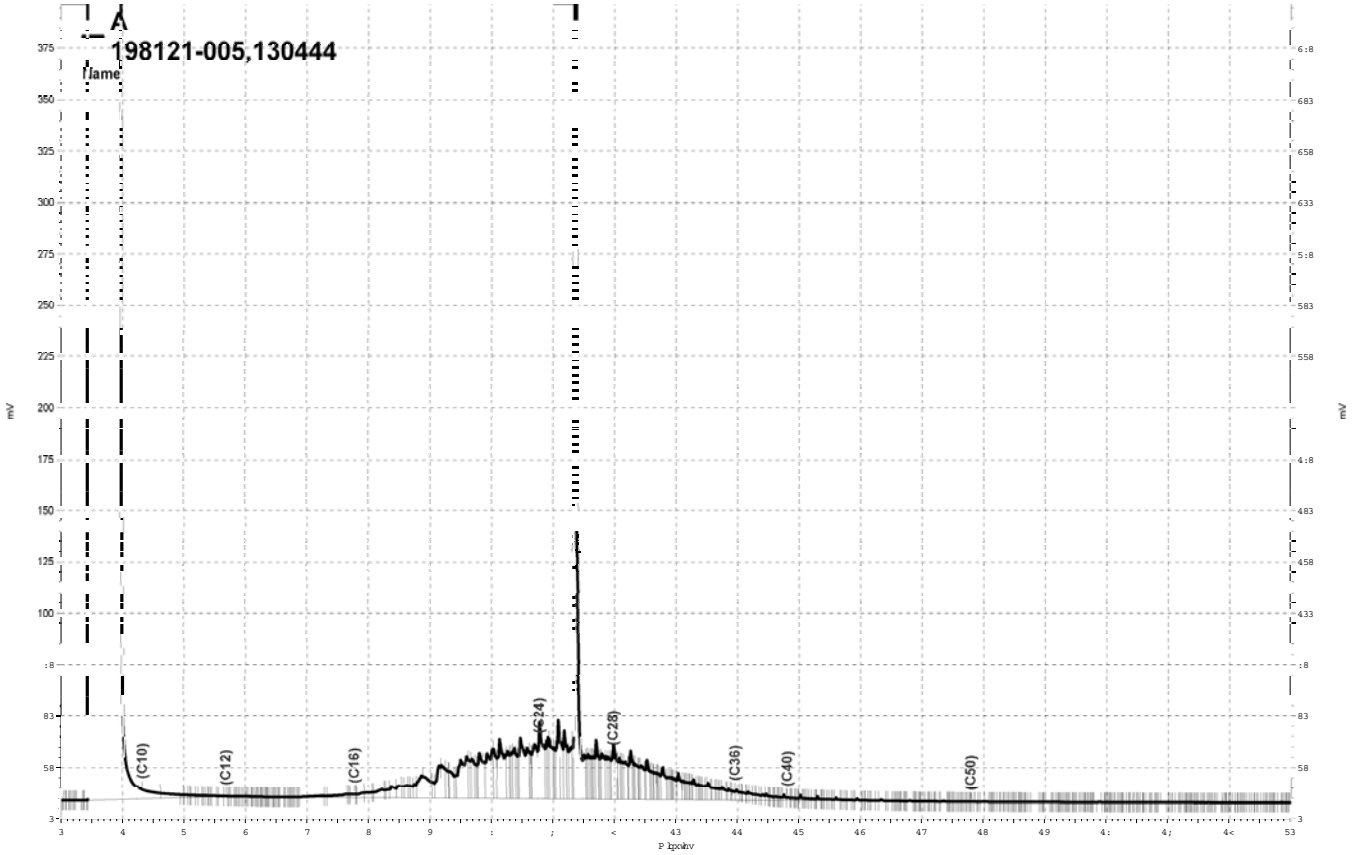
_Olp v jgulyh h}fkurp _Surmnfw J F44D_Gdwd_5;:d35;/D



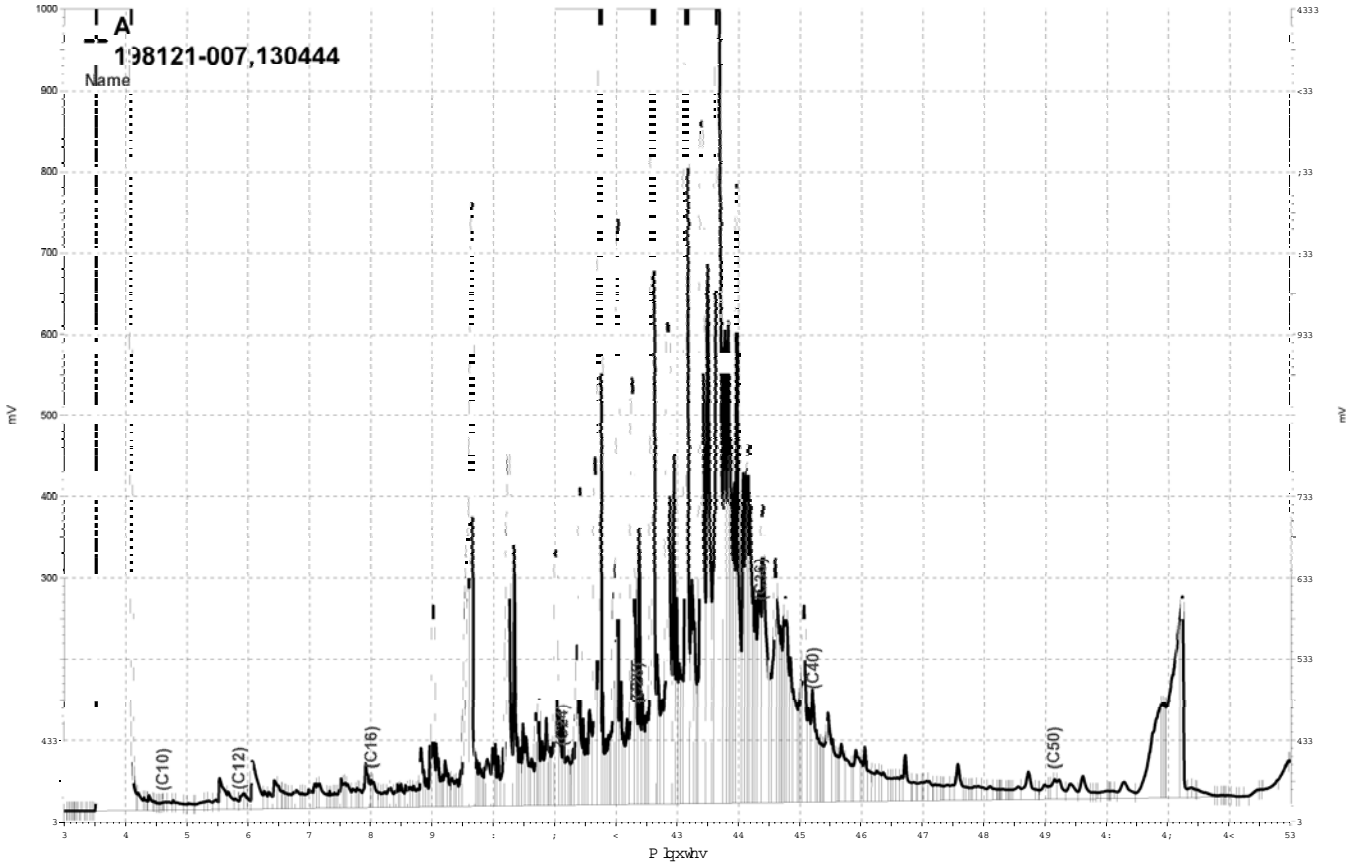
_Olp vjgulyh h}fkurp_Surmfw_JF47E_Gdwd_5;:e375/E



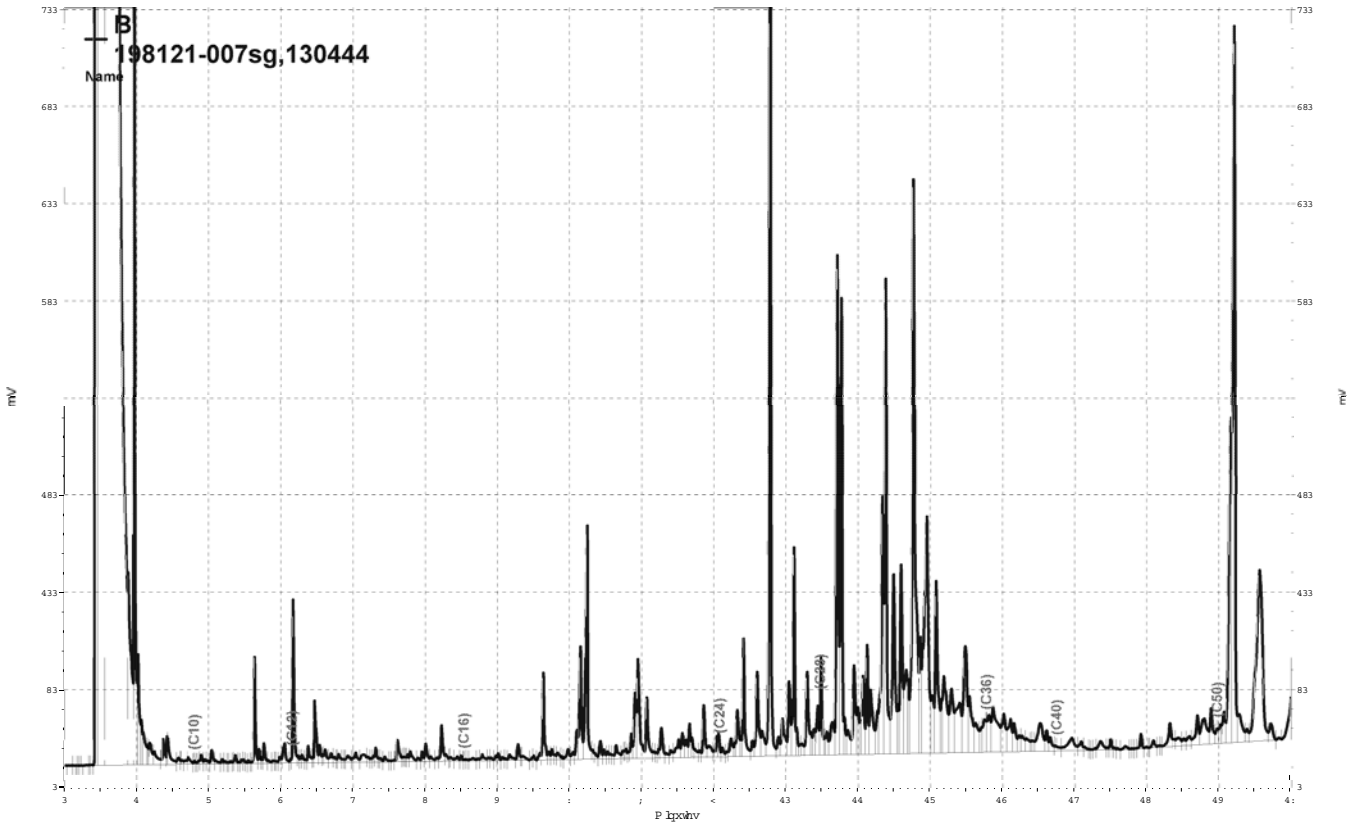
_Olp v jgulyh h}fkurp _Surmfw J F59 Gdwd 639e349/E



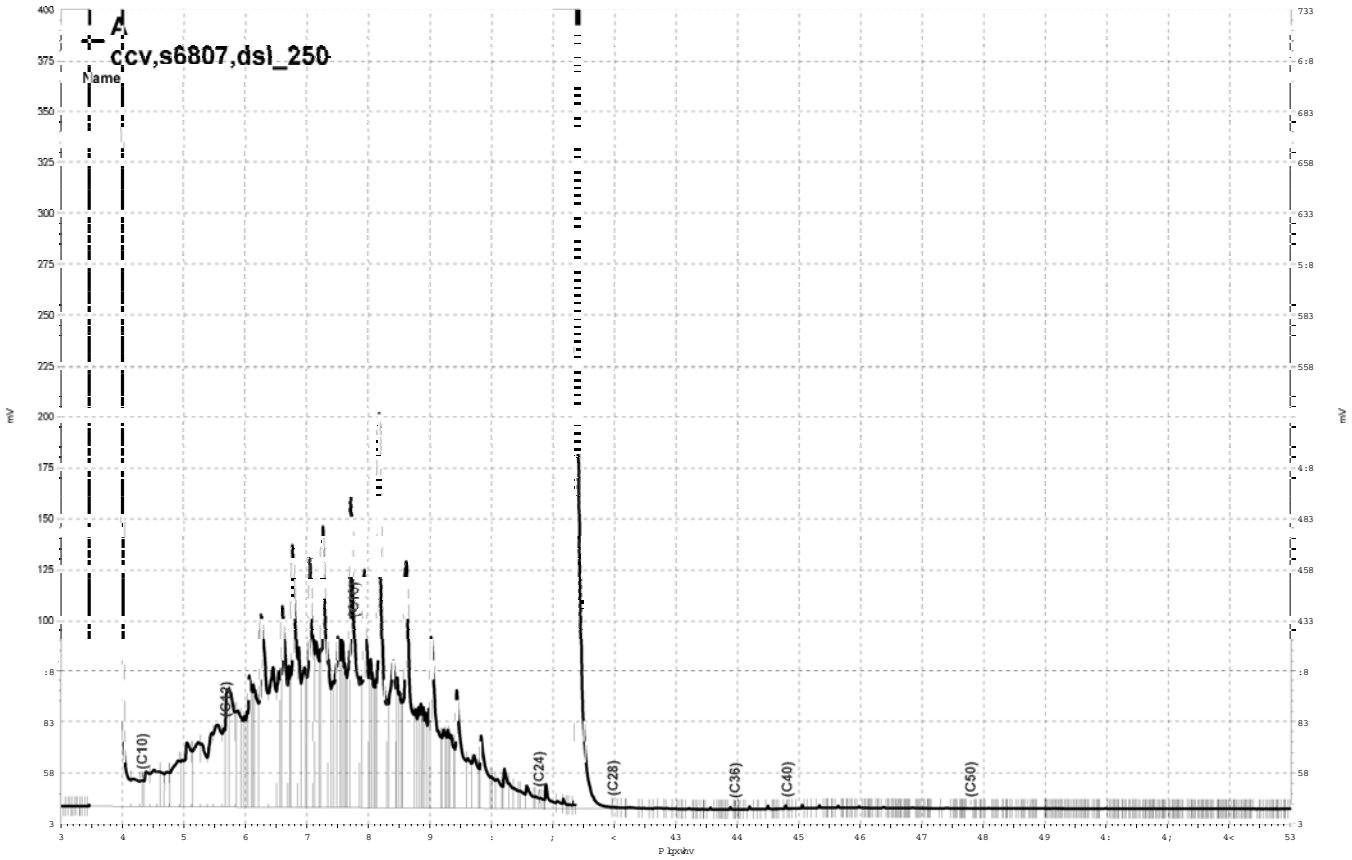
_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5;:d368/D



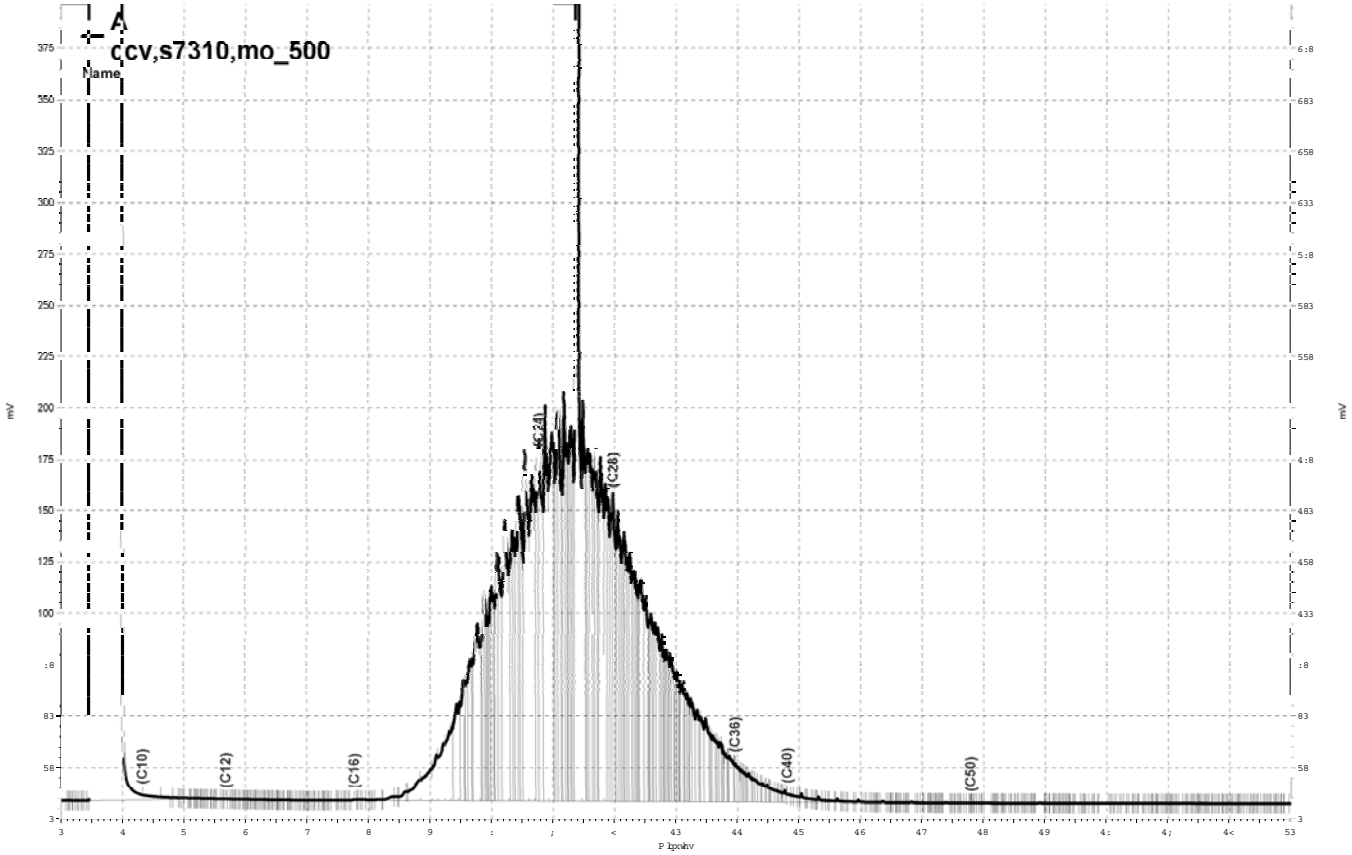
_Olpvjgulyh_h}fkurp_Surmfwr_JF4:D_Gdwd_5;:d353/D



_Olp v jgulyh h}fkurp _Surmfw J F59 Gdwd 639e348/E



_Olp v jgulyh h}fkurp _Surmnfw J F44D_Gdwd_5;:d353/D



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5;:d354/D

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-6-GW-17'	Batch#:	130284
Lab ID:	198121-003	Sampled:	10/04/07
Matrix:	Water	Received:	10/05/07
Units:	ug/L	Analyzed:	10/08/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-6-GW-17'	Batch#:	130284
Lab ID:	198121-003	Sampled:	10/04/07
Matrix:	Water	Received:	10/05/07
Units:	ug/L	Analyzed:	10/08/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-122
1,2-Dichloroethane-d4	129	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-5-GW-45'	Batch#:	130284
Lab ID:	198121-006	Sampled:	10/03/07
Matrix:	Water	Received:	10/05/07
Units:	ug/L	Analyzed:	10/08/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-5-GW-45'	Batch#:	130284
Lab ID:	198121-006	Sampled:	10/03/07
Matrix:	Water	Received:	10/05/07
Units:	ug/L	Analyzed:	10/08/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-122
1,2-Dichloroethane-d4	130	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	101	80-120

ND= Not Detected
RL= Reporting Limit

28.0

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409462	Batch#:	130284
Matrix:	Water	Analyzed:	10/08/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409462	Batch#:	130284
Matrix:	Water	Analyzed:	10/08/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-122
1,2-Dichloroethane-d4	115	74-137
Toluene-d8	97	80-120
Bromofluorobenzene	101	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	130284
Units:	ug/L	Analyzed:	10/08/07
Diln Fac:	1.000		

Type: BS Lab ID: QC409463

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	23.20	93	80-133
Benzene	25.00	23.31	93	80-120
Trichloroethene	25.00	26.84	107	80-120
Toluene	25.00	25.41	102	80-122
Chlorobenzene	25.00	23.61	94	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-122
1,2-Dichloroethane-d4	110	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-120

Type: BSD Lab ID: QC409464

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	24.99	100	80-133	7	20
Benzene	25.00	23.99	96	80-120	3	20
Trichloroethene	25.00	28.16	113	80-120	5	20
Toluene	25.00	25.08	100	80-122	1	20
Chlorobenzene	25.00	24.19	97	80-120	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-122
1,2-Dichloroethane-d4	109	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	98	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	130284
MSS Lab ID:	198132-007	Sampled:	10/04/07
Matrix:	Water	Received:	10/05/07
Units:	ug/L	Analyzed:	10/08/07
Diln Fac:	2.000		

Type: MS Lab ID: QC409562

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	2.411	50.00	55.85	107	80-141
Benzene	<0.5000	50.00	49.43	99	80-123
Trichloroethene	104.8	50.00	125.8	42 *	73-129
Toluene	<0.2675	50.00	51.54	103	80-124
Chlorobenzene	<0.3139	50.00	47.42	95	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-122
1,2-Dichloroethane-d4	124	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	110	80-120

Type: MSD Lab ID: QC409563

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	50.00	55.19	106	80-141	1	20
Benzene	50.00	48.93	98	80-123	1	20
Trichloroethene	50.00	126.4	43 *	73-129	0	20
Toluene	50.00	51.19	102	80-124	1	20
Chlorobenzene	50.00	47.92	96	80-120	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	109	80-122
1,2-Dichloroethane-d4	125	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	106	80-120

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-6-SS-0.0'	Diln Fac:	0.9804
Lab ID:	198121-001	Batch#:	130236
Matrix:	Soil	Sampled:	10/04/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/05/07

Analyte	Result	RL
Freon 12	ND	9.8
Chloromethane	ND	9.8
Vinyl Chloride	ND	9.8
Bromomethane	ND	9.8
Chloroethane	ND	9.8
Trichlorofluoromethane	ND	4.9
Acetone	ND	25
Freon 113	ND	4.9
1,1-Dichloroethene	ND	4.9
Methylene Chloride	ND	20
Carbon Disulfide	ND	4.9
MTBE	ND	4.9
trans-1,2-Dichloroethene	ND	4.9
Vinyl Acetate	ND	49
1,1-Dichloroethane	ND	4.9
2-Butanone	ND	9.8
cis-1,2-Dichloroethene	ND	4.9
2,2-Dichloropropane	ND	4.9
Chloroform	ND	4.9
Bromochloromethane	ND	4.9
1,1,1-Trichloroethane	ND	4.9
1,1-Dichloropropene	ND	4.9
Carbon Tetrachloride	ND	4.9
1,2-Dichloroethane	ND	4.9
Benzene	ND	4.9
Trichloroethene	ND	4.9
1,2-Dichloropropane	ND	4.9
Bromodichloromethane	ND	4.9
Dibromomethane	ND	4.9
4-Methyl-2-Pentanone	ND	9.8
cis-1,3-Dichloropropene	ND	4.9
Toluene	ND	4.9
trans-1,3-Dichloropropene	ND	4.9
1,1,2-Trichloroethane	ND	4.9
2-Hexanone	ND	9.8
1,3-Dichloropropane	ND	4.9
Tetrachloroethene	ND	4.9

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-6-SS-0.0'	Diln Fac:	0.9804
Lab ID:	198121-001	Batch#:	130236
Matrix:	Soil	Sampled:	10/04/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/05/07

Analyte	Result	RL
Dibromochloromethane	ND	4.9
1,2-Dibromoethane	ND	4.9
Chlorobenzene	ND	4.9
1,1,1,2-Tetrachloroethane	ND	4.9
Ethylbenzene	ND	4.9
m,p-Xylenes	ND	4.9
o-Xylene	ND	4.9
Styrene	ND	4.9
Bromoform	ND	4.9
Isopropylbenzene	ND	4.9
1,1,2,2-Tetrachloroethane	ND	4.9
1,2,3-Trichloropropane	ND	4.9
Propylbenzene	ND	4.9
Bromobenzene	ND	4.9
1,3,5-Trimethylbenzene	ND	4.9
2-Chlorotoluene	ND	4.9
4-Chlorotoluene	ND	4.9
tert-Butylbenzene	ND	4.9
1,2,4-Trimethylbenzene	ND	4.9
sec-Butylbenzene	ND	4.9
para-Isopropyl Toluene	ND	4.9
1,3-Dichlorobenzene	ND	4.9
1,4-Dichlorobenzene	ND	4.9
n-Butylbenzene	ND	4.9
1,2-Dichlorobenzene	ND	4.9
1,2-Dibromo-3-Chloropropane	ND	4.9
1,2,4-Trichlorobenzene	ND	4.9
Hexachlorobutadiene	ND	4.9
Naphthalene	ND	4.9
1,2,3-Trichlorobenzene	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-124
1,2-Dichloroethane-d4	97	79-136
Toluene-d8	101	80-120
Bromofluorobenzene	104	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-6-SS-25'	Diln Fac:	0.9804
Lab ID:	198121-002	Batch#:	130236
Matrix:	Soil	Sampled:	10/04/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/05/07

Analyte	Result	RL
Freon 12	ND	9.8
Chloromethane	ND	9.8
Vinyl Chloride	ND	9.8
Bromomethane	ND	9.8
Chloroethane	ND	9.8
Trichlorofluoromethane	ND	4.9
Acetone	ND	25
Freon 113	ND	4.9
1,1-Dichloroethene	ND	4.9
Methylene Chloride	ND	20
Carbon Disulfide	ND	4.9
MTBE	ND	4.9
trans-1,2-Dichloroethene	ND	4.9
Vinyl Acetate	ND	49
1,1-Dichloroethane	ND	4.9
2-Butanone	ND	9.8
cis-1,2-Dichloroethene	ND	4.9
2,2-Dichloropropane	ND	4.9
Chloroform	ND	4.9
Bromochloromethane	ND	4.9
1,1,1-Trichloroethane	ND	4.9
1,1-Dichloropropene	ND	4.9
Carbon Tetrachloride	ND	4.9
1,2-Dichloroethane	ND	4.9
Benzene	ND	4.9
Trichloroethene	ND	4.9
1,2-Dichloropropane	ND	4.9
Bromodichloromethane	ND	4.9
Dibromomethane	ND	4.9
4-Methyl-2-Pentanone	ND	9.8
cis-1,3-Dichloropropene	ND	4.9
Toluene	ND	4.9
trans-1,3-Dichloropropene	ND	4.9
1,1,2-Trichloroethane	ND	4.9
2-Hexanone	ND	9.8
1,3-Dichloropropane	ND	4.9
Tetrachloroethene	ND	4.9

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-6-SS-25'	Diln Fac:	0.9804
Lab ID:	198121-002	Batch#:	130236
Matrix:	Soil	Sampled:	10/04/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/05/07

Analyte	Result	RL
Dibromochloromethane	ND	4.9
1,2-Dibromoethane	ND	4.9
Chlorobenzene	ND	4.9
1,1,1,2-Tetrachloroethane	ND	4.9
Ethylbenzene	ND	4.9
m,p-Xylenes	ND	4.9
o-Xylene	ND	4.9
Styrene	ND	4.9
Bromoform	ND	4.9
Isopropylbenzene	ND	4.9
1,1,2,2-Tetrachloroethane	ND	4.9
1,2,3-Trichloropropane	ND	4.9
Propylbenzene	ND	4.9
Bromobenzene	ND	4.9
1,3,5-Trimethylbenzene	ND	4.9
2-Chlorotoluene	ND	4.9
4-Chlorotoluene	ND	4.9
tert-Butylbenzene	ND	4.9
1,2,4-Trimethylbenzene	ND	4.9
sec-Butylbenzene	ND	4.9
para-Isopropyl Toluene	ND	4.9
1,3-Dichlorobenzene	ND	4.9
1,4-Dichlorobenzene	ND	4.9
n-Butylbenzene	ND	4.9
1,2-Dichlorobenzene	ND	4.9
1,2-Dibromo-3-Chloropropane	ND	4.9
1,2,4-Trichlorobenzene	ND	4.9
Hexachlorobutadiene	ND	4.9
Naphthalene	ND	4.9
1,2,3-Trichlorobenzene	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	114	80-124
1,2-Dichloroethane-d4	109	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	104	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-5-SS-0.0'	Diln Fac:	0.9434
Lab ID:	198121-004	Batch#:	130236
Matrix:	Soil	Sampled:	10/03/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/05/07

Analyte	Result	RL
Freon 12	ND	9.4
Chloromethane	ND	9.4
Vinyl Chloride	ND	9.4
Bromomethane	ND	9.4
Chloroethane	ND	9.4
Trichlorofluoromethane	ND	4.7
Acetone	ND	24
Freon 113	ND	4.7
1,1-Dichloroethene	ND	4.7
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.7
MTBE	ND	4.7
trans-1,2-Dichloroethene	ND	4.7
Vinyl Acetate	ND	47
1,1-Dichloroethane	ND	4.7
2-Butanone	ND	9.4
cis-1,2-Dichloroethene	ND	4.7
2,2-Dichloropropane	ND	4.7
Chloroform	ND	4.7
Bromochloromethane	ND	4.7
1,1,1-Trichloroethane	ND	4.7
1,1-Dichloropropene	ND	4.7
Carbon Tetrachloride	ND	4.7
1,2-Dichloroethane	ND	4.7
Benzene	ND	4.7
Trichloroethene	ND	4.7
1,2-Dichloropropane	ND	4.7
Bromodichloromethane	ND	4.7
Dibromomethane	ND	4.7
4-Methyl-2-Pentanone	ND	9.4
cis-1,3-Dichloropropene	ND	4.7
Toluene	ND	4.7
trans-1,3-Dichloropropene	ND	4.7
1,1,2-Trichloroethane	ND	4.7
2-Hexanone	ND	9.4
1,3-Dichloropropane	ND	4.7
Tetrachloroethene	ND	4.7

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-5-SS-0.0'	Diln Fac:	0.9434
Lab ID:	198121-004	Batch#:	130236
Matrix:	Soil	Sampled:	10/03/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/05/07

Analyte	Result	RL
Dibromochloromethane	ND	4.7
1,2-Dibromoethane	ND	4.7
Chlorobenzene	ND	4.7
1,1,1,2-Tetrachloroethane	ND	4.7
Ethylbenzene	ND	4.7
m,p-Xylenes	ND	4.7
o-Xylene	ND	4.7
Styrene	ND	4.7
Bromoform	ND	4.7
Isopropylbenzene	ND	4.7
1,1,2,2-Tetrachloroethane	ND	4.7
1,2,3-Trichloropropane	ND	4.7
Propylbenzene	ND	4.7
Bromobenzene	ND	4.7
1,3,5-Trimethylbenzene	ND	4.7
2-Chlorotoluene	ND	4.7
4-Chlorotoluene	ND	4.7
tert-Butylbenzene	ND	4.7
1,2,4-Trimethylbenzene	ND	4.7
sec-Butylbenzene	ND	4.7
para-Isopropyl Toluene	ND	4.7
1,3-Dichlorobenzene	ND	4.7
1,4-Dichlorobenzene	ND	4.7
n-Butylbenzene	ND	4.7
1,2-Dichlorobenzene	ND	4.7
1,2-Dibromo-3-Chloropropane	ND	4.7
1,2,4-Trichlorobenzene	ND	4.7
Hexachlorobutadiene	ND	4.7
Naphthalene	ND	4.7
1,2,3-Trichlorobenzene	ND	4.7

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-124
1,2-Dichloroethane-d4	102	79-136
Toluene-d8	100	80-120
Bromofluorobenzene	102	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-5-SS-46'	Diln Fac:	0.9615
Lab ID:	198121-005	Batch#:	130236
Matrix:	Soil	Sampled:	10/04/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/05/07

Analyte	Result	RL
Freon 12	ND	9.6
Chloromethane	ND	9.6
Vinyl Chloride	ND	9.6
Bromomethane	ND	9.6
Chloroethane	ND	9.6
Trichlorofluoromethane	ND	4.8
Acetone	ND	24
Freon 113	ND	4.8
1,1-Dichloroethene	ND	4.8
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.8
MTBE	ND	4.8
trans-1,2-Dichloroethene	ND	4.8
Vinyl Acetate	ND	48
1,1-Dichloroethane	ND	4.8
2-Butanone	ND	9.6
cis-1,2-Dichloroethene	ND	4.8
2,2-Dichloropropane	ND	4.8
Chloroform	ND	4.8
Bromochloromethane	ND	4.8
1,1,1-Trichloroethane	ND	4.8
1,1-Dichloropropene	ND	4.8
Carbon Tetrachloride	ND	4.8
1,2-Dichloroethane	ND	4.8
Benzene	ND	4.8
Trichloroethene	ND	4.8
1,2-Dichloropropane	ND	4.8
Bromodichloromethane	ND	4.8
Dibromomethane	ND	4.8
4-Methyl-2-Pentanone	ND	9.6
cis-1,3-Dichloropropene	ND	4.8
Toluene	ND	4.8
trans-1,3-Dichloropropene	ND	4.8
1,1,2-Trichloroethane	ND	4.8
2-Hexanone	ND	9.6
1,3-Dichloropropane	ND	4.8
Tetrachloroethene	ND	4.8

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-5-SS-46'	Diln Fac:	0.9615
Lab ID:	198121-005	Batch#:	130236
Matrix:	Soil	Sampled:	10/04/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/05/07

Analyte	Result	RL
Dibromochloromethane	ND	4.8
1,2-Dibromoethane	ND	4.8
Chlorobenzene	ND	4.8
1,1,1,2-Tetrachloroethane	ND	4.8
Ethylbenzene	ND	4.8
m,p-Xylenes	ND	4.8
o-Xylene	ND	4.8
Styrene	ND	4.8
Bromoform	ND	4.8
Isopropylbenzene	ND	4.8
1,1,2,2-Tetrachloroethane	ND	4.8
1,2,3-Trichloropropane	ND	4.8
Propylbenzene	ND	4.8
Bromobenzene	ND	4.8
1,3,5-Trimethylbenzene	ND	4.8
2-Chlorotoluene	ND	4.8
4-Chlorotoluene	ND	4.8
tert-Butylbenzene	ND	4.8
1,2,4-Trimethylbenzene	ND	4.8
sec-Butylbenzene	ND	4.8
para-Isopropyl Toluene	ND	4.8
1,3-Dichlorobenzene	ND	4.8
1,4-Dichlorobenzene	ND	4.8
n-Butylbenzene	ND	4.8
1,2-Dichlorobenzene	ND	4.8
1,2-Dibromo-3-Chloropropane	ND	4.8
1,2,4-Trichlorobenzene	ND	4.8
Hexachlorobutadiene	ND	4.8
Naphthalene	ND	4.8
1,2,3-Trichlorobenzene	ND	4.8

Surrogate	%REC	Limits
Dibromofluoromethane	111	80-124
1,2-Dichloroethane-d4	108	79-136
Toluene-d8	100	80-120
Bromofluorobenzene	98	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-4-SS-0.0'	Diln Fac:	0.9259
Lab ID:	198121-007	Batch#:	130236
Matrix:	Soil	Sampled:	10/03/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/05/07

Analyte	Result	RL
Freon 12	ND	9.3
Chloromethane	ND	9.3
Vinyl Chloride	ND	9.3
Bromomethane	ND	9.3
Chloroethane	ND	9.3
Trichlorofluoromethane	ND	4.6
Acetone	ND	23
Freon 113	ND	4.6
1,1-Dichloroethene	ND	4.6
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.6
MTBE	ND	4.6
trans-1,2-Dichloroethene	ND	4.6
Vinyl Acetate	ND	46
1,1-Dichloroethane	ND	4.6
2-Butanone	69	9.3
cis-1,2-Dichloroethene	ND	4.6
2,2-Dichloropropane	ND	4.6
Chloroform	ND	4.6
Bromochloromethane	ND	4.6
1,1,1-Trichloroethane	ND	4.6
1,1-Dichloropropene	ND	4.6
Carbon Tetrachloride	ND	4.6
1,2-Dichloroethane	ND	4.6
Benzene	ND	4.6
Trichloroethene	ND	4.6
1,2-Dichloropropane	ND	4.6
Bromodichloromethane	ND	4.6
Dibromomethane	ND	4.6
4-Methyl-2-Pentanone	ND	9.3
cis-1,3-Dichloropropene	ND	4.6
Toluene	ND	4.6
trans-1,3-Dichloropropene	ND	4.6
1,1,2-Trichloroethane	ND	4.6
2-Hexanone	ND	9.3
1,3-Dichloropropane	ND	4.6
Tetrachloroethene	ND	4.6

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-4-SS-0.0'	Diln Fac:	0.9259
Lab ID:	198121-007	Batch#:	130236
Matrix:	Soil	Sampled:	10/03/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/05/07

Analyte	Result	RL
Dibromochloromethane	ND	4.6
1,2-Dibromoethane	ND	4.6
Chlorobenzene	ND	4.6
1,1,1,2-Tetrachloroethane	ND	4.6
Ethylbenzene	ND	4.6
m,p-Xylenes	ND	4.6
o-Xylene	ND	4.6
Styrene	ND	4.6
Bromoform	ND	4.6
Isopropylbenzene	ND	4.6
1,1,2,2-Tetrachloroethane	ND	4.6
1,2,3-Trichloropropane	ND	4.6
Propylbenzene	ND	4.6
Bromobenzene	ND	4.6
1,3,5-Trimethylbenzene	ND	4.6
2-Chlorotoluene	ND	4.6
4-Chlorotoluene	ND	4.6
tert-Butylbenzene	ND	4.6
1,2,4-Trimethylbenzene	ND	4.6
sec-Butylbenzene	ND	4.6
para-Isopropyl Toluene	ND	4.6
1,3-Dichlorobenzene	ND	4.6
1,4-Dichlorobenzene	ND	4.6
n-Butylbenzene	ND	4.6
1,2-Dichlorobenzene	ND	4.6
1,2-Dibromo-3-Chloropropane	ND	4.6
1,2,4-Trichlorobenzene	ND	4.6
Hexachlorobutadiene	ND	4.6
Naphthalene	ND	4.6
1,2,3-Trichlorobenzene	ND	4.6

Surrogate	%REC	Limits
Dibromofluoromethane	111	80-124
1,2-Dichloroethane-d4	104	79-136
Toluene-d8	100	80-120
Bromofluorobenzene	97	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC409289	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130236
Units:	ug/Kg	Analyzed:	10/05/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC409289	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130236
Units:	ug/Kg	Analyzed:	10/05/07

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-124
1,2-Dichloroethane-d4	104	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	99	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC409290	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130236
Units:	ug/Kg	Analyzed:	10/05/07

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	54.65	109	74-131
Benzene	50.00	49.84	100	77-121
Trichloroethene	50.00	52.32	105	77-121
Toluene	50.00	49.78	100	79-122
Chlorobenzene	50.00	46.70	93	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-124
1,2-Dichloroethane-d4	99	79-136
Toluene-d8	102	80-120
Bromofluorobenzene	99	80-122

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-4-SS-0.0'	Diln Fac:	0.9259
MSS Lab ID:	198121-007	Batch#:	130236
Matrix:	Soil	Sampled:	10/03/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/05/07

Type: MS Lab ID: QC409349

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.3308	46.30	35.47	77	61-145
Benzene	<0.4265	46.30	32.15	69	57-123
Trichloroethene	<0.2546	46.30	27.42	59	52-141
Toluene	<0.4615	46.30	24.26	52 *	53-126
Chlorobenzene	<0.2978	46.30	19.33	42 *	49-121

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-124
1,2-Dichloroethane-d4	102	79-136
Toluene-d8	102	80-120
Bromofluorobenzene	101	80-122

Type: MSD Lab ID: QC409350

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	46.30	40.00	86	61-145	12	26
Benzene	46.30	36.74	79	57-123	13	25
Trichloroethene	46.30	35.47	77	52-141	26	26
Toluene	46.30	33.49	72	53-126	32 *	27
Chlorobenzene	46.30	30.12	65	49-121	44 *	27

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-124
1,2-Dichloroethane-d4	101	79-136
Toluene-d8	102	80-120
Bromofluorobenzene	101	80-122

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198121	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-6-SS-0.0'	Basis:	as received
Lab ID:	198121-001	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/04/07
Units:	mg/Kg	Received:	10/05/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	0.93	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Arsenic	7.2	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Barium	130	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Beryllium	0.42	0.10	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Chromium	90	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Cobalt	22	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Copper	25	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Lead	9.6	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Mercury	0.055	0.020	130346	10/09/07	10/09/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Nickel	110	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Selenium	ND	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Vanadium	59	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Zinc	48	1.0	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198121	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-6-SS-25'	Basis:	as received
Lab ID:	198121-002	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/04/07
Units:	mg/Kg	Received:	10/05/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Arsenic	16	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Barium	82	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Beryllium	0.49	0.10	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Chromium	47	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Cobalt	17	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Copper	46	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Lead	8.4	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Mercury	0.11	0.020	130346	10/09/07	10/09/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Nickel	73	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Selenium	2.9	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Vanadium	52	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Zinc	75	1.0	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198121	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-5-SS-0.0'	Basis:	as received
Lab ID:	198121-004	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/03/07
Units:	mg/Kg	Received:	10/05/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Arsenic	9.7	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Barium	150	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Beryllium	0.41	0.10	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Chromium	82	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Cobalt	18	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Copper	30	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Lead	9.3	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Mercury	0.053	0.020	130346	10/09/07	10/09/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Nickel	120	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Selenium	2.0	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Vanadium	53	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Zinc	55	1.0	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198121	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-5-SS-46'	Basis:	as received
Lab ID:	198121-005	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/03/07
Units:	mg/Kg	Received:	10/05/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Arsenic	8.3	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Barium	81	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Beryllium	0.39	0.10	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Chromium	43	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Cobalt	11	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Copper	17	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Lead	4.9	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Mercury	0.040	0.020	130346	10/09/07	10/09/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Nickel	39	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Selenium	1.6	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Thallium	0.63	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Vanadium	55	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Zinc	55	1.0	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198121	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-4-SS-0.0'	Basis:	as received
Lab ID:	198121-007	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/03/07
Units:	mg/Kg	Received:	10/05/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	0.65	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Arsenic	8.4	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Barium	150	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Beryllium	0.44	0.10	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Chromium	110	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Cobalt	26	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Copper	36	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Lead	11	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Mercury	0.081	0.020	130346	10/09/07	10/09/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Nickel	160	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Selenium	2.3	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Vanadium	64	0.25	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B
Zinc	60	1.0	130259	10/05/07	10/08/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

16.1

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409376	Batch#:	130259
Matrix:	Soil	Prepared:	10/05/07
Units:	mg/Kg	Analyzed:	10/08/07
Basis:	as received		

Analyte	Result	RL
Antimony	ND	0.50
Arsenic	ND	0.25
Barium	ND	0.25
Beryllium	ND	0.10
Cadmium	ND	0.25
Chromium	ND	0.25
Cobalt	ND	0.25
Copper	ND	0.25
Lead	ND	0.25
Molybdenum	ND	0.25
Nickel	ND	0.25
Selenium	ND	0.50
Silver	ND	0.25
Thallium	ND	0.50
Vanadium	ND	0.25
Zinc	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	130259
Units:	mg/Kg	Prepared:	10/05/07
Basis:	as received	Analyzed:	10/08/07
Diln Fac:	1.000		

Type: BS Lab ID: QC409377

Analyte	Spiked	Result	%REC	Limits
Antimony	100.0	92.87	93	80-120
Arsenic	50.00	47.74	95	80-120
Barium	100.0	93.70	94	80-120
Beryllium	2.500	2.440	98	80-120
Cadmium	10.00	9.354	94	80-120
Chromium	100.0	90.85	91	80-120
Cobalt	25.00	22.34	89	80-120
Copper	12.50	11.28	90	80-120
Lead	100.0	88.53	89	80-120
Molybdenum	20.00	18.84	94	80-120
Nickel	25.00	22.36	89	80-120
Selenium	50.00	45.97	92	80-120
Silver	10.00	8.883	89	80-120
Thallium	50.00	46.20	92	80-120
Vanadium	25.00	22.66	91	80-120
Zinc	25.00	22.19	89	80-120

Type: BSD Lab ID: QC409378

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	100.0	98.33	98	80-120	6	20
Arsenic	50.00	50.74	101	80-120	6	20
Barium	100.0	98.03	98	80-120	5	20
Beryllium	2.500	2.572	103	80-120	5	20
Cadmium	10.00	9.816	98	80-120	5	20
Chromium	100.0	95.64	96	80-120	5	20
Cobalt	25.00	23.41	94	80-120	5	20
Copper	12.50	11.87	95	80-120	5	20
Lead	100.0	93.81	94	80-120	6	20
Molybdenum	20.00	20.01	100	80-120	6	20
Nickel	25.00	23.57	94	80-120	5	20
Selenium	50.00	49.13	98	80-120	7	20
Silver	10.00	9.330	93	80-120	5	20
Thallium	50.00	49.07	98	80-120	6	20
Vanadium	25.00	23.89	96	80-120	5	20
Zinc	25.00	23.27	93	80-120	5	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	B-6-SS-0.0'	Batch#:	130259
MSS Lab ID:	198121-001	Sampled:	10/04/07
Matrix:	Soil	Received:	10/05/07
Units:	mg/Kg	Prepared:	10/05/07
Basis:	as received	Analyzed:	10/08/07
Diln Fac:	1.000		

Type: MS Lab ID: QC409379

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	0.9286	95.24	40.61	42	1-122
Arsenic	7.159	47.62	53.13	97	72-120
Barium	134.8	95.24	228.4	98	49-139
Beryllium	0.4199	2.381	2.893	104	80-120
Cadmium	<0.002454	9.524	8.898	93	74-120
Chromium	89.68	95.24	176.8	91	65-120
Cobalt	21.50	23.81	44.06	95	60-120
Copper	24.99	11.90	37.04	101	47-146
Lead	9.576	95.24	95.17	90	53-123
Molybdenum	0.1454	19.05	17.26	90	66-120
Nickel	114.8	23.81	138.2	98 NM	43-142
Selenium	<0.07209	47.62	46.97	99	71-120
Silver	<0.01683	9.524	9.002	95	66-120
Thallium	<0.03180	47.62	41.61	87	62-120
Vanadium	59.34	23.81	78.46	80	52-139
Zinc	47.96	23.81	69.27	89	42-147

Type: MSD Lab ID: QC409380

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	96.15	40.66	41	1-122	1	30
Arsenic	48.08	52.60	95	72-120	2	20
Barium	96.15	227.9	97	49-139	1	23
Beryllium	2.404	2.859	101	80-120	2	20
Cadmium	9.615	8.779	91	74-120	2	20
Chromium	96.15	173.6	87	65-120	2	20
Cobalt	24.04	44.04	94	60-120	1	24
Copper	12.02	36.71	97	47-146	1	21
Lead	96.15	93.63	87	53-123	3	28
Molybdenum	19.23	17.16	88	66-120	1	20
Nickel	24.04	137.3	93 NM	43-142	1	26
Selenium	48.08	45.55	95	71-120	4	20
Silver	9.615	8.751	91	66-120	4	20
Thallium	48.08	40.74	85	62-120	3	20
Vanadium	24.04	78.60	80	52-139	0	20
Zinc	24.04	68.96	87	42-147	1	27

NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409705	Batch#:	130346
Matrix:	Soil	Prepared:	10/09/07
Units:	mg/Kg	Analyzed:	10/09/07

Result	RL
ND	0.020

ND= Not Detected
RL= Reporting Limit

43.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130346
Units:	mg/Kg	Prepared:	10/09/07
Basis:	as received	Analyzed:	10/09/07

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC409706	0.5000	0.4400	88	80-120		
BSD	QC409707	0.5000	0.4660	93	80-120	6	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	130346
MSS Lab ID:	198112-002	Sampled:	10/03/07
Matrix:	Soil	Received:	10/04/07
Units:	mg/Kg	Prepared:	10/09/07
Basis:	as received	Analyzed:	10/09/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC409709	0.02510	0.4630	0.4574	93	70-143		
MSD	QC409710		0.4464	0.4563	97	70-143	3	22

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	198121	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-6-GW-17'	Diln Fac:	1.000
Lab ID:	198121-003	Sampled:	10/04/07
Matrix:	Filtrate	Received:	10/05/07
Units:	ug/L		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	10	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Arsenic	ND	6.1	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Barium	81	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Copper	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Lead	ND	3.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130338	10/09/07	10/09/07	METHOD	EPA 7470A
Molybdenum	5.2	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Selenium	ND	10	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Silver	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Thallium	ND	10	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Zinc	ND	20	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	198121	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-5-GW-45'	Diln Fac:	1.000
Lab ID:	198121-006	Sampled:	10/03/07
Matrix:	Filtrate	Received:	10/05/07
Units:	ug/L		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	16	10	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Arsenic	ND	6.1	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Barium	130	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Copper	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Lead	ND	3.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130338	10/09/07	10/09/07	METHOD	EPA 7470A
Molybdenum	6.6	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Selenium	ND	10	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Silver	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Thallium	ND	10	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Zinc	ND	20	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409489	Batch#:	130292
Matrix:	Water	Prepared:	10/08/07
Units:	ug/L	Analyzed:	10/08/07

Analyte	Result	RL
Antimony	ND	10
Arsenic	ND	6.1
Barium	ND	5.0
Beryllium	ND	2.0
Cadmium	ND	5.0
Chromium	ND	5.0
Cobalt	ND	5.0
Copper	ND	5.0
Lead	ND	3.0
Molybdenum	ND	5.0
Nickel	ND	5.0
Selenium	ND	10
Silver	ND	5.0
Thallium	ND	10
Vanadium	ND	5.0
Zinc	ND	20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Water	Batch#:	130292
Units:	ug/L	Prepared:	10/08/07
Diln Fac:	1.000	Analyzed:	10/08/07

Type: BS Lab ID: QC409490

Analyte	Spiked	Result	%REC	Limits
Antimony	500.0	499.4	100	80-120
Arsenic	100.0	114.5	114	80-120
Barium	2,000	1,993	100	80-120
Beryllium	50.00	54.75	110	80-120
Cadmium	50.00	51.28	103	80-120
Chromium	200.0	203.7	102	80-120
Cobalt	500.0	493.2	99	80-120
Copper	250.0	248.8	100	80-120
Lead	100.0	94.39	94	80-120
Molybdenum	400.0	419.3	105	80-120
Nickel	500.0	504.1	101	80-120
Selenium	100.0	106.1	106	80-120
Silver	50.00	49.50	99	80-120
Thallium	100.0	106.6	107	80-120
Vanadium	500.0	510.0	102	80-120
Zinc	500.0	520.5	104	80-120

Type: BSD Lab ID: QC409491

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	493.7	99	80-120	1	20
Arsenic	100.0	110.7	111	80-120	3	20
Barium	2,000	1,936	97	80-120	3	20
Beryllium	50.00	53.24	106	80-120	3	20
Cadmium	50.00	49.55	99	80-120	3	20
Chromium	200.0	197.5	99	80-120	3	20
Cobalt	500.0	479.1	96	80-120	3	20
Copper	250.0	241.9	97	80-120	3	20
Lead	100.0	91.40	91	80-120	3	20
Molybdenum	400.0	407.2	102	80-120	3	20
Nickel	500.0	488.1	98	80-120	3	20
Selenium	100.0	102.7	103	80-120	3	20
Silver	50.00	49.30	99	80-120	0	20
Thallium	100.0	104.7	105	80-120	2	20
Vanadium	500.0	495.8	99	80-120	3	20
Zinc	500.0	505.2	101	80-120	3	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130292
MSS Lab ID:	198116-001	Sampled:	10/04/07
Matrix:	Water	Received:	10/04/07
Units:	ug/L	Prepared:	10/08/07
Diln Fac:	1.000	Analyzed:	10/08/07

Type: MS Lab ID: QC409492

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	3.839	500.0	553.6	110	80-120
Arsenic	5.247	100.0	132.8	128 *	80-127
Barium	44.95	2,000	1,882	92	80-120
Beryllium	0.8083	50.00	49.15	97	80-120
Cadmium	12.47	50.00	56.98	89	80-120
Chromium	9.743	200.0	190.3	90	80-120
Cobalt	2.919	500.0	429.8	85	80-120
Copper	40.55	250.0	320.7	112	80-120
Lead	30.19	100.0	116.8	87	76-120
Molybdenum	35.42	400.0	423.1	97	80-120
Nickel	39.27	500.0	462.0	85	80-120
Selenium	5.768	100.0	126.1	120	80-128
Silver	0.8867	50.00	59.82	118	73-122
Thallium	<1.616	100.0	82.16	82	78-120
Vanadium	1.241	500.0	480.4	96	80-120
Zinc	2,997	500.0	3,487	98 NM	80-123

Type: MSD Lab ID: QC409493

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	552.4	110	80-120	0	20
Arsenic	100.0	129.8	125	80-127	2	20
Barium	2,000	1,857	91	80-120	1	20
Beryllium	50.00	48.91	96	80-120	0	20
Cadmium	50.00	58.37	92	80-120	2	20
Chromium	200.0	188.9	90	80-120	1	20
Cobalt	500.0	427.0	85	80-120	1	20
Copper	250.0	320.9	112	80-120	0	20
Lead	100.0	116.8	87	76-120	0	20
Molybdenum	400.0	417.3	95	80-120	1	20
Nickel	500.0	458.8	84	80-120	1	20
Selenium	100.0	119.7	114	80-128	5	20
Silver	50.00	61.21	121	73-122	2	20
Thallium	100.0	79.59	80	78-120	3	20
Vanadium	500.0	478.8	96	80-120	0	20
Zinc	500.0	3,385	78 NM	80-123	3	20

*= Value outside of QC limits; see narrative
NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	130338
Lab ID:	QC409673	Prepared:	10/09/07
Matrix:	Water	Analyzed:	10/09/07
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

46.0

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130338
Matrix:	Water	Prepared:	10/09/07
Units:	ug/L	Analyzed:	10/09/07
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC409674	5.000	5.040	101	80-120		
BSD	QC409675	5.000	5.040	101	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130338
Field ID:	ZZZZZZZZZZ	Sampled:	10/04/07
MSS Lab ID:	198176-002	Received:	10/08/07
Matrix:	Water	Prepared:	10/09/07
Units:	ug/L	Analyzed:	10/09/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC409680	<0.05879	5.000	5.460	109	79-125		
MSD	QC409681		5.000	5.640	113	79-125	3	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Matrix:	Water	Batch#:	130232
Units:	mg/L	Received:	10/05/07

Field ID	Type	Lab ID	Result	RL	Sampled	Analyzed
B-6-GW-17'	SAMPLE	198121-003	0.05	0.05	10/04/07 10:15	10/05/07 12:14
B-5-GW-45'	SAMPLE	198121-006	ND	0.05	10/03/07 16:00	10/05/07 11:54
	BLANK	QC409271	ND	0.05		10/05/07 11:28

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	B-6-GW-17'	Batch#:	130232
MSS Lab ID:	198121-003	Sampled:	10/04/07 10:15
Matrix:	Water	Received:	10/05/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC409272		1.000	0.9603	96	80-120			1.000	10/05/07 14:13
BSD	QC409273		1.000	0.9830	98	80-120	2	20	1.000	10/05/07 14:31
MS	QC409351	0.05275	2.500	2.464	96	80-120			5.000	10/05/07 19:29
MSD	QC409352		2.500	2.501	98	80-120	2	20	5.000	10/05/07 19:47

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130304
Units:	mg/Kg	Received:	10/05/07
Basis:	as received		

Field ID	Type	Lab ID	Result	RL	Sampled	Analyzed
B-6-SS-25'	SAMPLE	198121-002	ND	0.5	10/04/07 10:40	10/08/07 15:18
B-5-SS-46'	SAMPLE	198121-005	ND	0.5	10/04/07 15:45	10/08/07 15:36
	BLANK	QC409544	ND	0.5		10/08/07 12:58

ND= Not Detected
RL= Reporting Limit

25.0

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198121	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Basis:	as received
Field ID:	B-12-SS-0.0'	Batch#:	130304
MSS Lab ID:	198049-002	Sampled:	10/01/07 09:00
Matrix:	Soil	Received:	10/03/07
Units:	mg/Kg		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC409545		10.00	10.34	103	80-120			1.000	10/08/07 13:15
BSD	QC409546		10.00	9.983	100	80-120	3	20	1.000	10/08/07 13:33
MS	QC409587	2.349	5.100	6.705	85	50-120			1.020	10/08/07 16:52
MSD	QC409588		5.100	6.956	90	50-120	4	30	1.020	10/08/07 17:10

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

Chain of Custody Record

198121

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 10/4/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier: UPS - 9X3169
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☐ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15 - G
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

	Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	Filter Sample	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
1	B-6-SS-0.0'	10/4/07	8:30	poly	SO	1		✓	✓	✓	✓		✓		
2	B-6-SS-25'	↓	10:40	poly	SO	1		✓	✓	✓	✓	✓			
3	B-6-GW-17'	10/4/07	10:15	VOA	GW	3		✓							
				VOA		3					✓				
				1L poly		2				✓					
				750 ml poly		1	✓		✓						
		↓	↓	250 ml poly	↓	1						✓			
4	B-5-SS-0.0'	10/3/07	14:00	poly	SO	1		✓	✓	✓	✓		✓		
5	B-5-SS-46'	10/3/07	15:45	poly	SO	1		✓	✓	✓	✓	✓			
6	B-5-GW-45'	10/3/07	16:00	VOA	GW	6		✓			✓				
				1L poly		2				✓					
		↓	↓	750, 250 poly	↓	2	✓		✓		✓				
7	B-4-SS-0.0'	10/3/07	10:30	poly	SO	1		✓	✓	✓	✓		✓		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:
Trip Blank also included in shipment

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Robert R. [illegible]	Weiss Associates	10/4/07, 14:50	[illegible]	C&T	10-5-07 1015
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 198121 Date Received: 10-5-07 Number of Coolers: 1
Client: Weiss Project: Cloverdale

A. Preliminary Examination Phase
Date Opened: 10-5-07 By (print): Faith Nichols (sign) [signature]

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES NO
   If YES, enter carrier name and airbill number: UPS 1Z 832 32E 01 4164 2993
2. Were custody seals on outside of cooler? ..... YES NO
   How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO N/A
4. Were custody papers dry and intact when received? ..... YES NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... YES NO
6. Did you sign the custody papers in the appropriate place? ..... YES NO
7. Was project identifiable from custody papers? ..... YES NO
   If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bubble wrap, Voa foam
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... YES NO
   Type of ice: Wet Temperature: 3°C
10. Were Encore sampling devices present in the cooler? ..... YES NO
    If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10-5-07 By (print): Faith Nichols (sign) [signature]

1. Did all bottles arrive unbroken? ..... YES NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... YES NO
3. Did bottle labels agree with custody papers? ..... YES NO
4. Were appropriate containers used for the tests indicated? ..... YES NO
5. Were correct preservatives added to samples? ..... YES NO
6. Was sufficient amount of sample sent for tests indicated? ..... YES NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below ..... YES NO
8. Was the client contacted concerning this sample delivery? ..... YES NO
   If YES, give details below.
   Who was called? _____ By whom? _____ Date: _____

Additional Comments:
*1 L amber for sample B-6-GW-17' arrived broken in Cooler
*No Trip blank in cooler

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates 5801 Christie Avenue Emeryville, CA 94608	Project : 379-1827-15-02 Location : Cloverdale Project Level : II

Sample ID	Lab ID
B-13-SS-0.0'	198154-001
B-13-SS-45'	198154-002
B-13-GW-38'	198154-003
TRIP BLANK	198154-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/29/2007
Project Manager

Signature: _____ Date: 10/29/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198154**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/08/07**
Samples Received:	**10/05/07**

This hardcopy data package contains sample and QC results for two soil samples and two water samples, requested for the above referenced project on 10/08/07. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Soil:
B-13-SS-0.0' (lab # 198154-001) was diluted due to high non-target analytes. B-13-SS-45' (lab # 198154-002) was diluted due to the dark and viscous nature of the sample extract. No other analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Water:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Soil:
High surrogate recovery was observed for bromofluorobenzene in B-13-SS-45' (lab # 198154-002); no target analytes were detected in the sample. No other analytical problems were encountered.

Pesticides (EPA 8081A):
No analytical problems were encountered.

Polychlorinated Biphenyls (PCBs) (EPA 8082):
No analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A) Soil:
High recoveries were observed for copper and lead in the MS/MSD for batch 130325; the parent sample was not a project sample, the BS/BSD were within limits, and the associated RPDs were within limits. No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7470A) Filtrate:
High recovery was observed for arsenic in the MS for batch 130292; the parent sample was not a project sample, and the associated RPD was within limits. No

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198154**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/08/07**
Samples Received:	**10/05/07**

Metals (EPA 6010B and EPA 7470A) Filtrate:
other analytical problems were encountered.

Ion Chromatography (EPA 300.0) Water:
No analytical problems were encountered.

Ion Chromatography (EPA 300.0) Soil:
No analytical problems were encountered.

Asbestos PLM (EPA 600/R-93-116):
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-13-GW-38'	Batch#:	130404
Matrix:	Water	Sampled:	10/04/07
Units:	ug/L	Received:	10/05/07
Diln Fac:	1.000	Analyzed:	10/10/07

Type: SAMPLE Lab ID: 198154-003

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	120	73-134
Bromofluorobenzene (FID)	126	77-140

Type: BLANK Lab ID: QC409948

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	73-134
Bromofluorobenzene (FID)	97	77-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409949	Batch#:	130404
Matrix:	Water	Analyzed:	10/10/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	917.8	92	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	125	73-134
Bromofluorobenzene (FID)	120	77-140

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130404
MSS Lab ID:	198188-008	Sampled:	10/08/07
Matrix:	Water	Received:	10/08/07
Units:	ug/L	Analyzed:	10/10/07
Diln Fac:	1.000		

Type: MS Lab ID: QC409950

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	24.42	2,000	1,885	93	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	127	73-134
Bromofluorobenzene (FID)	134	77-140

Type: MSD Lab ID: QC409951

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,868	92	72-120	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	122	73-134
Bromofluorobenzene (FID)	129	77-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130395
Units:	mg/Kg	Sampled:	10/04/07
Basis:	as received	Received:	10/05/07
Diln Fac:	1.000		

Field ID:	B-13-SS-0.0'	Lab ID:	198154-001
Type:	SAMPLE	Analyzed:	10/11/07

Analyte	Result	RL
Gasoline C7-C12	ND	0.97

Surrogate	%REC	Limits
Trifluorotoluene (FID)	87	71-132
Bromofluorobenzene (FID)	97	69-145

Field ID:	B-13-SS-45'	Lab ID:	198154-002
Type:	SAMPLE	Analyzed:	10/11/07

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	84	71-132
Bromofluorobenzene (FID)	90	69-145

Type:	BLANK	Analyzed:	10/10/07
Lab ID:	QC409917		

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	97	71-132
Bromofluorobenzene (FID)	99	69-145

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC409918	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130395
Units:	mg/Kg	Analyzed:	10/10/07

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	5.000	5.263	105	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	71-132
Bromofluorobenzene (FID)	100	69-145

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	198144-002	Batch#:	130395
Matrix:	Soil	Sampled:	10/05/07
Units:	mg/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/10/07

Type: MS Lab ID: QC409919

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.2430	9.804	7.760	77	43-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	110	71-132
Bromofluorobenzene (FID)	104	69-145

Type: MSD Lab ID: QC409920

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.20	7.782	74	43-120	4	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	109	71-132
Bromofluorobenzene (FID)	103	69-145

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-13-GW-38'	Sampled:	10/04/07
Matrix:	Water	Received:	10/05/07
Units:	ug/L	Prepared:	10/10/07
Diln Fac:	1.000	Analyzed:	10/12/07
Batch#:	130398		

Type: SAMPLE Lab ID: 198154-003

Analyte	Result	RL	MDL
Diesel C10-C24	74 Y	50	
Motor Oil C24-C36	ND	300	56

Surrogate	%REC	Limits
Hexacosane	98	61-133

Type: BLANK Lab ID: QC409929

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	ND	300	56

Surrogate	%REC	Limits
Hexacosane	104	61-133

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409930	Batch#:	130398
Matrix:	Water	Prepared:	10/10/07
Units:	ug/L	Analyzed:	10/11/07

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,081	83	58-128

Surrogate	%REC	Limits
Hexacosane	83	61-133

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130398
MSS Lab ID:	198061-003	Sampled:	10/03/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Prepared:	10/10/07
Diln Fac:	1.000	Analyzed:	10/12/07

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC409931

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	33.12	2,500	2,490	98	58-129

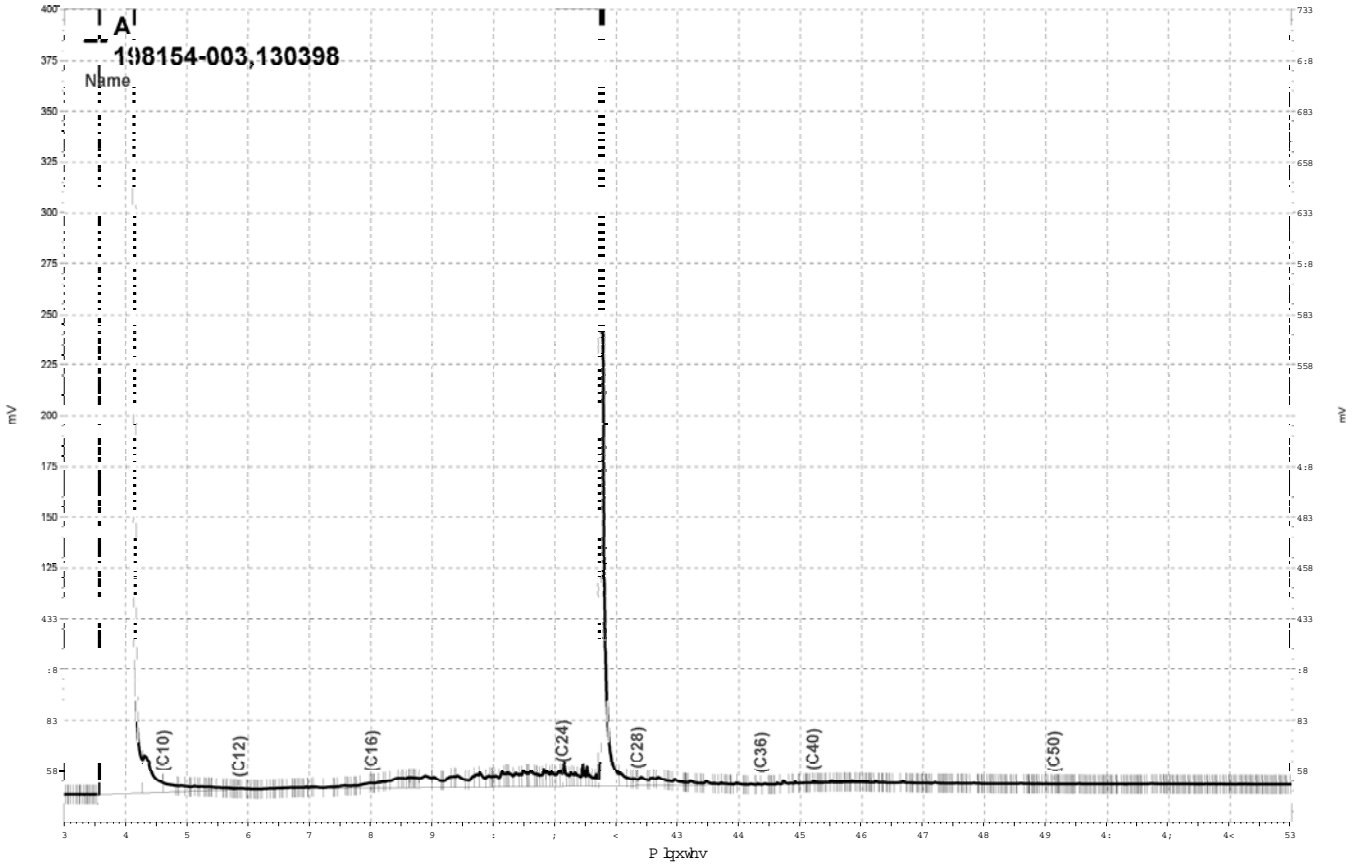
Surrogate	%REC	Limits
Hexacosane	122	61-133

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC409932

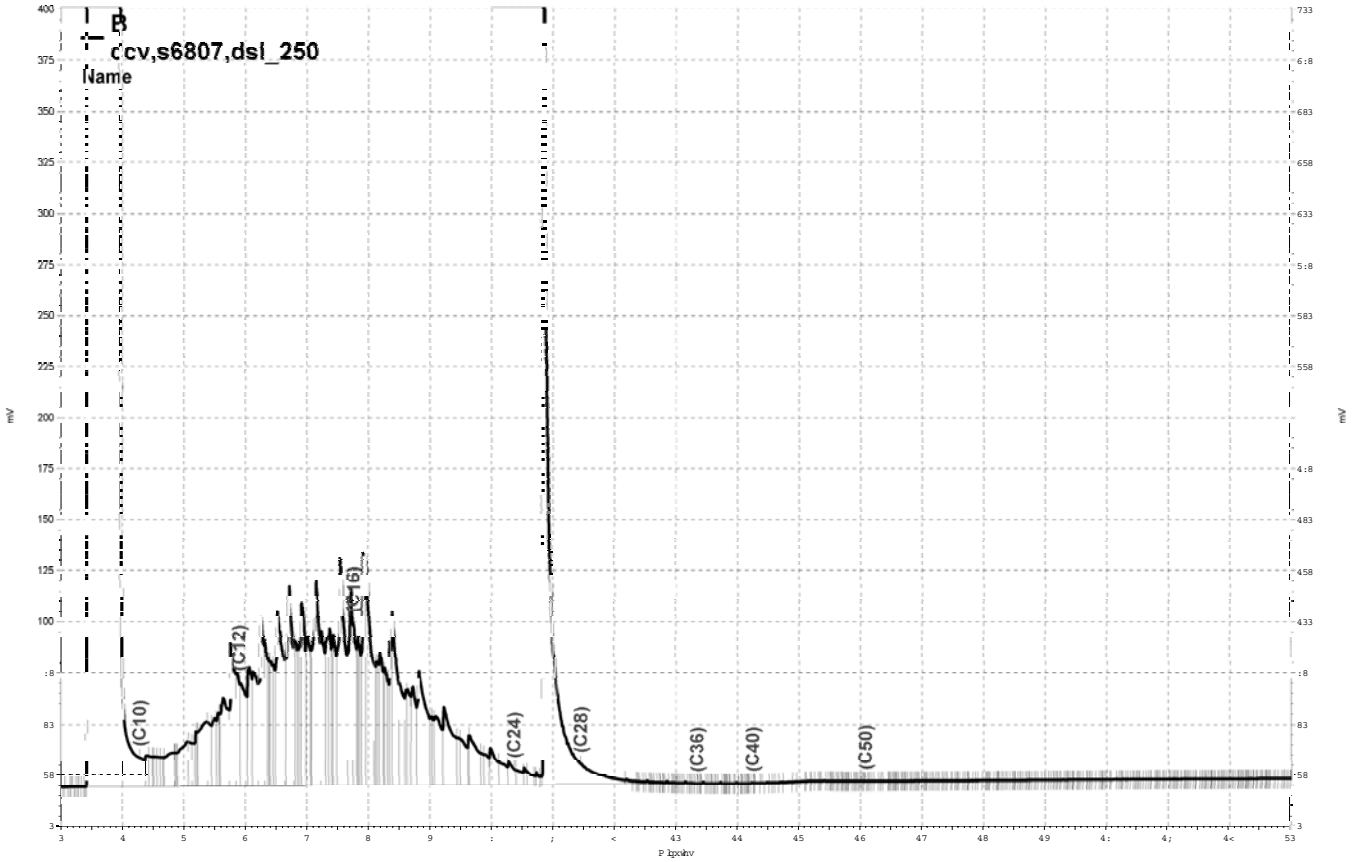
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,372	94	58-129	5	27

Surrogate	%REC	Limits
Hexacosane	114	61-133

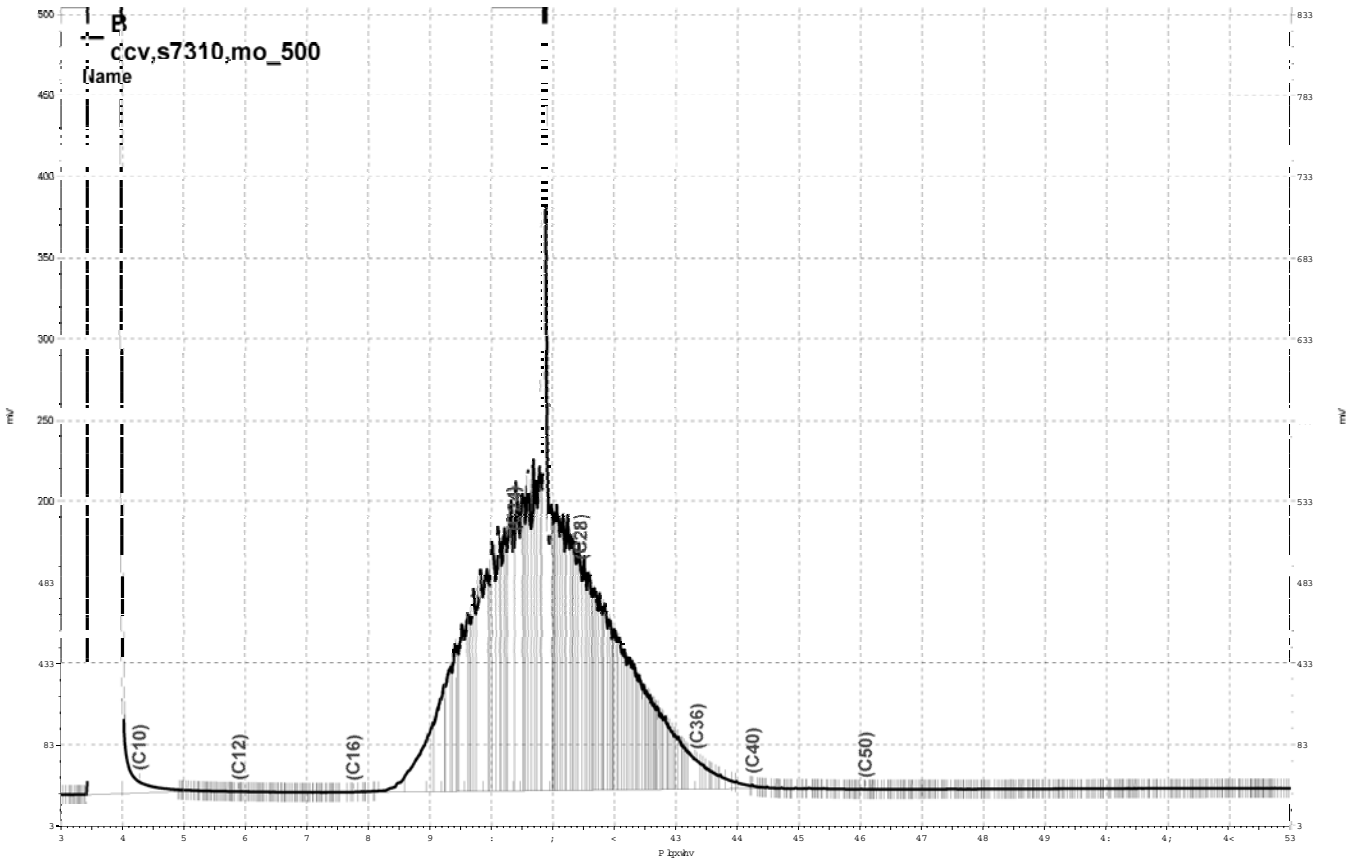
RPD= Relative Percent Difference



_Olpvjgulyh_h}fkurp_Surmfw_JF4:D_Gdwd_5;7d36:/D



_Olp vjgulyh h}fkurp_Surmfw_JF48E_Gdwd_5;6e36</E



_Olp vjgulyh h}fkurp_Surmfw_JF48E_Gdwd_5;6e368/E

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	10/04/07
Units:	mg/Kg	Received:	10/05/07
Basis:	as received	Prepared:	10/13/07
Batch#:	130512		

Field ID:	B-13-SS-0.0'	Diln Fac:	2.000
Type:	SAMPLE	Analyzed:	10/16/07
Lab ID:	198154-001		

Analyte	Result	RL
Diesel C10-C24	26 Y	2.0
Motor Oil C24-C36	94	9.9

Surrogate	%REC	Limits
Hexacosane	99	46-128

Field ID:	B-13-SS-45'	Diln Fac:	2.000
Type:	SAMPLE	Analyzed:	10/16/07
Lab ID:	198154-002		

Analyte	Result	RL
Diesel C10-C24	8.9 Y	2.0
Motor Oil C24-C36	17	9.9

Surrogate	%REC	Limits
Hexacosane	97	46-128

Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC410400	Analyzed:	10/15/07

Analyte	Result	RL
Diesel C10-C24	ND	0.99
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
Hexacosane	98	46-128

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

52.2

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC410401	Batch#:	130512
Matrix:	Soil	Prepared:	10/13/07
Units:	mg/Kg	Analyzed:	10/15/07
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.77	36.17	73	55-131

Surrogate	%REC	Limits
Hexacosane	77	46-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130512
MSS Lab ID:	198070-001	Sampled:	10/02/07
Matrix:	Soil	Received:	10/03/07
Units:	mg/Kg	Prepared:	10/13/07
Basis:	as received	Analyzed:	10/16/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410402

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	0.5333	49.99	46.40	92	31-150

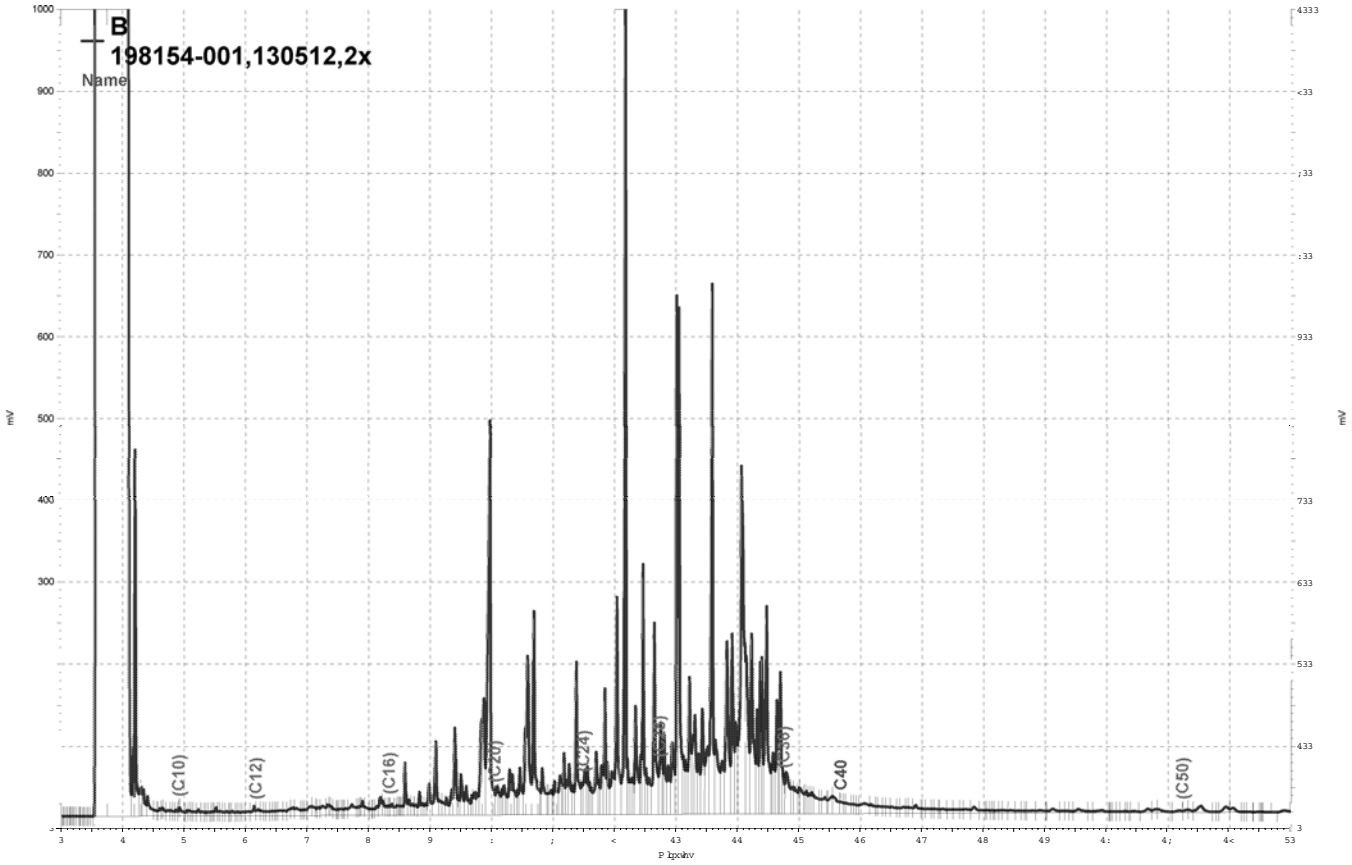
Surrogate	%REC	Limits
Hexacosane	102	46-128

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410403

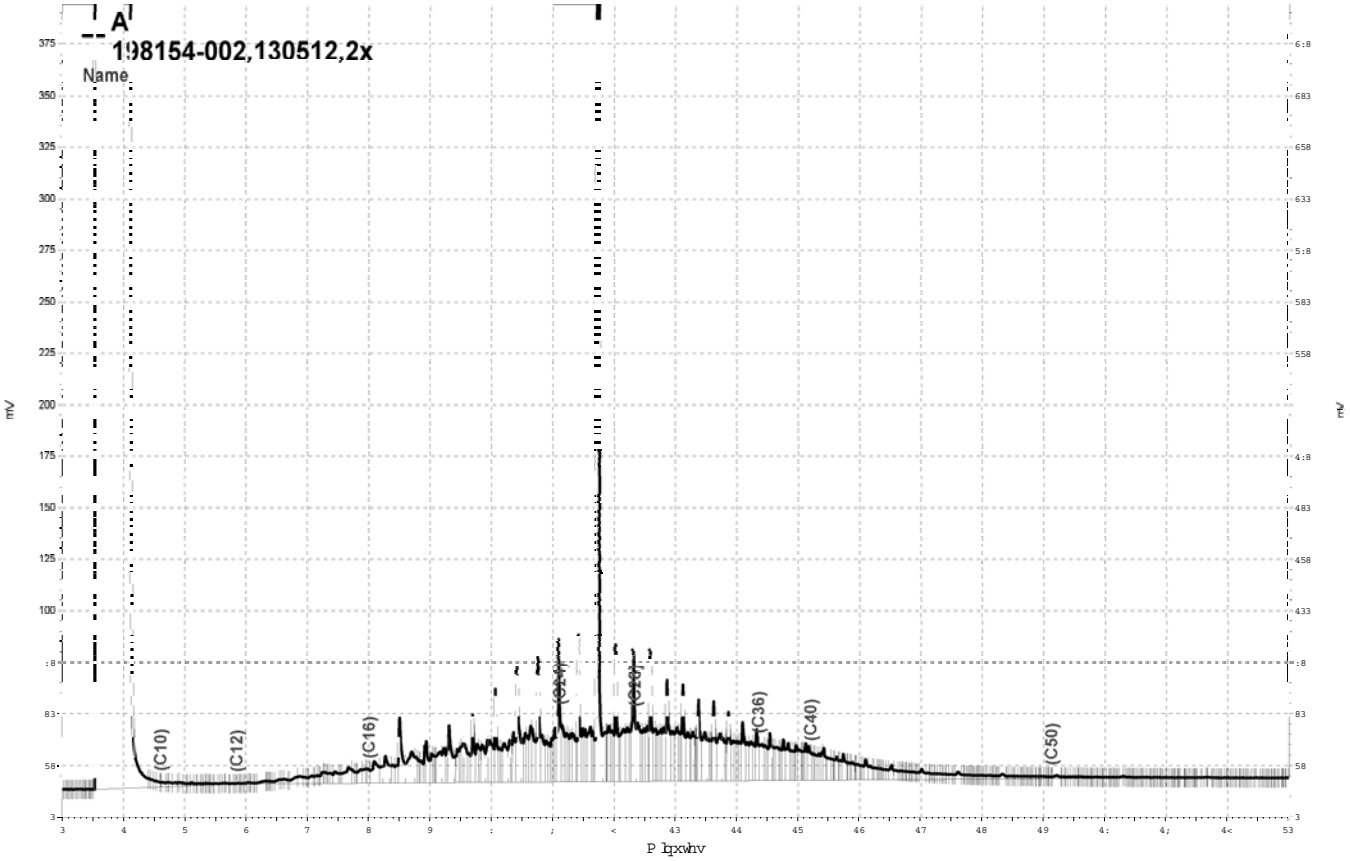
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	49.60	41.26	82	31-150	11	42

Surrogate	%REC	Limits
Hexacosane	89	46-128

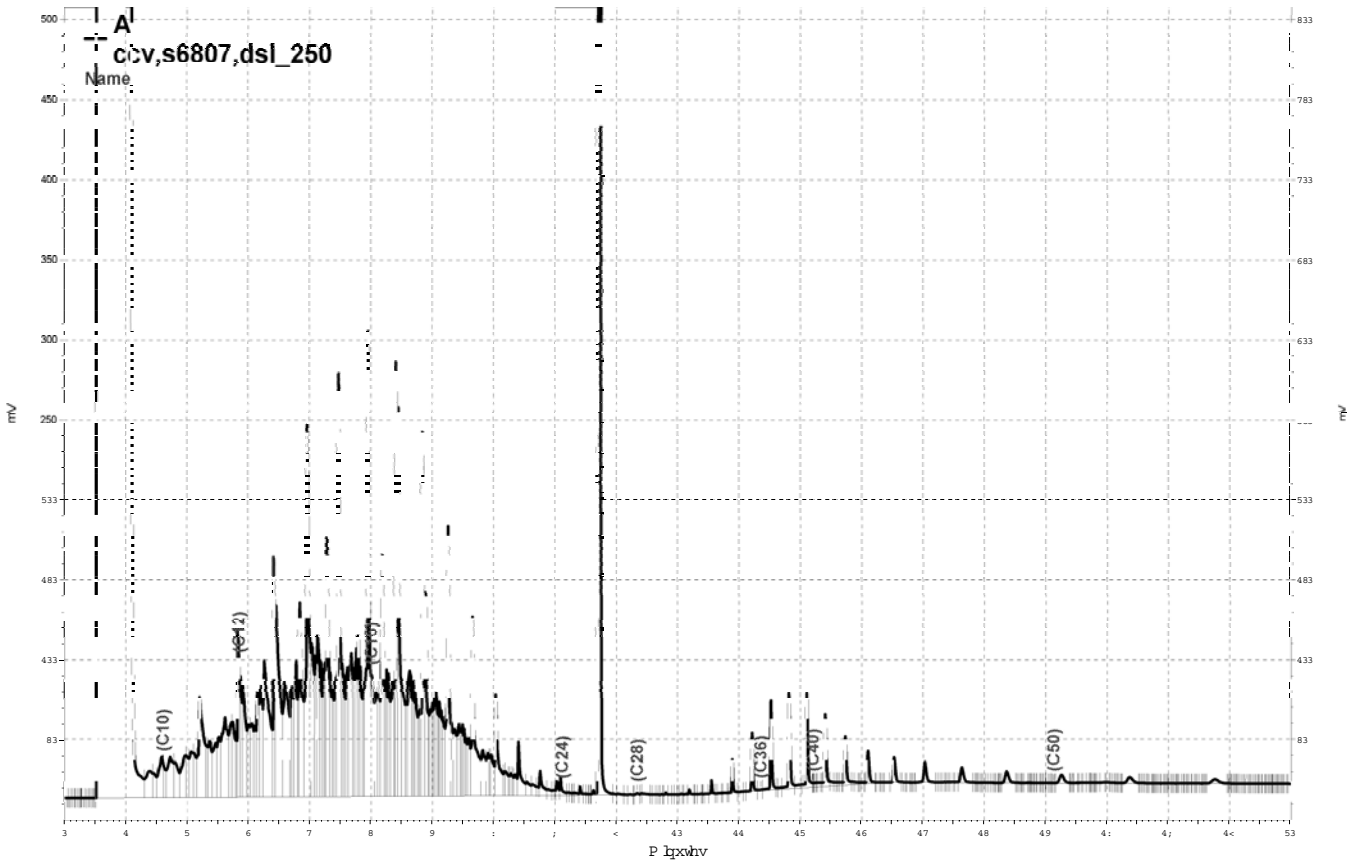
RPD= Relative Percent Difference



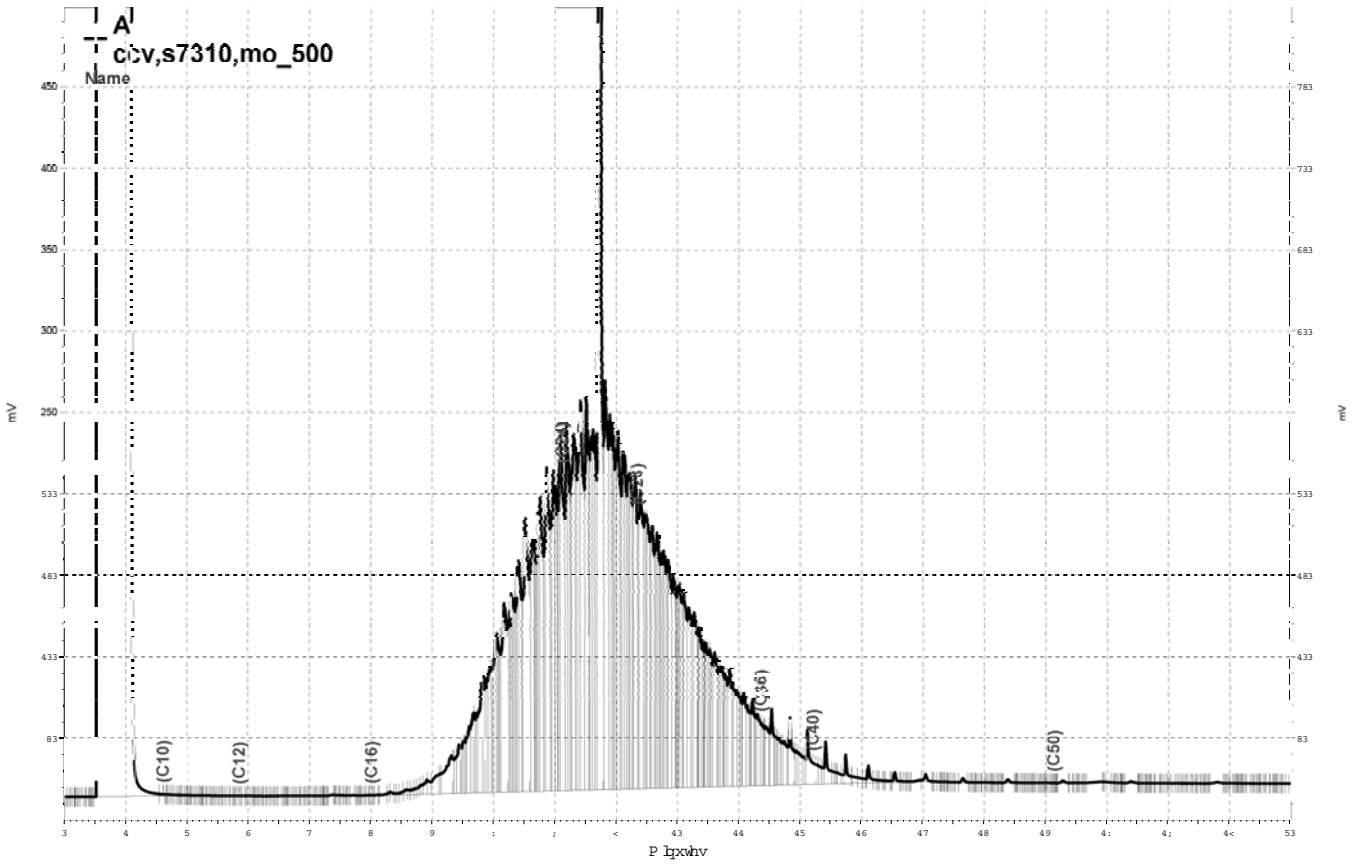
_Olp vjgulyh h}fkurp_Surmfw_JF47E_Gdwd_5;:e3;9/E



_Olpvjgulyh_h}fkurp_Surmfwr_JF4:D_Gdwd_5;:d38</D



_Olpvjgulyh_h}fkurp_Surmfwr_JF4:D_Gdwd_5;:d357/D



_Olp vjgulyh h}fkurp _Surmfw_JF4:D_Gdwd_5;:d358/D

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-13-GW-38'	Batch#:	130328
Lab ID:	198154-003	Sampled:	10/04/07
Matrix:	Water	Received:	10/05/07
Units:	ug/L	Analyzed:	10/09/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

37.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-13-GW-38'	Batch#:	130328
Lab ID:	198154-003	Sampled:	10/04/07
Matrix:	Water	Received:	10/05/07
Units:	ug/L	Analyzed:	10/09/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-122
1,2-Dichloroethane-d4	110	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected
RL= Reporting Limit

37.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	130375
Lab ID:	198154-004	Sampled:	10/04/07
Matrix:	Water	Received:	10/05/07
Units:	ug/L	Analyzed:	10/10/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	11	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

38.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	TRIP BLANK	Batch#:	130375
Lab ID:	198154-004	Sampled:	10/04/07
Matrix:	Water	Received:	10/05/07
Units:	ug/L	Analyzed:	10/10/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-122
1,2-Dichloroethane-d4	114	74-137
Toluene-d8	97	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected
RL= Reporting Limit

38.0

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	130328
Units:	ug/L	Analyzed:	10/09/07
Diln Fac:	1.000		

Type: BS Lab ID: QC409632

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	29.53	118	80-133
Benzene	25.00	25.69	103	80-120
Trichloroethene	25.00	26.24	105	80-120
Toluene	25.00	25.01	100	80-122
Chlorobenzene	25.00	25.03	100	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-122
1,2-Dichloroethane-d4	108	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	105	80-120

Type: BSD Lab ID: QC409633

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	27.94	112	80-133	6	20
Benzene	25.00	24.95	100	80-120	3	20
Trichloroethene	25.00	25.61	102	80-120	2	20
Toluene	25.00	24.90	100	80-122	0	20
Chlorobenzene	25.00	24.38	98	80-120	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-122
1,2-Dichloroethane-d4	108	74-137
Toluene-d8	105	80-120
Bromofluorobenzene	103	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409721	Batch#:	130328
Matrix:	Water	Analyzed:	10/09/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409721	Batch#:	130328
Matrix:	Water	Analyzed:	10/09/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	106	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409828	Batch#:	130375
Matrix:	Water	Analyzed:	10/10/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409828	Batch#:	130375
Matrix:	Water	Analyzed:	10/10/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-122
1,2-Dichloroethane-d4	115	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
RL= Reporting Limit

41.0

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409829	Batch#:	130375
Matrix:	Water	Analyzed:	10/10/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	23.37	93	80-133
Benzene	25.00	23.09	92	80-120
Trichloroethene	25.00	26.15	105	80-120
Toluene	25.00	24.56	98	80-122
Chlorobenzene	25.00	23.20	93	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-122
1,2-Dichloroethane-d4	106	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	104	80-120

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	130375
MSS Lab ID:	198043-017	Sampled:	10/02/07
Matrix:	Water	Received:	10/02/07
Units:	ug/L	Analyzed:	10/10/07
Diln Fac:	1.000		

Type: MS Lab ID: QC409830

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	0.1973	25.00	21.81	86	80-141
Benzene	<0.2500	25.00	21.81	87	80-123
Trichloroethene	2.555	25.00	25.45	92	73-129
Toluene	<0.1338	25.00	22.63	91	80-124
Chlorobenzene	<0.1569	25.00	21.59	86	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-122
1,2-Dichloroethane-d4	115	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	103	80-120

Type: MSD Lab ID: QC409831

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	23.43	93	80-141	7	20
Benzene	25.00	22.97	92	80-123	5	20
Trichloroethene	25.00	27.12	98	73-129	6	20
Toluene	25.00	23.74	95	80-124	5	20
Chlorobenzene	25.00	23.27	93	80-120	8	20

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	115	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	104	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-13-SS-0.0'	Diln Fac:	0.9434
Lab ID:	198154-001	Batch#:	130287
Matrix:	Soil	Sampled:	10/04/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/08/07

Analyte	Result	RL
Freon 12	ND	9.4
Chloromethane	ND	9.4
Vinyl Chloride	ND	9.4
Bromomethane	ND	9.4
Chloroethane	ND	9.4
Trichlorofluoromethane	ND	4.7
Acetone	ND	24
Freon 113	ND	4.7
1,1-Dichloroethene	ND	4.7
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.7
MTBE	ND	4.7
trans-1,2-Dichloroethene	ND	4.7
Vinyl Acetate	ND	47
1,1-Dichloroethane	ND	4.7
2-Butanone	ND	9.4
cis-1,2-Dichloroethene	ND	4.7
2,2-Dichloropropane	ND	4.7
Chloroform	ND	4.7
Bromochloromethane	ND	4.7
1,1,1-Trichloroethane	ND	4.7
1,1-Dichloropropene	ND	4.7
Carbon Tetrachloride	ND	4.7
1,2-Dichloroethane	ND	4.7
Benzene	ND	4.7
Trichloroethene	ND	4.7
1,2-Dichloropropane	ND	4.7
Bromodichloromethane	ND	4.7
Dibromomethane	ND	4.7
4-Methyl-2-Pentanone	ND	9.4
cis-1,3-Dichloropropene	ND	4.7
Toluene	ND	4.7
trans-1,3-Dichloropropene	ND	4.7
1,1,2-Trichloroethane	ND	4.7
2-Hexanone	ND	9.4
1,3-Dichloropropane	ND	4.7
Tetrachloroethene	ND	4.7

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-13-SS-0.0'	Diln Fac:	0.9434
Lab ID:	198154-001	Batch#:	130287
Matrix:	Soil	Sampled:	10/04/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/08/07

Analyte	Result	RL
Dibromochloromethane	ND	4.7
1,2-Dibromoethane	ND	4.7
Chlorobenzene	ND	4.7
1,1,1,2-Tetrachloroethane	ND	4.7
Ethylbenzene	ND	4.7
m,p-Xylenes	ND	4.7
o-Xylene	ND	4.7
Styrene	ND	4.7
Bromoform	ND	4.7
Isopropylbenzene	ND	4.7
1,1,2,2-Tetrachloroethane	ND	4.7
1,2,3-Trichloropropane	ND	4.7
Propylbenzene	ND	4.7
Bromobenzene	ND	4.7
1,3,5-Trimethylbenzene	ND	4.7
2-Chlorotoluene	ND	4.7
4-Chlorotoluene	ND	4.7
tert-Butylbenzene	ND	4.7
1,2,4-Trimethylbenzene	ND	4.7
sec-Butylbenzene	ND	4.7
para-Isopropyl Toluene	ND	4.7
1,3-Dichlorobenzene	ND	4.7
1,4-Dichlorobenzene	ND	4.7
n-Butylbenzene	ND	4.7
1,2-Dichlorobenzene	ND	4.7
1,2-Dibromo-3-Chloropropane	ND	4.7
1,2,4-Trichlorobenzene	ND	4.7
Hexachlorobutadiene	ND	4.7
Naphthalene	ND	4.7
1,2,3-Trichlorobenzene	ND	4.7

Surrogate	%REC	Limits
Dibromofluoromethane	89	80-124
1,2-Dichloroethane-d4	103	79-136
Toluene-d8	90	80-120
Bromofluorobenzene	102	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-13-SS-45'	Diln Fac:	0.9615
Lab ID:	198154-002	Batch#:	130287
Matrix:	Soil	Sampled:	10/04/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/08/07

Analyte	Result	RL
Freon 12	ND	9.6
Chloromethane	ND	9.6
Vinyl Chloride	ND	9.6
Bromomethane	ND	9.6
Chloroethane	ND	9.6
Trichlorofluoromethane	ND	4.8
Acetone	ND	24
Freon 113	ND	4.8
1,1-Dichloroethene	ND	4.8
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.8
MTBE	ND	4.8
trans-1,2-Dichloroethene	ND	4.8
Vinyl Acetate	ND	48
1,1-Dichloroethane	ND	4.8
2-Butanone	ND	9.6
cis-1,2-Dichloroethene	ND	4.8
2,2-Dichloropropane	ND	4.8
Chloroform	ND	4.8
Bromochloromethane	ND	4.8
1,1,1-Trichloroethane	ND	4.8
1,1-Dichloropropene	ND	4.8
Carbon Tetrachloride	ND	4.8
1,2-Dichloroethane	ND	4.8
Benzene	ND	4.8
Trichloroethene	ND	4.8
1,2-Dichloropropane	ND	4.8
Bromodichloromethane	ND	4.8
Dibromomethane	ND	4.8
4-Methyl-2-Pentanone	ND	9.6
cis-1,3-Dichloropropene	ND	4.8
Toluene	ND	4.8
trans-1,3-Dichloropropene	ND	4.8
1,1,2-Trichloroethane	ND	4.8
2-Hexanone	ND	9.6
1,3-Dichloropropane	ND	4.8
Tetrachloroethene	ND	4.8
Dibromochloromethane	ND	4.8
1,2-Dibromoethane	ND	4.8
Chlorobenzene	ND	4.8
1,1,1,2-Tetrachloroethane	ND	4.8
Ethylbenzene	ND	4.8
m,p-Xylenes	ND	4.8
o-Xylene	ND	4.8
Styrene	ND	4.8
Bromoform	ND	4.8
Isopropylbenzene	ND	4.8
1,1,2,2-Tetrachloroethane	ND	4.8
1,2,3-Trichloropropane	ND	4.8
Propylbenzene	ND	4.8
Bromobenzene	ND	4.8
1,3,5-Trimethylbenzene	ND	4.8
2-Chlorotoluene	ND	4.8

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-13-SS-45'	Diln Fac:	0.9615
Lab ID:	198154-002	Batch#:	130287
Matrix:	Soil	Sampled:	10/04/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/08/07

Analyte	Result	RL
4-Chlorotoluene	ND	4.8
tert-Butylbenzene	ND	4.8
1,2,4-Trimethylbenzene	ND	4.8
sec-Butylbenzene	ND	4.8
para-Isopropyl Toluene	ND	4.8
1,3-Dichlorobenzene	ND	4.8
1,4-Dichlorobenzene	ND	4.8
n-Butylbenzene	ND	4.8
1,2-Dichlorobenzene	ND	4.8
1,2-Dibromo-3-Chloropropane	ND	4.8
1,2,4-Trichlorobenzene	ND	4.8
Hexachlorobutadiene	ND	4.8
Naphthalene	ND	4.8
1,2,3-Trichlorobenzene	ND	4.8

Surrogate	%REC	Limits
Dibromofluoromethane	86	80-124
1,2-Dichloroethane-d4	96	79-136
Toluene-d8	87	80-120
Bromofluorobenzene	130 *	80-122

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

19.0

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC409473	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130287
Units:	ug/Kg	Analyzed:	10/08/07

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	25.67	103	74-131
Benzene	25.00	25.38	102	77-121
Trichloroethene	25.00	26.87	107	77-121
Toluene	25.00	25.54	102	79-122
Chlorobenzene	25.00	26.62	106	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	91	80-124
1,2-Dichloroethane-d4	94	79-136
Toluene-d8	94	80-120
Bromofluorobenzene	102	80-122

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC409474	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130287
Units:	ug/Kg	Analyzed:	10/08/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC409474	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130287
Units:	ug/Kg	Analyzed:	10/08/07

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-124
1,2-Dichloroethane-d4	96	79-136
Toluene-d8	94	80-120
Bromofluorobenzene	108	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Diln Fac:	0.9434
MSS Lab ID:	198144-002	Batch#:	130287
Matrix:	Soil	Sampled:	10/05/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/08/07

Type: MS Lab ID: QC409517

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.5076	47.17	38.30	81	61-145
Benzene	<0.2990	47.17	38.93	83	57-123
Trichloroethene	<0.6858	47.17	40.46	86	52-141
Toluene	<0.3016	47.17	37.56	80	53-126
Chlorobenzene	<0.2335	47.17	39.32	83	49-121

Surrogate	%REC	Limits
Dibromofluoromethane	88	80-124
1,2-Dichloroethane-d4	95	79-136
Toluene-d8	92	80-120
Bromofluorobenzene	94	80-122

Type: MSD Lab ID: QC409518

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	47.17	40.38	86	61-145	5	26
Benzene	47.17	40.40	86	57-123	4	25
Trichloroethene	47.17	42.87	91	52-141	6	26
Toluene	47.17	39.71	84	53-126	6	27
Chlorobenzene	47.17	41.25	87	49-121	5	27

Surrogate	%REC	Limits
Dibromofluoromethane	89	80-124
1,2-Dichloroethane-d4	96	79-136
Toluene-d8	93	80-120
Bromofluorobenzene	95	80-122

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-13-SS-0.0'	Batch#:	130274
Lab ID:	198154-001	Sampled:	10/04/07
Matrix:	Soil	Received:	10/05/07
Units:	ug/Kg	Prepared:	10/07/07
Basis:	as received	Analyzed:	10/12/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND #	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	74	54-120
Decachlorobiphenyl	75	49-142

#= CCV drift outside limits; average CCV drift within limits per method requirements
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409432	Batch#:	130274
Matrix:	Soil	Prepared:	10/07/07
Units:	ug/Kg	Analyzed:	10/11/07
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	58	54-120
Decachlorobiphenyl	57	49-142

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409433	Batch#:	130274
Matrix:	Soil	Prepared:	10/07/07
Units:	ug/Kg	Analyzed:	10/11/07
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	13.23	13.69	104	44-120
Heptachlor	13.23	10.56	80	44-120
Aldrin	13.23	10.41	79	47-120
Dieldrin	26.46	30.57	116	50-120
Endrin	26.46	30.91	117	27-128
4,4'-DDT	26.46	33.21	126	42-128

Surrogate	%REC	Limits
TCMX	101	54-120
Decachlorobiphenyl	79	49-142

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-SS-0.0'	Batch#:	130274
MSS Lab ID:	198049-002	Sampled:	10/01/07
Matrix:	Soil	Received:	10/03/07
Units:	ug/Kg	Prepared:	10/07/07
Basis:	as received	Analyzed:	10/12/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3620B
Lab ID: QC409434

Analyte	MSS Result	Spiked	Result	%REC	Limits
gamma-BHC	<0.3690	13.28	9.105	69	45-122
Heptachlor	<0.4798	13.28	9.355	70	49-125
Aldrin	<0.3153	13.28	9.232	70	48-120
Dieldrin	<0.9915	26.56	19.07	72	50-121
Endrin	<1.176	26.56	18.43	69	42-123
4,4'-DDT	<1.267	26.56	22.21 #	84	29-135

Surrogate	%REC	Limits
TCMX	74	54-120
Decachlorobiphenyl	73	49-142

Type: MSD Cleanup Method: EPA 3620B
Lab ID: QC409435

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
gamma-BHC	13.31	10.67	80	45-122	16	40
Heptachlor	13.31	11.13	84	49-125	17	42
Aldrin	13.31	10.67	80	48-120	14	37
Dieldrin	26.62	22.92	86	50-121	18	34
Endrin	26.62	22.52	85	42-123	20	39
4,4'-DDT	26.62	23.64 #	89	29-135	6	51

Surrogate	%REC	Limits
TCMX	82	54-120
Decachlorobiphenyl	84	49-142

#= CCV drift outside limits; average CCV drift within limits per method requirements
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Field ID:	B-13-SS-0.0'	Batch#:	130274
Matrix:	Soil	Sampled:	10/04/07
Units:	ug/Kg	Received:	10/05/07
Basis:	as received	Prepared:	10/07/07
Diln Fac:	1.000	Analyzed:	10/08/07

Type: SAMPLE Cleanup Method: EPA 3665A
Lab ID: 198154-001

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	107	66-140
Decachlorobiphenyl	98	51-152

Type: BLANK Cleanup Method: EPA 3665A
Lab ID: QC409432

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	94	66-140
Decachlorobiphenyl	105	51-152

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409436	Batch#:	130274
Matrix:	Soil	Prepared:	10/07/07
Units:	ug/Kg	Analyzed:	10/08/07
Basis:	as received		

Cleanup Method: EPA 3665A

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	164.1	195.3	119	69-142
Aroclor-1260	164.1	191.7	117	69-155

Surrogate	%REC	Limits
TCMX	99	66-140
Decachlorobiphenyl	110	51-152

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Field ID:	ZZZZZZZZZZ	Batch#:	130274
MSS Lab ID:	198070-005	Sampled:	10/02/07
Matrix:	Soil	Received:	10/03/07
Units:	ug/Kg	Prepared:	10/07/07
Basis:	as received	Analyzed:	10/08/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3665A
Lab ID: QC409437

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1016	<2.656	166.2	186.7	112	62-139
Aroclor-1260	<2.695	166.2	176.7	106	54-143

Surrogate	%REC	Limits
TCMX	102	66-140
Decachlorobiphenyl	107	51-152

Type: MSD Cleanup Method: EPA 3665A
Lab ID: QC409438

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	166.2	197.8	119	62-139	6	33
Aroclor-1260	166.2	193.3	116	54-143	9	34

Surrogate	%REC	Limits
TCMX	102	66-140
Decachlorobiphenyl	106	51-152

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198154	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-13-SS-0.0'	Basis:	as received
Lab ID:	198154-001	Sampled:	10/04/07
Matrix:	Soil	Received:	10/05/07
Units:	mg/Kg		

Analyte	Result	RL	Diln Fac	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	0.50	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Arsenic	6.7	0.25	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Barium	85	0.25	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Beryllium	0.34	0.10	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Chromium	65	0.25	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Cobalt	16	0.25	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Copper	17	0.25	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Lead	12	0.25	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Mercury	0.88	0.033	2.000	130392	10/10/07	10/10/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Nickel	73	0.25	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Selenium	1.5	0.50	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Vanadium	49	0.25	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Zinc	35	1.0	1.000	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198154	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-13-SS-45'	Basis:	as received
Lab ID:	198154-002	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/04/07
Units:	mg/Kg	Received:	10/05/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	0.50	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Arsenic	29	0.25	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Barium	36	0.25	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Beryllium	0.34	0.10	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Chromium	22	0.25	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Cobalt	17	0.25	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Copper	44	0.25	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Lead	7.8	0.25	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Mercury	0.43	0.020	130392	10/10/07	10/10/07	METHOD	EPA 7471A
Molybdenum	1.1	0.25	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Nickel	46	0.25	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Selenium	3.9	0.50	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Silver	0.25	0.25	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Thallium	1.1	0.50	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Vanadium	35	0.25	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B
Zinc	61	1.0	130325	10/08/07	10/09/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409617	Batch#:	130325
Matrix:	Soil	Prepared:	10/08/07
Units:	mg/Kg	Analyzed:	10/09/07
Basis:	as received		

Analyte	Result	RL
Antimony	ND	0.50
Arsenic	ND	0.25
Barium	ND	0.25
Beryllium	ND	0.10
Cadmium	ND	0.25
Chromium	ND	0.25
Cobalt	ND	0.25
Copper	ND	0.25
Lead	ND	0.25
Molybdenum	ND	0.25
Nickel	ND	0.25
Selenium	ND	0.50
Silver	ND	0.25
Thallium	ND	0.50
Vanadium	ND	0.25
Zinc	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	130325
Units:	mg/Kg	Prepared:	10/08/07
Basis:	as received	Analyzed:	10/09/07
Diln Fac:	1.000		

Type: BS Lab ID: QC409618

Analyte	Spiked	Result	%REC	Limits
Antimony	100.0	90.99	91	80-120
Arsenic	50.00	46.95	94	80-120
Barium	100.0	91.97	92	80-120
Beryllium	2.500	2.408	96	80-120
Cadmium	10.00	9.488	95	80-120
Chromium	100.0	90.06	90	80-120
Cobalt	25.00	22.17	89	80-120
Copper	12.50	11.24	90	80-120
Lead	100.0	89.17	89	80-120
Molybdenum	20.00	18.64	93	80-120
Nickel	25.00	22.44	90	80-120
Selenium	50.00	46.57	93	80-120
Silver	10.00	8.604	86	80-120
Thallium	50.00	44.59	89	80-120
Vanadium	25.00	22.57	90	80-120
Zinc	25.00	23.21	93	80-120

Type: BSD Lab ID: QC409619

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	100.0	94.76	95	80-120	4	20
Arsenic	50.00	48.62	97	80-120	3	20
Barium	100.0	95.57	96	80-120	4	20
Beryllium	2.500	2.502	100	80-120	4	20
Cadmium	10.00	9.786	98	80-120	3	20
Chromium	100.0	93.48	93	80-120	4	20
Cobalt	25.00	22.90	92	80-120	3	20
Copper	12.50	11.65	93	80-120	4	20
Lead	100.0	91.83	92	80-120	3	20
Molybdenum	20.00	19.33	97	80-120	4	20
Nickel	25.00	22.92	92	80-120	2	20
Selenium	50.00	47.94	96	80-120	3	20
Silver	10.00	8.986	90	80-120	4	20
Thallium	50.00	46.05	92	80-120	3	20
Vanadium	25.00	23.41	94	80-120	4	20
Zinc	25.00	23.83	95	80-120	3	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130325
MSS Lab ID:	198135-001	Sampled:	10/04/07
Matrix:	Soil	Received:	10/05/07
Units:	mg/Kg	Prepared:	10/08/07
Basis:	as received	Analyzed:	10/09/07
Diln Fac:	1.000		

Type: MS Lab ID: QC409620

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	1.736	89.29	51.52	56	1-122
Arsenic	2.184	44.64	48.76	104	72-120
Barium	113.6	89.29	169.8	63	49-139
Beryllium	0.06166	2.232	2.170	94	80-120
Cadmium	0.9771	8.929	8.941	89	74-120
Chromium	10.66	89.29	88.58	87	65-120
Cobalt	1.369	22.32	19.34	81	60-120
Copper	24.97	11.16	44.98	179 *	47-146
Lead	52.95	89.29	164.1	125 *	53-123
Molybdenum	0.4365	17.86	16.18	88	66-120
Nickel	12.86	22.32	34.82	98	43-142
Selenium	0.2957	44.64	42.89	95	71-120
Silver	0.2760	8.929	8.268	90	66-120
Thallium	0.1462	44.64	32.96	73	62-120
Vanadium	13.38	22.32	33.49	90	52-139
Zinc	864.1	22.32	990.1 >LR	564 NM	42-147

Type: MSD Lab ID: QC409621

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	97.09	59.21	59	1-122	6	30
Arsenic	48.54	54.54	108	72-120	3	20
Barium	97.09	182.4	71	49-139	3	23
Beryllium	2.427	2.349	94	80-120	0	20
Cadmium	9.709	9.713	90	74-120	1	20
Chromium	97.09	92.85	85	65-120	3	20
Cobalt	24.27	21.06	81	60-120	1	24
Copper	12.14	47.36	184 *	47-146	2	21
Lead	97.09	155.1	105	53-123	11	28
Molybdenum	19.42	17.48	88	66-120	1	20
Nickel	24.27	35.78	94	43-142	3	26
Selenium	48.54	46.67	96	71-120	0	20
Silver	9.709	8.911	89	66-120	1	20
Thallium	48.54	37.01	76	62-120	3	20
Vanadium	24.27	36.67	96	52-139	4	20
Zinc	24.27	1,199 >LR	1380 NM	42-147	NC	27

*= Value outside of QC limits; see narrative
NC= Not Calculated
NM= Not Meaningful: Sample concentration > 4X spike concentration
>LR= Response exceeds instrument's linear range
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409898	Batch#:	130392
Matrix:	Soil	Prepared:	10/10/07
Units:	mg/Kg	Analyzed:	10/10/07

Result	RL
ND	0.020

ND= Not Detected
RL= Reporting Limit

34.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130392
Units:	mg/Kg	Prepared:	10/10/07
Basis:	as received	Analyzed:	10/10/07

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC409899	0.5000	0.5370	107	80-120		
BSD	QC409900	0.5000	0.5250	105	80-120	2	20

RPD= Relative Percent Difference

35.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	130392
MSS Lab ID:	198135-001	Sampled:	10/04/07
Matrix:	Soil	Received:	10/05/07
Units:	mg/Kg	Prepared:	10/10/07
Basis:	as received	Analyzed:	10/10/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC409902	0.4034	0.5000	0.8470	89	70-143		
MSD	QC409903		0.5000	0.8200	83	70-143	3	22

RPD= Relative Percent Difference

36.0

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	198154	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-13-GW-38'	Diln Fac:	1.000
Lab ID:	198154-003	Sampled:	10/04/07
Matrix:	Filtrate	Received:	10/05/07
Units:	ug/L		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	41	10	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Arsenic	9.1	6.1	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Barium	51	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Copper	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Lead	ND	3.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130391	10/10/07	10/10/07	METHOD	EPA 7470A
Molybdenum	31	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Selenium	ND	10	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Silver	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Thallium	ND	10	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B
Zinc	ND	20	130292	10/08/07	10/08/07	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409489	Batch#:	130292
Matrix:	Water	Prepared:	10/08/07
Units:	ug/L	Analyzed:	10/08/07

Analyte	Result	RL
Antimony	ND	10
Arsenic	ND	6.1
Barium	ND	5.0
Beryllium	ND	2.0
Cadmium	ND	5.0
Chromium	ND	5.0
Cobalt	ND	5.0
Copper	ND	5.0
Lead	ND	3.0
Molybdenum	ND	5.0
Nickel	ND	5.0
Selenium	ND	10
Silver	ND	5.0
Thallium	ND	10
Vanadium	ND	5.0
Zinc	ND	20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Water	Batch#:	130292
Units:	ug/L	Prepared:	10/08/07
Diln Fac:	1.000	Analyzed:	10/08/07

Type: BS Lab ID: QC409490

Analyte	Spiked	Result	%REC	Limits
Antimony	500.0	499.4	100	80-120
Arsenic	100.0	114.5	114	80-120
Barium	2,000	1,993	100	80-120
Beryllium	50.00	54.75	110	80-120
Cadmium	50.00	51.28	103	80-120
Chromium	200.0	203.7	102	80-120
Cobalt	500.0	493.2	99	80-120
Copper	250.0	248.8	100	80-120
Lead	100.0	94.39	94	80-120
Molybdenum	400.0	419.3	105	80-120
Nickel	500.0	504.1	101	80-120
Selenium	100.0	106.1	106	80-120
Silver	50.00	49.50	99	80-120
Thallium	100.0	106.6	107	80-120
Vanadium	500.0	510.0	102	80-120
Zinc	500.0	520.5	104	80-120

Type: BSD Lab ID: QC409491

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	493.7	99	80-120	1	20
Arsenic	100.0	110.7	111	80-120	3	20
Barium	2,000	1,936	97	80-120	3	20
Beryllium	50.00	53.24	106	80-120	3	20
Cadmium	50.00	49.55	99	80-120	3	20
Chromium	200.0	197.5	99	80-120	3	20
Cobalt	500.0	479.1	96	80-120	3	20
Copper	250.0	241.9	97	80-120	3	20
Lead	100.0	91.40	91	80-120	3	20
Molybdenum	400.0	407.2	102	80-120	3	20
Nickel	500.0	488.1	98	80-120	3	20
Selenium	100.0	102.7	103	80-120	3	20
Silver	50.00	49.30	99	80-120	0	20
Thallium	100.0	104.7	105	80-120	2	20
Vanadium	500.0	495.8	99	80-120	3	20
Zinc	500.0	505.2	101	80-120	3	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130292
MSS Lab ID:	198116-001	Sampled:	10/04/07
Matrix:	Water	Received:	10/04/07
Units:	ug/L	Prepared:	10/08/07
Diln Fac:	1.000	Analyzed:	10/08/07

Type: MS Lab ID: QC409492

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	3.839	500.0	553.6	110	80-120
Arsenic	5.247	100.0	132.8	128 *	80-127
Barium	44.95	2,000	1,882	92	80-120
Beryllium	0.8083	50.00	49.15	97	80-120
Cadmium	12.47	50.00	56.98	89	80-120
Chromium	9.743	200.0	190.3	90	80-120
Cobalt	2.919	500.0	429.8	85	80-120
Copper	40.55	250.0	320.7	112	80-120
Lead	30.19	100.0	116.8	87	76-120
Molybdenum	35.42	400.0	423.1	97	80-120
Nickel	39.27	500.0	462.0	85	80-120
Selenium	5.768	100.0	126.1	120	80-128
Silver	0.8867	50.00	59.82	118	73-122
Thallium	<1.616	100.0	82.16	82	78-120
Vanadium	1.241	500.0	480.4	96	80-120
Zinc	2,997	500.0	3,487	98 NM	80-123

Type: MSD Lab ID: QC409493

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	552.4	110	80-120	0	20
Arsenic	100.0	129.8	125	80-127	2	20
Barium	2,000	1,857	91	80-120	1	20
Beryllium	50.00	48.91	96	80-120	0	20
Cadmium	50.00	58.37	92	80-120	2	20
Chromium	200.0	188.9	90	80-120	1	20
Cobalt	500.0	427.0	85	80-120	1	20
Copper	250.0	320.9	112	80-120	0	20
Lead	100.0	116.8	87	76-120	0	20
Molybdenum	400.0	417.3	95	80-120	1	20
Nickel	500.0	458.8	84	80-120	1	20
Selenium	100.0	119.7	114	80-128	5	20
Silver	50.00	61.21	121	73-122	2	20
Thallium	100.0	79.59	80	78-120	3	20
Vanadium	500.0	478.8	96	80-120	0	20
Zinc	500.0	3,385	78 NM	80-123	3	20

*= Value outside of QC limits; see narrative
NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	130391
Lab ID:	QC409888	Prepared:	10/10/07
Matrix:	Filtrate	Analyzed:	10/10/07
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

31.0

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130391
Matrix:	Filtrate	Prepared:	10/10/07
Units:	ug/L	Analyzed:	10/10/07
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC409889	5.000	4.940	99	80-120		
BSD	QC409890	5.000	4.950	99	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130391
Field ID:	ZZZZZZZZZZ	Sampled:	10/03/07
MSS Lab ID:	198073-001	Received:	10/03/07
Matrix:	Filtrate	Prepared:	10/10/07
Units:	ug/L	Analyzed:	10/10/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC409892	0.4560	5.000	5.220	95	79-125		
MSD	QC409893		5.000	5.090	93	79-125	3	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Field ID:	B-13-GW-38'	Batch#:	130232
Matrix:	Water	Sampled:	10/04/07 14:05
Units:	mg/L	Received:	10/05/07

Type	Lab ID	Result	RL	Analyzed
SAMPLE	198154-003	ND	0.05	10/05/07 20:56
BLANK	QC409271	ND	0.05	10/05/07 11:28

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	B-6-GW-17'	Batch#:	130232
MSS Lab ID:	198121-003	Sampled:	10/04/07 10:15
Matrix:	Water	Received:	10/05/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC409272		1.000	0.9603	96	80-120			1.000	10/05/07 14:13
BSD	QC409273		1.000	0.9830	98	80-120	2	20	1.000	10/05/07 14:31
MS	QC409351	0.05275	2.500	2.464	96	80-120			5.000	10/05/07 19:29
MSD	QC409352		2.500	2.501	98	80-120	2	20	5.000	10/05/07 19:47

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Field ID:	B-13-SS-45'	Batch#:	130304
Matrix:	Soil	Sampled:	10/04/07 13:55
Units:	mg/Kg	Received:	10/05/07
Basis:	as received		

Type	Lab ID	Result	RL	Analyzed
SAMPLE	198154-002	ND	0.5	10/08/07 15:53
BLANK	QC409544	ND	0.5	10/08/07 12:58

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198154	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Basis:	as received
Field ID:	B-12-SS-0.0'	Batch#:	130304
MSS Lab ID:	198049-002	Sampled:	10/01/07 09:00
Matrix:	Soil	Received:	10/03/07
Units:	mg/Kg		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC409545		10.00	10.34	103	80-120			1.000	10/08/07 13:15
BSD	QC409546		10.00	9.983	100	80-120	3	20	1.000	10/08/07 13:33
MS	QC409587	2.349	5.100	6.705	85	50-120			1.020	10/08/07 16:52
MSD	QC409588		5.100	6.956	90	50-120	4	30	1.020	10/08/07 17:10

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

198154

Chain of Custody Record

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 10/5/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier:
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☐ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15 - H
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

	Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
-1	B-13-SS-0.0' *	10/4/05	12:00	poly	SO	1	✓	✓	✓	✓		✓	✓	
-2	B-13-SS-45'	10/4/05	13:55	poly	SO	1	✓	✓	✓	✓	✓			
-3	B-13-GW-38'	10/4/05	14:05	VOA	GW	3	✓							
				VOA		3				✓				
				1L amber		2			✓					
				750 ml poly		1	✓	✓						
				250 ml poly		1					✓			
-4	Trip Blank			VOA	AQ	1								

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

RECD ON ICE) intact

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Robert R. [illegible]	Weiss Associates	10/5/07 17:35	[illegible]	Curtis & Tompkins	10/5/07 5:36pm
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

* Logged in as 10/4/07. ZAW 10/5/07

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates 5801 Christie Avenue Emeryville, CA 94608	Project : 379-1827-15-02 Location : Cloverdale Project Level : II

Sample ID	Lab ID
B-14-SS-53'	198195-001
B-14-GW-45'	198195-002
TRIP BLANK	198195-003

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/30/2007
Project Manager

Signature: _____ Date: 10/30/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198195**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/09/07**
Samples Received:	**10/09/07**

This hardcopy data package contains sample and QC results for one soil sample and one water sample, requested for the above referenced project on 10/09/07. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:
High surrogate recovery was observed for trifluorotoluene (FID) in the MS for batch 130396; the corresponding bromofluorobenzene (FID) surrogate recovery was within limits, and the parent sample was not a project sample. Sample BV-14-SS-53'(198195-001) was received in a polyethylene container. No other analytical problems were encountered.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Water:
Sample BV-14-SS-53'(198195-001) was received in a polyethylene container. No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Soil:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Water:
Sample BV-14-SS-53'(198195-001) was received in a polyethylene container. No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Soil:
No analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A) Soil:
No analytical problems were encountered.

Metals (EPA 6010B and EPA 7470A) Filtrate:
No analytical problems were encountered.

Ion Chromatography (EPA 300.0) Water:
No analytical problems were encountered.

Ion Chromatography (EPA 300.0) Soil:
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-14-GW-45'	Batch#:	130396
Matrix:	Water	Sampled:	10/08/07
Units:	ug/L	Received:	10/09/07
Diln Fac:	1.000		

Type: SAMPLE Analyzed: 10/11/07
Lab ID: 198195-002

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	97	73-134
Bromofluorobenzene (FID)	94	77-140

Type: BLANK Analyzed: 10/10/07
Lab ID: QC409921

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	102	73-134
Bromofluorobenzene (FID)	95	77-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC409922	Batch#:	130396
Matrix:	Water	Analyzed:	10/10/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	961.2	96	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	117	73-134
Bromofluorobenzene (FID)	92	77-140

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130396
MSS Lab ID:	198183-003	Sampled:	10/08/07
Matrix:	Water	Received:	10/08/07
Units:	ug/L	Analyzed:	10/10/07
Diln Fac:	1.000		

Type: MS Lab ID: QC409923

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	93.11	2,000	1,761	83	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	135 *	73-134
Bromofluorobenzene (FID)	100	77-140

Type: MSD Lab ID: QC409924

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,712	81	72-120	3	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	132	73-134
Bromofluorobenzene (FID)	99	77-140

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-14-SS-53'	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130395
Units:	mg/Kg	Sampled:	10/08/07
Basis:	as received	Received:	10/09/07

Type: SAMPLE Analyzed: 10/11/07
Lab ID: 198195-001

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	93	71-132
Bromofluorobenzene (FID)	95	69-145

Type: BLANK Analyzed: 10/10/07
Lab ID: QC409917

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	97	71-132
Bromofluorobenzene (FID)	99	69-145

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC409918	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130395
Units:	mg/Kg	Analyzed:	10/10/07

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	5.000	5.263	105	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	71-132
Bromofluorobenzene (FID)	100	69-145

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	198144-002	Batch#:	130395
Matrix:	Soil	Sampled:	10/05/07
Units:	mg/Kg	Received:	10/05/07
Basis:	as received	Analyzed:	10/10/07

Type: MS Lab ID: QC409919

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.2430	9.804	7.760	77	43-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	110	71-132
Bromofluorobenzene (FID)	104	69-145

Type: MSD Lab ID: QC409920

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.20	7.782	74	43-120	4	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	109	71-132
Bromofluorobenzene (FID)	103	69-145

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-14-GW-45'	Batch#:	130435
Matrix:	Water	Sampled:	10/08/07
Units:	ug/L	Received:	10/09/07
Diln Fac:	1.000	Prepared:	10/11/07

Type: SAMPLE
Lab ID: 198195-002
Cleanup Method: EPA 3630C

Analyte	Result	RL	MDL	Analyzed
Diesel C10-C24	280 Y	50		10/12/07
Diesel C10-C24 (SGCU)	110 Y	50		11/02/07
Motor Oil C24-C36	370	300	64	10/12/07
Motor Oil C24-C36 (SGCU)	250 J	300	130	11/02/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	109	61-133	10/12/07
Hexacosane (SGCU)	102	61-133	11/02/07

Type: BLANK
Lab ID: QC410090
Analyzed: 10/12/07
Cleanup Method: EPA 3630C

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Diesel C10-C24 (SGCU)	ND	50	
Motor Oil C24-C36	ND	300	56
Motor Oil C24-C36 (SGCU)	ND	300	56

Surrogate	%REC	Limits
Hexacosane	95	61-133
Hexacosane (SGCU)	88	61-133

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC410091	Batch#:	130435
Matrix:	Water	Prepared:	10/11/07
Units:	ug/L	Analyzed:	10/12/07

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	2,500	1,823	73	58-128

Surrogate	%REC	Limits
Hexacosane (SGCU)	90	61-133

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130435
MSS Lab ID:	198077-001	Sampled:	10/03/07
Matrix:	Water	Received:	10/03/07
Units:	ug/L	Prepared:	10/11/07
Diln Fac:	1.000	Analyzed:	10/12/07

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410092

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	<19.31	2,500	2,114	85	58-129

Surrogate	%REC	Limits
Hexacosane (SGCU)	83	61-133

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410093

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	2,500	2,336	93	58-129	10	27

Surrogate	%REC	Limits
Hexacosane (SGCU)	93	61-133

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130435
MSS Lab ID:	198119-008	Sampled:	10/04/07
Matrix:	Water	Received:	10/04/07
Units:	ug/L	Prepared:	10/11/07
Diln Fac:	1.000	Analyzed:	10/12/07

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410094

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	20.71	2,500	2,187	87	58-129

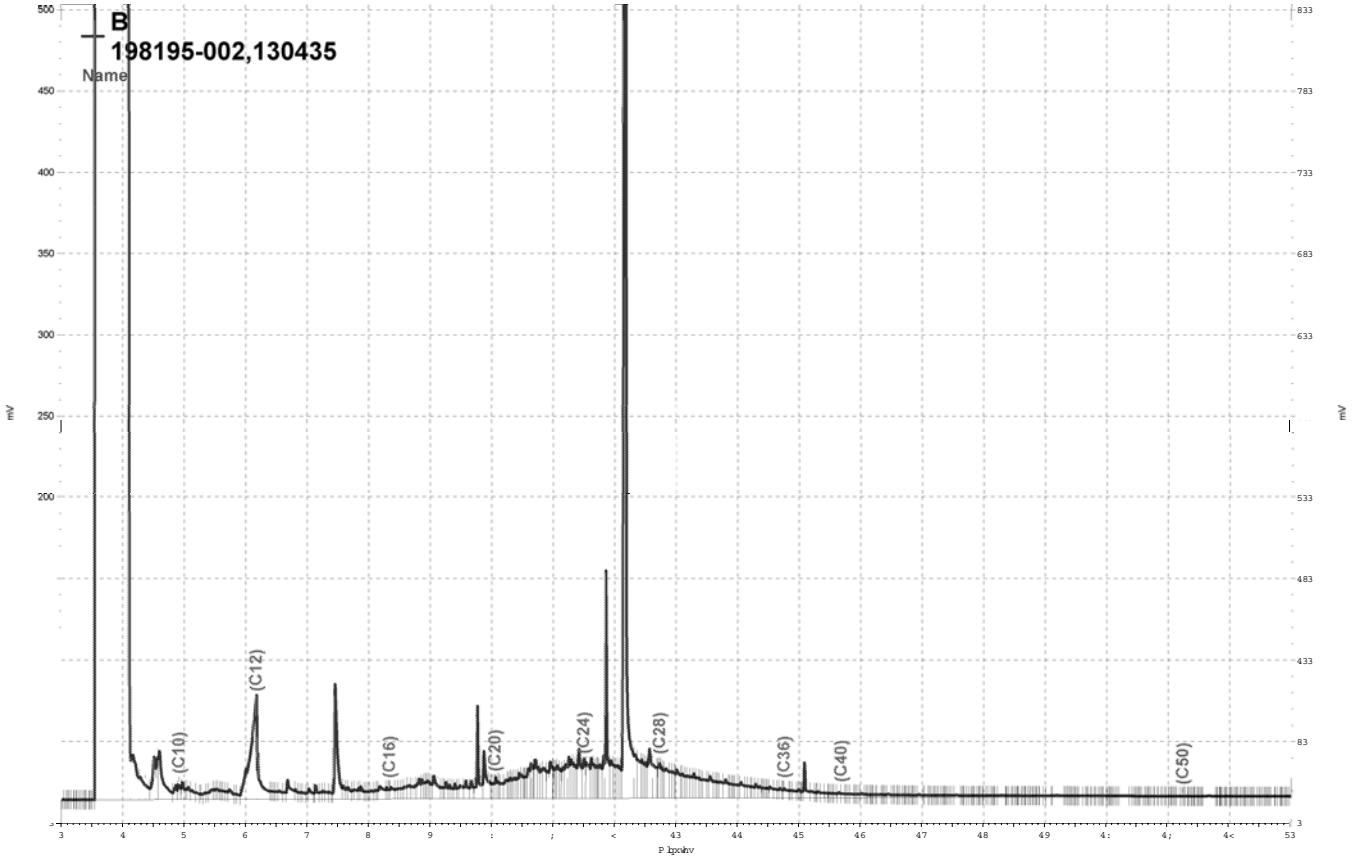
Surrogate	%REC	Limits
Hexacosane (SGCU)	108	61-133

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410095

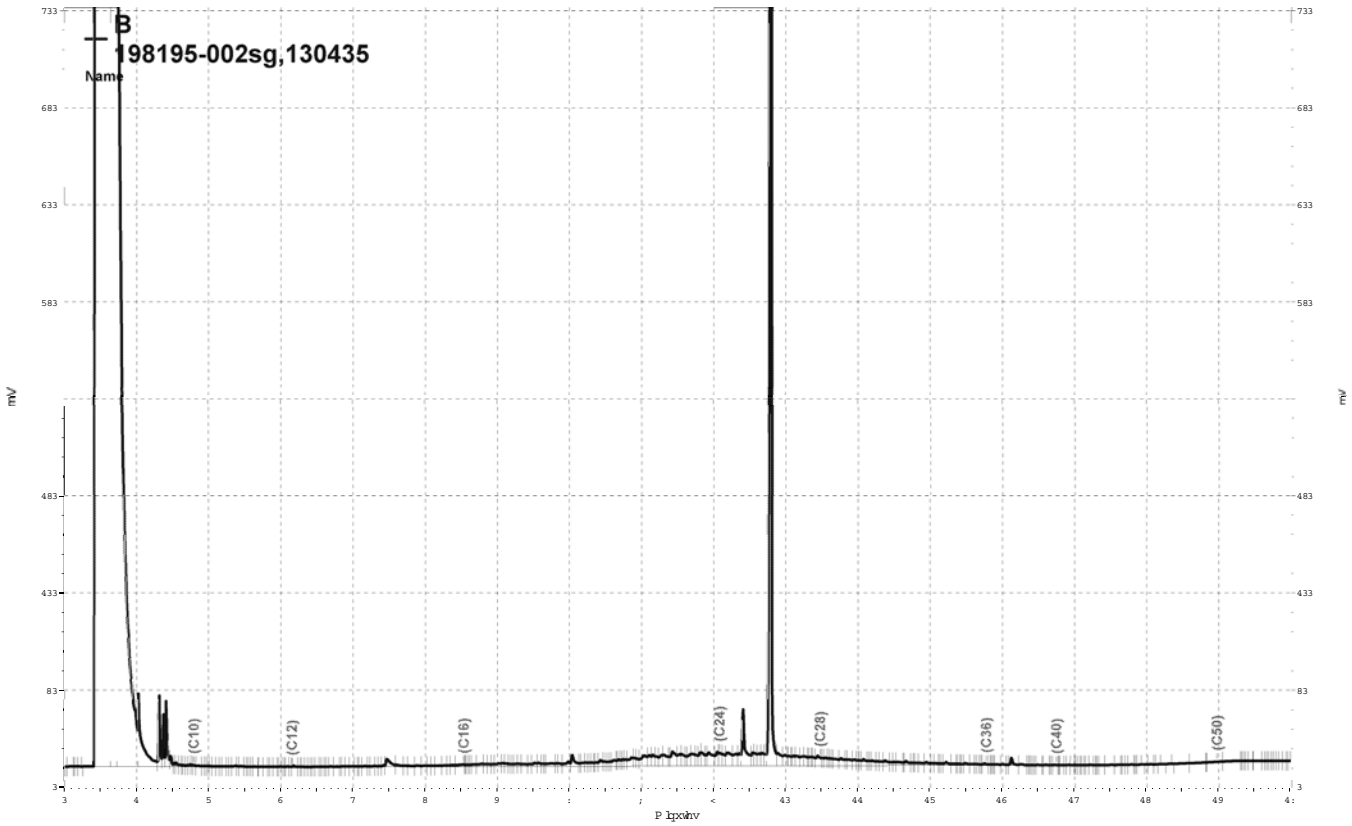
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	2,500	2,160	86	58-129	1	27

Surrogate	%REC	Limits
Hexacosane (SGCU)	105	61-133

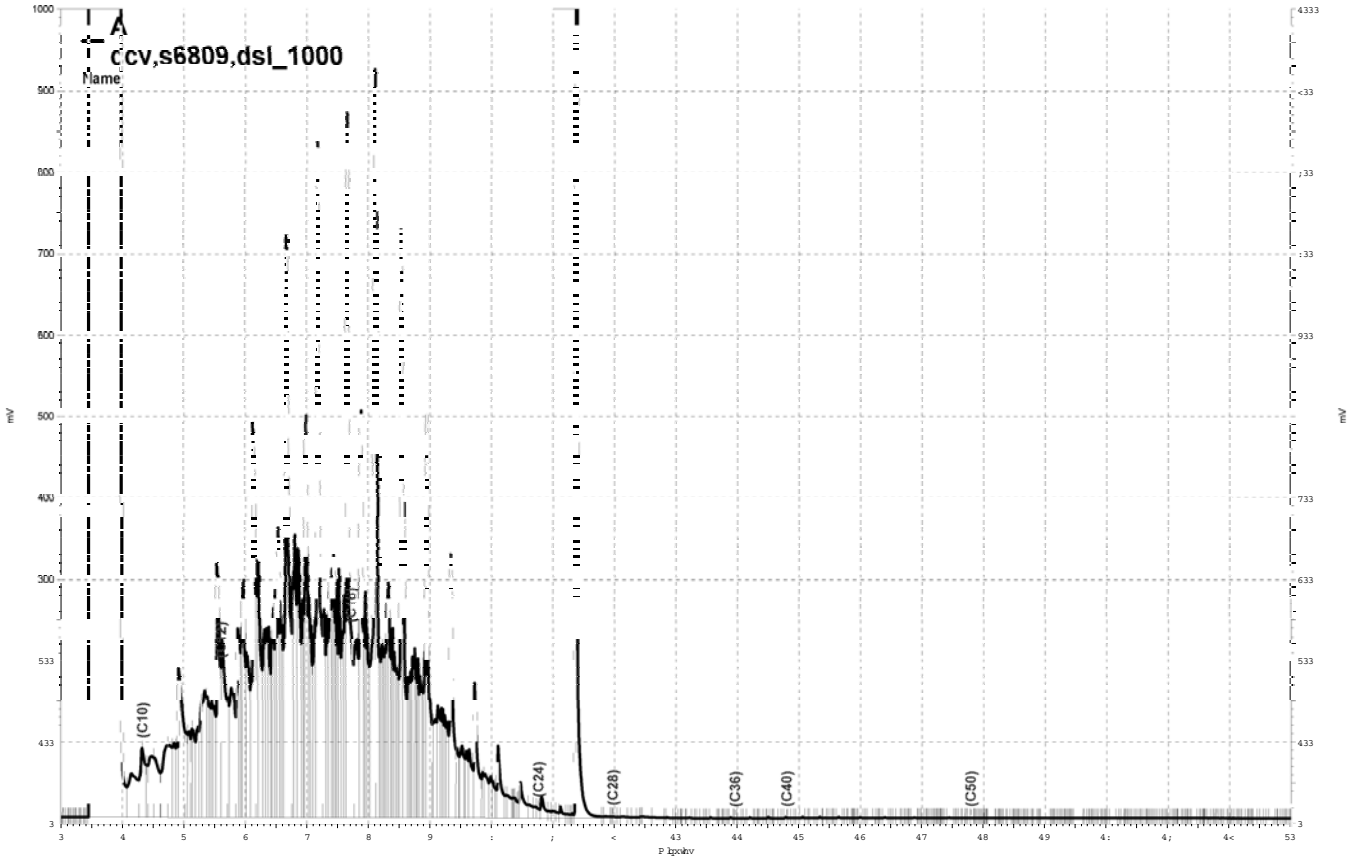
RPD= Relative Percent Difference
SGCU= Silica gel cleanup



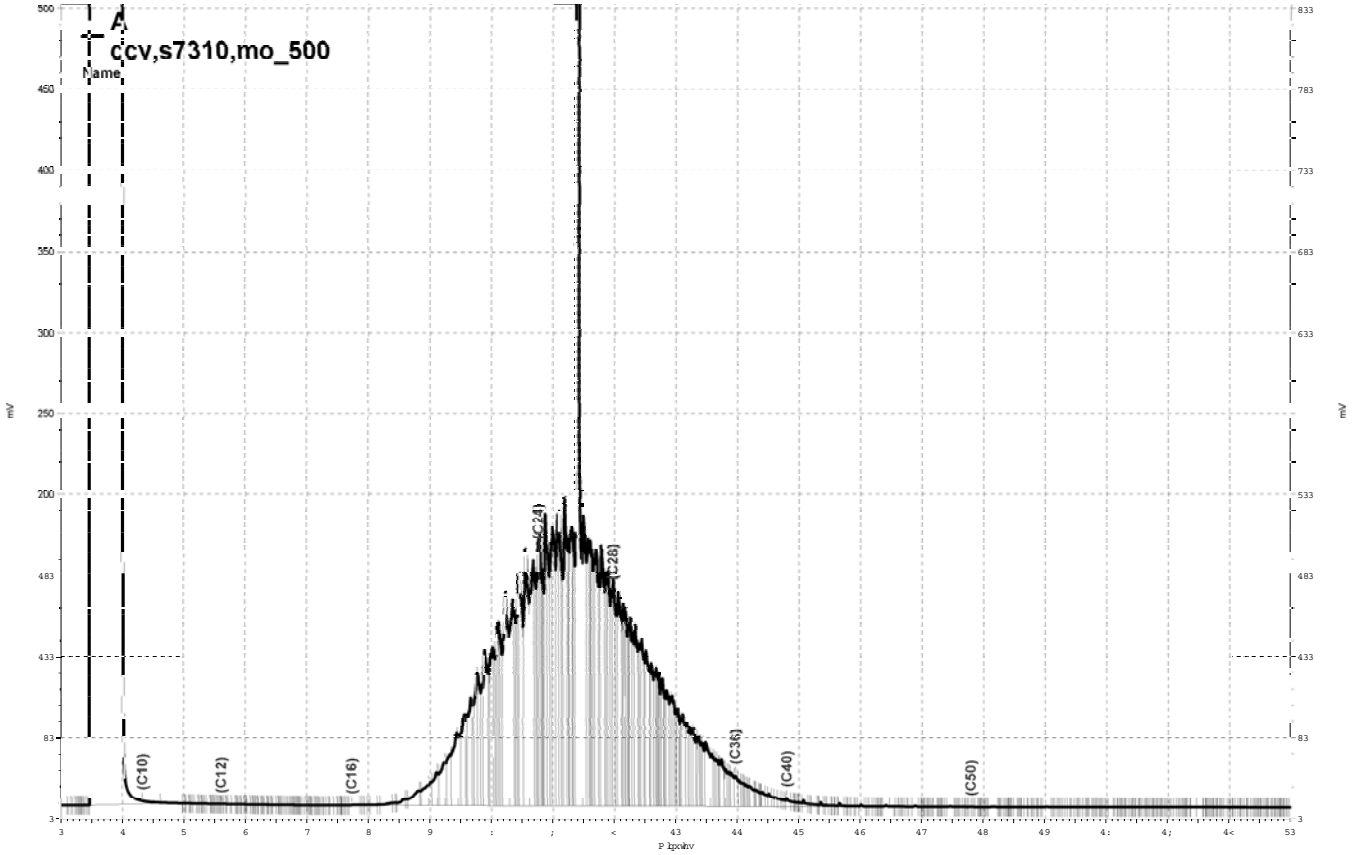
_Olp vjgulyh h}fkurp _Surmfw_J F47E_Gdwd_5;7e385/E



_Olp v jgulyh h}fkurp _Surmfw J F59 Gdwd 639e344/E



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5;7d373/D



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5;7d374/D

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-14-SS-53'	Batch#:	130512
Matrix:	Soil	Sampled:	10/08/07
Units:	mg/Kg	Received:	10/09/07
Basis:	as received	Prepared:	10/13/07
Diln Fac:	1.000		

Type: SAMPLE Analyzed: 10/16/07
Lab ID: 198195-001

Analyte	Result	RL
Diesel C10-C24	19	1.0
Motor Oil C24-C36	35	5.0

Surrogate	%REC	Limits
Hexacosane	101	46-128

Type: BLANK Analyzed: 10/15/07
Lab ID: QC410400

Analyte	Result	RL
Diesel C10-C24	ND	0.99
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
Hexacosane	98	46-128

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC410401	Batch#:	130512
Matrix:	Soil	Prepared:	10/13/07
Units:	mg/Kg	Analyzed:	10/15/07
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.77	36.17	73	55-131

Surrogate	%REC	Limits
Hexacosane	77	46-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130512
MSS Lab ID:	198070-001	Sampled:	10/02/07
Matrix:	Soil	Received:	10/03/07
Units:	mg/Kg	Prepared:	10/13/07
Basis:	as received	Analyzed:	10/16/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410402

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	0.5333	49.99	46.40	92	31-150

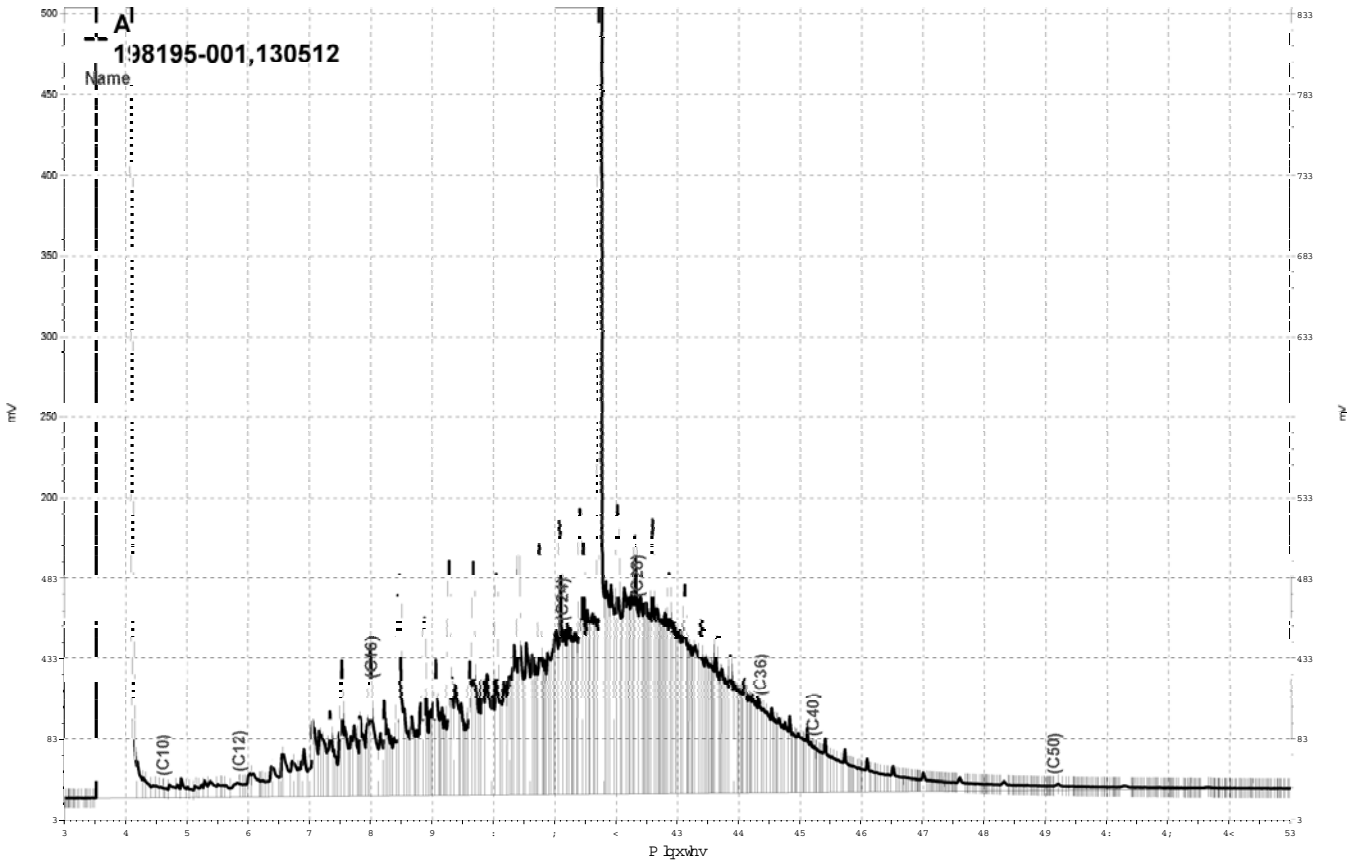
Surrogate	%REC	Limits
Hexacosane	102	46-128

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410403

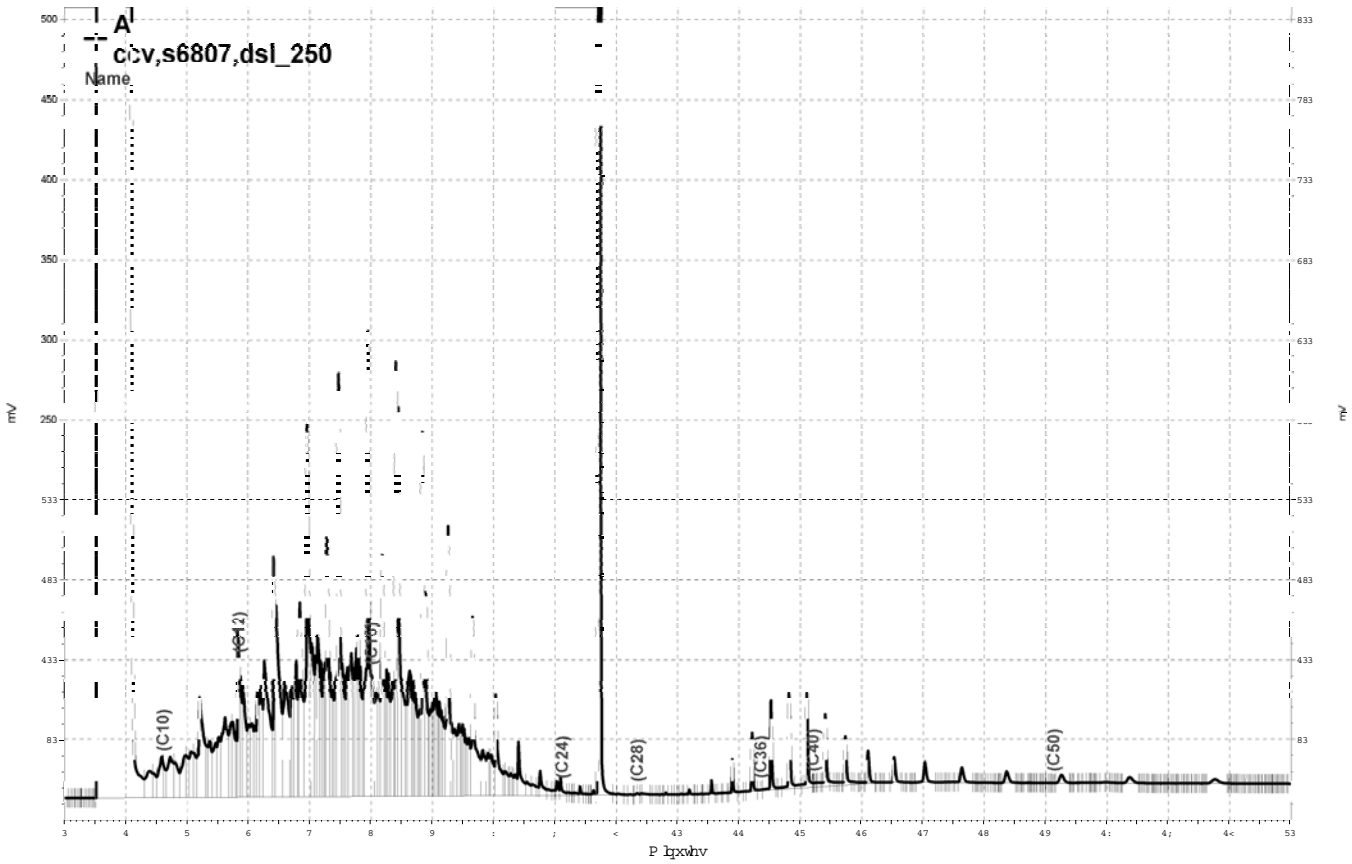
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	49.60	41.26	82	31-150	11	42

Surrogate	%REC	Limits
Hexacosane	89	46-128

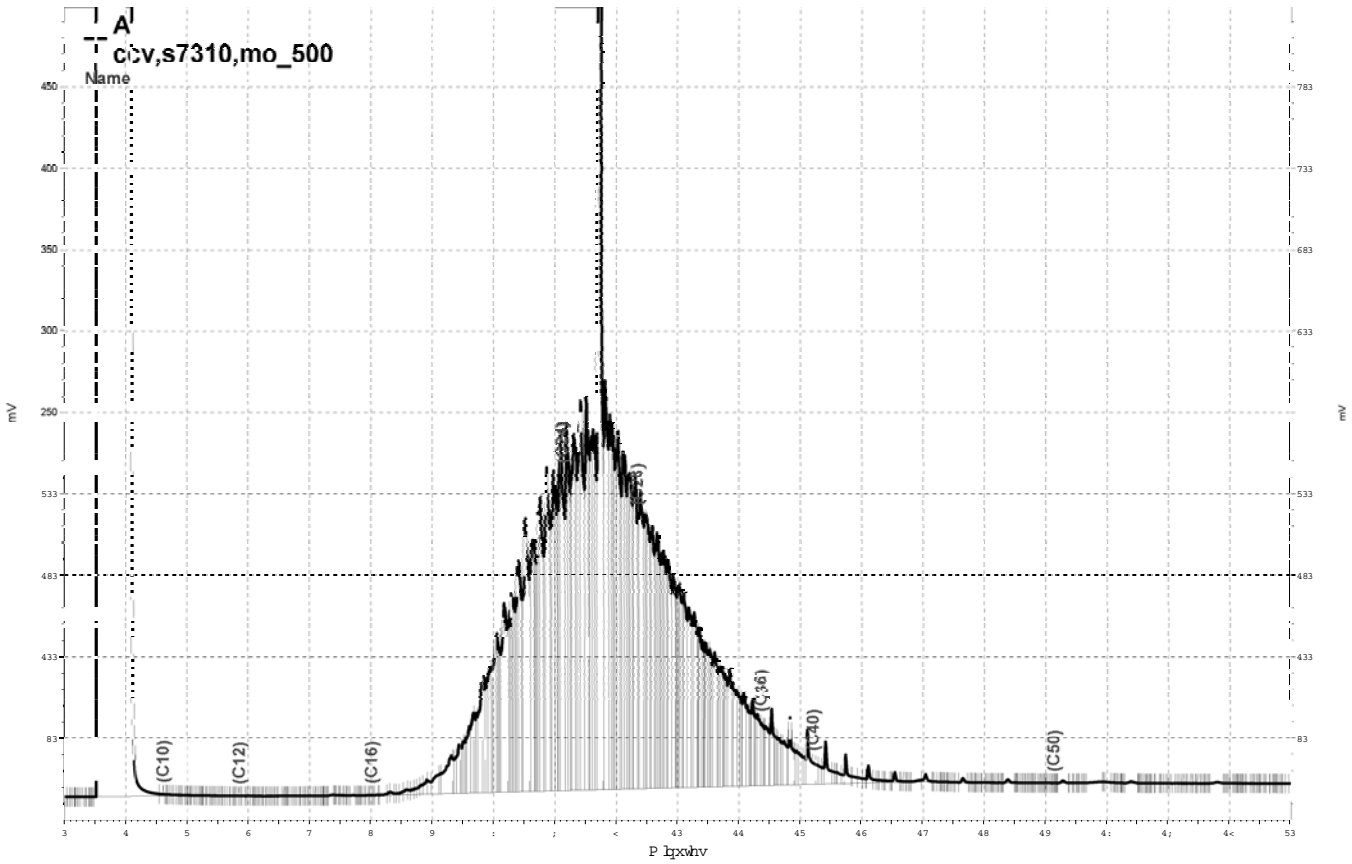
RPD= Relative Percent Difference



_Olpvjgulyh_h}fkurp_Surmfw_JF4:D_Gdwd_5;:d393/D



_Olpvjgulyh_h}fkurp_Surmfwv_JF4:D_Gdwd_5;:d357/D



_Olp vjgulyh h}fkurp _Surmfw_JF4:D_Gdwd_5;:d358/D

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-14-GW-45'	Batch#:	130380
Lab ID:	198195-002	Sampled:	10/08/07
Matrix:	Water	Received:	10/09/07
Units:	ug/L	Analyzed:	10/10/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-14-GW-45'	Batch#:	130380
Lab ID:	198195-002	Sampled:	10/08/07
Matrix:	Water	Received:	10/09/07
Units:	ug/L	Analyzed:	10/10/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	108	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	110	80-120

ND= Not Detected
RL= Reporting Limit

24.0

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	130380
Units:	ug/L	Analyzed:	10/10/07
Diln Fac:	1.000		

Type: BS Lab ID: QC409847

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	28.30	113	80-133
Benzene	25.00	25.33	101	80-120
Trichloroethene	25.00	26.46	106	80-120
Toluene	25.00	25.15	101	80-122
Chlorobenzene	25.00	24.63	99	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	107	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	102	80-120

Type: BSD Lab ID: QC409848

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	26.55	106	80-133	6	20
Benzene	25.00	23.50	94	80-120	7	20
Trichloroethene	25.00	24.64	99	80-120	7	20
Toluene	25.00	23.67	95	80-122	6	20
Chlorobenzene	25.00	23.72	95	80-120	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	103	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	102	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409849	Batch#:	130380
Matrix:	Water	Analyzed:	10/10/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409849	Batch#:	130380
Matrix:	Water	Analyzed:	10/10/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	106	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	108	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-14-SS-53'	Diln Fac:	0.9615
Lab ID:	198195-001	Batch#:	130337
Matrix:	Soil	Sampled:	10/08/07
Units:	ug/Kg	Received:	10/09/07
Basis:	as received	Analyzed:	10/09/07

Analyte	Result	RL
Freon 12	ND	9.6
Chloromethane	ND	9.6
Vinyl Chloride	ND	9.6
Bromomethane	ND	9.6
Chloroethane	ND	9.6
Trichlorofluoromethane	ND	4.8
Acetone	ND	24
Freon 113	ND	4.8
1,1-Dichloroethene	ND	4.8
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.8
MTBE	ND	4.8
trans-1,2-Dichloroethene	ND	4.8
Vinyl Acetate	ND	48
1,1-Dichloroethane	ND	4.8
2-Butanone	ND	9.6
cis-1,2-Dichloroethene	ND	4.8
2,2-Dichloropropane	ND	4.8
Chloroform	ND	4.8
Bromochloromethane	ND	4.8
1,1,1-Trichloroethane	ND	4.8
1,1-Dichloropropene	ND	4.8
Carbon Tetrachloride	ND	4.8
1,2-Dichloroethane	ND	4.8
Benzene	ND	4.8
Trichloroethene	ND	4.8
1,2-Dichloropropane	ND	4.8
Bromodichloromethane	ND	4.8
Dibromomethane	ND	4.8
4-Methyl-2-Pentanone	ND	9.6
cis-1,3-Dichloropropene	ND	4.8
Toluene	ND	4.8
trans-1,3-Dichloropropene	ND	4.8
1,1,2-Trichloroethane	ND	4.8
2-Hexanone	ND	9.6
1,3-Dichloropropane	ND	4.8
Tetrachloroethene	ND	4.8

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-14-SS-53'	Diln Fac:	0.9615
Lab ID:	198195-001	Batch#:	130337
Matrix:	Soil	Sampled:	10/08/07
Units:	ug/Kg	Received:	10/09/07
Basis:	as received	Analyzed:	10/09/07

Analyte	Result	RL
Dibromochloromethane	ND	4.8
1,2-Dibromoethane	ND	4.8
Chlorobenzene	ND	4.8
1,1,1,2-Tetrachloroethane	ND	4.8
Ethylbenzene	ND	4.8
m,p-Xylenes	ND	4.8
o-Xylene	ND	4.8
Styrene	ND	4.8
Bromoform	ND	4.8
Isopropylbenzene	ND	4.8
1,1,2,2-Tetrachloroethane	ND	4.8
1,2,3-Trichloropropane	ND	4.8
Propylbenzene	ND	4.8
Bromobenzene	ND	4.8
1,3,5-Trimethylbenzene	ND	4.8
2-Chlorotoluene	ND	4.8
4-Chlorotoluene	ND	4.8
tert-Butylbenzene	ND	4.8
1,2,4-Trimethylbenzene	ND	4.8
sec-Butylbenzene	ND	4.8
para-Isopropyl Toluene	ND	4.8
1,3-Dichlorobenzene	ND	4.8
1,4-Dichlorobenzene	ND	4.8
n-Butylbenzene	ND	4.8
1,2-Dichlorobenzene	ND	4.8
1,2-Dibromo-3-Chloropropane	ND	4.8
1,2,4-Trichlorobenzene	ND	4.8
Hexachlorobutadiene	ND	4.8
Naphthalene	ND	4.8
1,2,3-Trichlorobenzene	ND	4.8

Surrogate	%REC	Limits
Dibromofluoromethane	94	80-124
1,2-Dichloroethane-d4	84	79-136
Toluene-d8	96	80-120
Bromofluorobenzene	113	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC409667	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130337
Units:	ug/Kg	Analyzed:	10/09/07

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	25.39	102	74-131
Benzene	25.00	25.27	101	77-121
Trichloroethene	25.00	25.18	101	77-121
Toluene	25.00	25.10	100	79-122
Chlorobenzene	25.00	24.68	99	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	93	80-124
1,2-Dichloroethane-d4	92	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	97	80-122

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC409668	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130337
Units:	ug/Kg	Analyzed:	10/09/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC409668	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130337
Units:	ug/Kg	Analyzed:	10/09/07

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-124
1,2-Dichloroethane-d4	96	79-136
Toluene-d8	95	80-120
Bromofluorobenzene	98	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Diln Fac:	0.9259
MSS Lab ID:	198106-008	Batch#:	130337
Matrix:	Soil	Sampled:	09/28/07
Units:	ug/Kg	Received:	10/04/07
Basis:	as received	Analyzed:	10/09/07

Type: MS Lab ID: QC409711

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.4048	46.30	37.40	81	61-145
Benzene	<0.2822	46.30	34.97	76	57-123
Trichloroethene	<0.3985	46.30	36.89	80	52-141
Toluene	<0.3824	46.30	36.32	78	53-126
Chlorobenzene	<0.2585	46.30	33.67	73	49-121

Surrogate	%REC	Limits
Dibromofluoromethane	93	80-124
1,2-Dichloroethane-d4	86	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	97	80-122

Type: MSD Lab ID: QC409712

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	46.30	38.59	83	61-145	3	26
Benzene	46.30	35.26	76	57-123	1	25
Trichloroethene	46.30	37.21	80	52-141	1	26
Toluene	46.30	36.95	80	53-126	2	27
Chlorobenzene	46.30	34.14	74	49-121	1	27

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-124
1,2-Dichloroethane-d4	85	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	98	80-122

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198195	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-14-SS-53'	Basis:	as received
Lab ID:	198195-001	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/08/07
Units:	mg/Kg	Received:	10/09/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	1.7	0.50	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Arsenic	6.5	0.25	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Barium	72	0.25	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Beryllium	0.31	0.10	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Chromium	32	0.25	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Cobalt	11	0.25	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Copper	31	0.25	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Lead	4.9	0.25	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Mercury	0.095	0.020	130392	10/10/07	10/10/07	METHOD	EPA 7471A
Molybdenum	0.67	0.25	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Nickel	53	0.25	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Selenium	1.4	0.50	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Vanadium	33	0.25	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B
Zinc	38	1.0	130360	10/09/07	10/09/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409777	Batch#:	130360
Matrix:	Soil	Prepared:	10/09/07
Units:	mg/Kg	Analyzed:	10/09/07
Basis:	as received		

Analyte	Result	RL
Antimony	ND	0.50
Arsenic	ND	0.25
Barium	ND	0.25
Beryllium	ND	0.10
Cadmium	ND	0.25
Chromium	ND	0.25
Cobalt	ND	0.25
Copper	ND	0.25
Lead	ND	0.25
Molybdenum	ND	0.25
Nickel	ND	0.25
Selenium	ND	0.50
Silver	ND	0.25
Thallium	ND	0.50
Vanadium	ND	0.25
Zinc	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	130360
Units:	mg/Kg	Prepared:	10/09/07
Basis:	as received	Analyzed:	10/09/07
Diln Fac:	1.000		

Type: BS Lab ID: QC409778

Analyte	Spiked	Result	%REC	Limits
Antimony	100.0	92.67	93	80-120
Arsenic	50.00	51.72	103	80-120
Barium	100.0	99.79	100	80-120
Beryllium	2.500	2.621	105	80-120
Cadmium	10.00	10.20	102	80-120
Chromium	100.0	96.38	96	80-120
Cobalt	25.00	23.77	95	80-120
Copper	12.50	12.04	96	80-120
Lead	100.0	96.40	96	80-120
Molybdenum	20.00	20.04	100	80-120
Nickel	25.00	24.07	96	80-120
Selenium	50.00	49.60	99	80-120
Silver	10.00	9.327	93	80-120
Thallium	50.00	48.07	96	80-120
Vanadium	25.00	24.17	97	80-120
Zinc	25.00	24.66	99	80-120

Type: BSD Lab ID: QC409779

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	100.0	86.21	86	80-120	7	20
Arsenic	50.00	47.72	95	80-120	8	20
Barium	100.0	91.62	92	80-120	9	20
Beryllium	2.500	2.404	96	80-120	9	20
Cadmium	10.00	9.378	94	80-120	8	20
Chromium	100.0	88.76	89	80-120	8	20
Cobalt	25.00	21.83	87	80-120	9	20
Copper	12.50	11.08	89	80-120	8	20
Lead	100.0	88.36	88	80-120	9	20
Molybdenum	20.00	18.51	93	80-120	8	20
Nickel	25.00	21.99	88	80-120	9	20
Selenium	50.00	45.76	92	80-120	8	20
Silver	10.00	8.614	86	80-120	8	20
Thallium	50.00	44.28	89	80-120	8	20
Vanadium	25.00	22.22	89	80-120	8	20
Zinc	25.00	22.73	91	80-120	8	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130360
MSS Lab ID:	198179-001	Sampled:	10/08/07
Matrix:	Soil	Received:	10/08/07
Units:	mg/Kg	Prepared:	10/09/07
Basis:	as received	Analyzed:	10/09/07
Diln Fac:	1.000		

Type: MS Lab ID: QC409780

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	1.871	95.24	31.24	31	1-122
Arsenic	4.506	47.62	48.37	92	72-120
Barium	131.7	95.24	233.1	106	49-139
Beryllium	0.4706	2.381	2.602	90	80-120
Cadmium	0.04620	9.524	8.256	86	74-120
Chromium	27.87	95.24	104.0	80	65-120
Cobalt	6.129	23.81	25.32	81	60-120
Copper	17.51	11.90	27.78	86	47-146
Lead	24.03	95.24	110.5	91	53-123
Molybdenum	0.8130	19.05	15.55	77	66-120
Nickel	28.83	23.81	47.75	79	43-142
Selenium	1.323	47.62	43.40	88	71-120
Silver	<0.01782	9.524	8.011	84	66-120
Thallium	0.2177	47.62	36.18	76	62-120
Vanadium	29.01	23.81	48.85	83	52-139
Zinc	49.95	23.81	70.18	85	42-147

Type: MSD Lab ID: QC409781

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	99.01	30.77	29	1-122	5	30
Arsenic	49.50	49.07	90	72-120	2	20
Barium	99.01	221.5	91	49-139	7	23
Beryllium	2.475	2.684	89	80-120	0	20
Cadmium	9.901	8.502	85	74-120	1	20
Chromium	99.01	108.0	81	65-120	1	20
Cobalt	24.75	27.09	85	60-120	4	24
Copper	12.38	28.03	85	47-146	1	21
Lead	99.01	106.6	83	53-123	7	28
Molybdenum	19.80	16.03	77	66-120	1	20
Nickel	24.75	49.19	82	43-142	1	26
Selenium	49.50	44.96	88	71-120	0	20
Silver	9.901	8.257	83	66-120	1	20
Thallium	49.50	37.35	75	62-120	1	20
Vanadium	24.75	50.80	88	52-139	2	20
Zinc	24.75	70.87	85	42-147	0	27

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409898	Batch#:	130392
Matrix:	Soil	Prepared:	10/10/07
Units:	mg/Kg	Analyzed:	10/10/07

Result	RL
ND	0.020

ND= Not Detected
RL= Reporting Limit

35.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130392
Units:	mg/Kg	Prepared:	10/10/07
Basis:	as received	Analyzed:	10/10/07

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC409899	0.5000	0.5370	107	80-120		
BSD	QC409900	0.5000	0.5250	105	80-120	2	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	130392
MSS Lab ID:	198135-001	Sampled:	10/04/07
Matrix:	Soil	Received:	10/05/07
Units:	mg/Kg	Prepared:	10/10/07
Basis:	as received	Analyzed:	10/10/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC409902	0.4034	0.5000	0.8470	89	70-143		
MSD	QC409903		0.5000	0.8200	83	70-143	3	22

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	198195	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-14-GW-45'	Diln Fac:	1.000
Lab ID:	198195-002	Sampled:	10/08/07
Matrix:	Filtrate	Received:	10/09/07
Units:	ug/L	Prepared:	10/11/07

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	ND	10	130423	10/11/07	EPA 3010A	EPA 6010B
Arsenic	ND	6.1	130423	10/11/07	EPA 3010A	EPA 6010B
Barium	230	5.0	130423	10/11/07	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130423	10/11/07	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130423	10/11/07	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130423	10/11/07	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130423	10/11/07	EPA 3010A	EPA 6010B
Copper	ND	5.0	130423	10/11/07	EPA 3010A	EPA 6010B
Lead	ND	3.0	130423	10/11/07	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130432	10/11/07	METHOD	EPA 7470A
Molybdenum	77	5.0	130423	10/11/07	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130423	10/11/07	EPA 3010A	EPA 6010B
Selenium	ND	10	130423	10/11/07	EPA 3010A	EPA 6010B
Silver	ND	5.0	130423	10/12/07	EPA 3010A	EPA 6010B
Thallium	ND	10	130423	10/11/07	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130423	10/11/07	EPA 3010A	EPA 6010B
Zinc	ND	20	130423	10/11/07	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409859	Batch#:	130383
Matrix:	Water	Prepared:	10/10/07
Units:	ug/L	Analyzed:	10/10/07

Analyte	Result	RL
Antimony	ND	10
Arsenic	ND	6.1
Barium	ND	5.0
Beryllium	ND	2.0
Cadmium	ND	5.0
Chromium	ND	5.0
Cobalt	ND	5.0
Copper	ND	5.0
Lead	ND	3.0
Molybdenum	ND	5.0
Nickel	ND	5.0
Selenium	ND	10
Silver	ND	5.0
Thallium	ND	10
Vanadium	ND	5.0
Zinc	ND	20

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Water	Batch#:	130383
Units:	ug/L	Prepared:	10/10/07
Diln Fac:	1.000	Analyzed:	10/10/07

Type: BS Lab ID: QC409860

Analyte	Spiked	Result	%REC	Limits
Antimony	500.0	463.5	93	80-120
Arsenic	100.0	104.7	105	80-120
Barium	2,000	1,939	97	80-120
Beryllium	50.00	52.43	105	80-120
Cadmium	50.00	50.24	100	80-120
Chromium	200.0	192.8	96	80-120
Cobalt	500.0	471.8	94	80-120
Copper	250.0	236.4	95	80-120
Lead	100.0	93.34	93	80-120
Molybdenum	400.0	400.0	100	80-120
Nickel	500.0	486.2	97	80-120
Selenium	100.0	101.5	102	80-120
Silver	50.00	47.33	95	80-120
Thallium	100.0	105.5	106	80-120
Vanadium	500.0	482.8	97	80-120
Zinc	500.0	505.1	101	80-120

Type: BSD Lab ID: QC409861

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	466.4	93	80-120	1	20
Arsenic	100.0	104.3	104	80-120	0	20
Barium	2,000	1,895	95	80-120	2	20
Beryllium	50.00	51.40	103	80-120	2	20
Cadmium	50.00	49.35	99	80-120	2	20
Chromium	200.0	189.2	95	80-120	2	20
Cobalt	500.0	466.8	93	80-120	1	20
Copper	250.0	232.7	93	80-120	2	20
Lead	100.0	93.84	94	80-120	1	20
Molybdenum	400.0	398.2	100	80-120	0	20
Nickel	500.0	475.0	95	80-120	2	20
Selenium	100.0	99.85	100	80-120	2	20
Silver	50.00	46.63	93	80-120	1	20
Thallium	100.0	105.8	106	80-120	0	20
Vanadium	500.0	476.2	95	80-120	1	20
Zinc	500.0	488.8	98	80-120	3	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	B-14-GW-45'	Batch#:	130383
MSS Lab ID:	198195-002	Sampled:	10/08/07
Matrix:	Water	Received:	10/09/07
Units:	ug/L	Prepared:	10/10/07
Diln Fac:	1.000	Analyzed:	10/10/07

Type: MS Lab ID: QC409862

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	<1.074	500.0	467.8	94	80-120
Arsenic	<2.042	100.0	103.5	104	80-127
Barium	264.4	2,000	2,158	95	80-120
Beryllium	0.1546	50.00	51.79	103	80-120
Cadmium	<0.1091	50.00	48.20	96	80-120
Chromium	7.700	200.0	193.0	93	80-120
Cobalt	2.740	500.0	453.3	90	80-120
Copper	10.49	250.0	246.1	94	80-120
Lead	<0.6892	100.0	93.51	94	76-120
Molybdenum	76.84	400.0	481.4	101	80-120
Nickel	12.18	500.0	465.6	91	80-120
Selenium	<1.469	100.0	100.4	100	80-128
Silver	<0.7459	50.00	47.42	95	73-122
Thallium	<1.616	100.0	100.8	101	78-120
Vanadium	7.169	500.0	481.3	95	80-120
Zinc	13.48	500.0	484.6	94	80-123

Type: MSD Lab ID: QC409863

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	465.2	93	80-120	1	20
Arsenic	100.0	104.1	104	80-127	1	20
Barium	2,000	2,167	95	80-120	0	20
Beryllium	50.00	51.88	103	80-120	0	20
Cadmium	50.00	48.75	97	80-120	1	20
Chromium	200.0	196.2	94	80-120	2	20
Cobalt	500.0	458.6	91	80-120	1	20
Copper	250.0	249.9	96	80-120	2	20
Lead	100.0	93.02	93	76-120	1	20
Molybdenum	400.0	480.1	101	80-120	0	20
Nickel	500.0	472.0	92	80-120	1	20
Selenium	100.0	103.0	103	80-128	3	20
Silver	50.00	47.97	96	73-122	1	20
Thallium	100.0	104.6	105	78-120	4	20
Vanadium	500.0	484.2	95	80-120	1	20
Zinc	500.0	494.5	96	80-123	2	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC410023	Batch#:	130423
Matrix:	Water	Prepared:	10/11/07
Units:	ug/L		

Analyte	Result	RL	Analyzed
Antimony	ND	10	10/11/07
Arsenic	ND	6.1	10/11/07
Barium	ND	5.0	10/11/07
Beryllium	ND	2.0	10/11/07
Cadmium	ND	5.0	10/11/07
Chromium	ND	5.0	10/11/07
Cobalt	ND	5.0	10/11/07
Copper	ND	5.0	10/11/07
Lead	ND	3.0	10/11/07
Molybdenum	ND	5.0	10/11/07
Nickel	ND	5.0	10/11/07
Selenium	ND	10	10/11/07
Silver	ND	5.0	10/12/07
Thallium	ND	10	10/11/07
Vanadium	ND	5.0	10/11/07
Zinc	ND	20	10/11/07

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Water	Batch#:	130423
Units:	ug/L	Prepared:	10/11/07
Diln Fac:	1.000		

Type: BS Lab ID: QC410024

Analyte	Spiked	Result	%REC	Limits	Analyzed
Antimony	500.0	466.7	93	80-120	10/11/07
Arsenic	100.0	95.38	95	80-120	10/11/07
Barium	2,000	1,928	96	80-120	10/11/07
Beryllium	50.00	51.88	104	80-120	10/11/07
Cadmium	50.00	51.19	102	80-120	10/11/07
Chromium	200.0	192.9	96	80-120	10/11/07
Cobalt	500.0	478.6	96	80-120	10/11/07
Copper	250.0	238.5	95	80-120	10/11/07
Lead	100.0	96.36	96	80-120	10/11/07
Molybdenum	400.0	387.9	97	80-120	10/11/07
Nickel	500.0	481.8	96	80-120	10/11/07
Selenium	100.0	95.34	95	80-120	10/11/07
Silver	50.00	50.68	101	80-120	10/12/07
Thallium	100.0	90.77	91	80-120	10/11/07
Vanadium	500.0	488.5	98	80-120	10/11/07
Zinc	500.0	494.1	99	80-120	10/11/07

Type: BSD Lab ID: QC410025

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
Antimony	500.0	468.4	94	80-120	0	20	10/11/07
Arsenic	100.0	96.36	96	80-120	1	20	10/11/07
Barium	2,000	1,915	96	80-120	1	20	10/11/07
Beryllium	50.00	51.33	103	80-120	1	20	10/11/07
Cadmium	50.00	50.78	102	80-120	1	20	10/11/07
Chromium	200.0	190.6	95	80-120	1	20	10/11/07
Cobalt	500.0	466.2	93	80-120	3	20	10/11/07
Copper	250.0	235.1	94	80-120	1	20	10/11/07
Lead	100.0	96.57	97	80-120	0	20	10/11/07
Molybdenum	400.0	387.9	97	80-120	0	20	10/11/07
Nickel	500.0	477.1	95	80-120	1	20	10/11/07
Selenium	100.0	97.32	97	80-120	2	20	10/11/07
Silver	50.00	47.21	94	80-120	7	20	10/12/07
Thallium	100.0	89.65	90	80-120	1	20	10/11/07
Vanadium	500.0	482.1	96	80-120	1	20	10/11/07
Zinc	500.0	487.7	98	80-120	1	20	10/11/07

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130423
MSS Lab ID:	198264-001	Sampled:	10/10/07
Matrix:	Water	Received:	10/10/07
Units:	ug/L	Prepared:	10/11/07
Diln Fac:	1.000		

Type: MS Lab ID: QC410026

Analyte	MSS Result	Spiked	Result	%REC	Limits	Analyzed
Antimony	3.905	500.0	463.6	92	80-120	10/11/07
Arsenic	6.011	100.0	104.4	98	80-127	10/11/07
Barium	80.40	2,000	1,962	94	80-120	10/11/07
Beryllium	0.1085	50.00	50.96	102	80-120	10/11/07
Cadmium	<0.1091	50.00	49.76	100	80-120	10/11/07
Chromium	21.10	200.0	196.4	88	80-120	10/11/07
Cobalt	8.736	500.0	467.5	92	80-120	10/11/07
Copper	41.85	250.0	278.7	95	80-120	10/11/07
Lead	42.63	100.0	133.9	91	76-120	10/11/07
Molybdenum	1.071	400.0	381.1	95	80-120	10/11/07
Nickel	79.58	500.0	513.8	87	80-120	10/11/07
Selenium	<1.469	100.0	93.90	94	80-128	10/11/07
Silver	<0.7459	50.00	47.52	95	73-122	10/12/07
Thallium	<1.616	100.0	83.08	83	78-120	10/11/07
Vanadium	11.71	500.0	485.4	95	80-120	10/11/07
Zinc	173.8	500.0	641.9	94	80-123	10/11/07

Type: MSD Lab ID: QC410027

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
Antimony	500.0	462.5	92	80-120	0	20	10/11/07
Arsenic	100.0	102.3	96	80-127	2	20	10/11/07
Barium	2,000	1,938	93	80-120	1	20	10/11/07
Beryllium	50.00	49.63	99	80-120	3	20	10/11/07
Cadmium	50.00	48.50	97	80-120	3	20	10/11/07
Chromium	200.0	191.7	85	80-120	2	20	10/11/07
Cobalt	500.0	456.4	90	80-120	2	20	10/11/07
Copper	250.0	273.1	93	80-120	2	20	10/11/07
Lead	100.0	131.7	89	76-120	2	20	10/11/07
Molybdenum	400.0	375.8	94	80-120	1	20	10/11/07
Nickel	500.0	501.7	84	80-120	2	20	10/11/07
Selenium	100.0	91.10	91	80-128	3	20	10/11/07
Silver	50.00	46.88	94	73-122	1	20	10/12/07
Thallium	100.0	83.98	84	78-120	1	20	10/11/07
Vanadium	500.0	472.9	92	80-120	3	20	10/11/07
Zinc	500.0	626.2	90	80-123	2	20	10/11/07

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	130432
Lab ID:	QC410058	Prepared:	10/11/07
Matrix:	Filtrate	Analyzed:	10/11/07
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

28.0

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130432
Matrix:	Filtrate	Prepared:	10/11/07
Units:	ug/L	Analyzed:	10/11/07
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC410059	5.000	5.070	101	80-120		
BSD	QC410060	5.000	5.180	104	80-120	2	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130432
Field ID:	ZZZZZZZZZZ	Sampled:	10/04/07
MSS Lab ID:	198119-008	Received:	10/04/07
Matrix:	Filtrate	Prepared:	10/11/07
Units:	ug/L	Analyzed:	10/11/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC410062	<0.04502	5.000	5.250	105	79-125		
MSD	QC410063		5.000	5.470	109	79-125	4	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130432
Field ID:	ZZZZZZZZZZ	Sampled:	10/04/07
MSS Lab ID:	198119-010	Received:	10/04/07
Matrix:	Filtrate	Prepared:	10/11/07
Units:	ug/L	Analyzed:	10/11/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC410065	<0.04502	5.000	5.250	105	79-125		
MSD	QC410066		5.000	5.540	111	79-125	5	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130432
Field ID:	ZZZZZZZZZZ	Sampled:	10/08/07
MSS Lab ID:	198262-002	Received:	10/10/07
Matrix:	Filtrate	Prepared:	10/11/07
Units:	ug/L	Analyzed:	10/11/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC410068	<0.04502	5.000	5.400	108	79-125		
MSD	QC410069		5.000	5.270	105	79-125	2	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Field ID:	B-14-GW-45'	Batch#:	130348
Matrix:	Water	Sampled:	10/08/07 09:45
Units:	mg/L	Received:	10/09/07

Type	Lab ID	Result	RL	Analyzed
SAMPLE	198195-002	0.07	0.05	10/09/07 13:25
BLANK	QC409716	ND	0.05	10/09/07 12:26

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	B-14-GW-45'	Batch#:	130348
MSS Lab ID:	198195-002	Sampled:	10/08/07 09:45
Matrix:	Water	Received:	10/09/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC409717		1.000	1.022	102	80-120			1.000	10/09/07 12:43
BSD	QC409718		1.000	1.016	102	80-120	1	20	1.000	10/09/07 13:01
MS	QC409771	0.07299	2.500	2.705	105	80-120			5.000	10/09/07 17:55
MSD	QC409772		2.500	2.863	112	80-120	6	20	5.000	10/09/07 18:12

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Field ID:	B-14-SS-53'	Batch#:	130516
Matrix:	Soil	Sampled:	10/08/07 11:00
Units:	mg/Kg	Received:	10/09/07
Basis:	as received		

Type	Lab ID	Result	RL	Analyzed
SAMPLE	198195-001	ND	0.5	10/13/07 22:09
BLANK	QC410418	ND	0.5	10/13/07 21:17

ND= Not Detected
RL= Reporting Limit

38.0

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198195	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Basis:	as received
Field ID:	B-8-SS-68'	Diln Fac:	1.000
MSS Lab ID:	198234-002	Batch#:	130516
Matrix:	Soil	Sampled:	10/09/07 13:15
Units:	mg/Kg	Received:	10/10/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
BS	QC410419		10.00	10.16	102	80-120			10/13/07 21:34
BSD	QC410420		10.00	9.861	99	80-120	3	20	10/13/07 21:52
MS	QC410421	0.1512	5.000	5.225	101	50-120			10/13/07 23:19
MSD	QC410422		5.000	5.266	102	50-120	1	30	10/13/07 23:36

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

198195

Chain of Custody Record

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 10/8/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier: UPS 9X3169
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☐ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15 - I
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	Filtered Sample	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pestcides/PCBs EPA 8081/8082	Sample Specific Notes:
B-14-SS-53	10/8/07	11:00	poly	SO	1		✓	✓	✓	✓	✓			
B-14-GW-45	10/8/07	9:45	VOA	GW	3		✓							
			VOA		3					✓				
			1L amber		2				✓					
			500 ml poly		2			✓						non-filtered.
			250 ml poly		1						✓			
Trip Blank	10/8/07		VOA	AQ	1									

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Weiss Associates	10/8/07 15:00	[signature]	C&T	10-9-07 1054
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 198195 Date Received: 10-9-07 Number of Coolers: 1
Client: Weiss Project: Cloverdale

A. Preliminary Examination Phase
Date Opened: 10-9-07 By (print): Faith Nichols (sign) [signature]

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES NO
   If YES, enter carrier name and airbill number: UPS 1Z 832 32E 01 4383 1212
2. Were custody seals on outside of cooler? ..... YES NO
   How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO N/A
4. Were custody papers dry and intact when received? ..... YES NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... YES NO
6. Did you sign the custody papers in the appropriate place? ..... YES NO
7. Was project identifiable from custody papers? ..... YES NO
   If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bubble wrap, wet ice
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... YES NO
   Type of ice: Wet Temperature: No temp blank, All cold
10. Were Encore sampling devices present in the cooler? ..... YES NO
    If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10-9-07 By (print): Faith Nichols (sign) [signature]

1. Did all bottles arrive unbroken? ..... YES NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... YES NO
3. Did bottle labels agree with custody papers? ..... YES NO
4. Were appropriate containers used for the tests indicated? ..... YES NO
5. Were correct preservatives added to samples? ..... YES NO
6. Was sufficient amount of sample sent for tests indicated? ..... YES NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below ..... YES NO
8. Was the client contacted concerning this sample delivery? ..... YES NO
   If YES, give details below.
   Who was called? _____ By whom? _____ Date: _____

Additional Comments:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates 5801 Christie Avenue Emeryville, CA 94608	Project : 379-1827-15-02 Location : Cloverdale Project Level : II

Sample ID	Lab ID
B-8-SS-0.0'	198234-001
B-8-SS-68'	198234-002
B-8-GW-+1.25'	198234-003

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 11/12/2007
Project Manager

Signature: _____ Date: 11/15/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198234**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/10/07**
Samples Received:	**10/10/07**

This hardcopy data package contains sample and QC results for two soil samples and one water sample, requested for the above referenced project on 10/10/07. The samples were received on ice and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Soil:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Water:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Soil:
Matrix spikes were not reported for batch 130426 because the parent sample required reanalysis in another batch. Methylene chloride was detected above the RL in B-8-SS-0.0' (lab # 198234-001); this analyte is a common laboratory contaminant. No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A) Soil:
No analytical problems were encountered.

Metals (EPA 6010B and EPA 7470A) Filtrate:
No analytical problems were encountered.

Ion Chromatography (EPA 300.0) Water:
No analytical problems were encountered.

Ion Chromatography (EPA 300.0) Soil:
No analytical problems were encountered.

Asbestos PLM (EPA 600/R-93-116):
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-8-GW-+1.25'	Batch#:	130446
Matrix:	Water	Sampled:	10/09/07
Units:	ug/L	Received:	10/10/07
Diln Fac:	1.000		

Type: SAMPLE Analyzed: 10/12/07
Lab ID: 198234-003

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	95	73-134
Bromofluorobenzene (FID)	101	77-140

Type: BLANK Analyzed: 10/11/07
Lab ID: QC410139

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	99	73-134
Bromofluorobenzene (FID)	100	77-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC410142	Batch#:	130446
Matrix:	Water	Analyzed:	10/11/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	861.2	86	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	73-134
Bromofluorobenzene (FID)	93	77-140

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130446
MSS Lab ID:	198226-010	Sampled:	10/09/07
Matrix:	Water	Received:	10/09/07
Units:	ug/L	Analyzed:	10/11/07
Diln Fac:	1.000		

Type: MS Lab ID: QC410143

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	14.85	2,000	1,810	90	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	103	73-134
Bromofluorobenzene (FID)	101	77-140

Type: MSD Lab ID: QC410144

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,737	86	72-120	4	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	107	73-134
Bromofluorobenzene (FID)	104	77-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Diln Fac:	1.000
Units:	mg/Kg	Batch#:	130542
Basis:	as received	Received:	10/10/07

Field ID:	B-8-SS-0.0'	Sampled:	10/08/07
Type:	SAMPLE	Analyzed:	10/16/07
Lab ID:	198234-001		

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	71-132
Bromofluorobenzene (FID)	92	69-145

Field ID:	B-8-SS-68'	Sampled:	10/09/07
Type:	SAMPLE	Analyzed:	10/16/07
Lab ID:	198234-002		

Analyte	Result	RL
Gasoline C7-C12	ND	0.99

Surrogate	%REC	Limits
Trifluorotoluene (FID)	91	71-132
Bromofluorobenzene (FID)	85	69-145

Type:	BLANK	Analyzed:	10/15/07
Lab ID:	QC410537		

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	71-132
Bromofluorobenzene (FID)	94	69-145

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC410538	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130542
Units:	mg/Kg	Analyzed:	10/15/07

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	5.000	4.895	98	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	119	71-132
Bromofluorobenzene (FID)	94	69-145

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	198322-002	Batch#:	130542
Matrix:	Soil	Sampled:	10/11/07
Units:	mg/Kg	Received:	10/12/07
Basis:	as received	Analyzed:	10/15/07

Type: MS Lab ID: QC410539

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<0.07746	10.42	6.979	67	43-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	132	71-132
Bromofluorobenzene (FID)	100	69-145

Type: MSD Lab ID: QC410540

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.20	6.200	61	43-120	10	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	127	71-132
Bromofluorobenzene (FID)	95	69-145

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-8-GW-+1.25'	Sampled:	10/09/07
Matrix:	Water	Received:	10/10/07
Units:	ug/L	Prepared:	10/14/07
Diln Fac:	1.000	Analyzed:	10/17/07
Batch#:	130519		

Type: SAMPLE Lab ID: 198234-003

Analyte	Result	RL	MDL
Diesel C10-C24	180 Y	50	
Motor Oil C24-C36	ND	300	64

Surrogate	%REC	Limits
Hexacosane	108	61-133

Type: BLANK Lab ID: QC410432

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	ND	300	56

Surrogate	%REC	Limits
Hexacosane	106	61-133

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC410433	Batch#:	130519
Matrix:	Water	Prepared:	10/14/07
Units:	ug/L	Analyzed:	10/17/07

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,489	100	58-128

Surrogate	%REC	Limits
Hexacosane	112	61-133

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130519
MSS Lab ID:	198177-007	Sampled:	10/08/07
Matrix:	Water	Received:	10/08/07
Units:	ug/L	Prepared:	10/14/07
Diln Fac:	1.000	Analyzed:	10/18/07

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410434

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	63.44	2,500	2,047	79	58-129

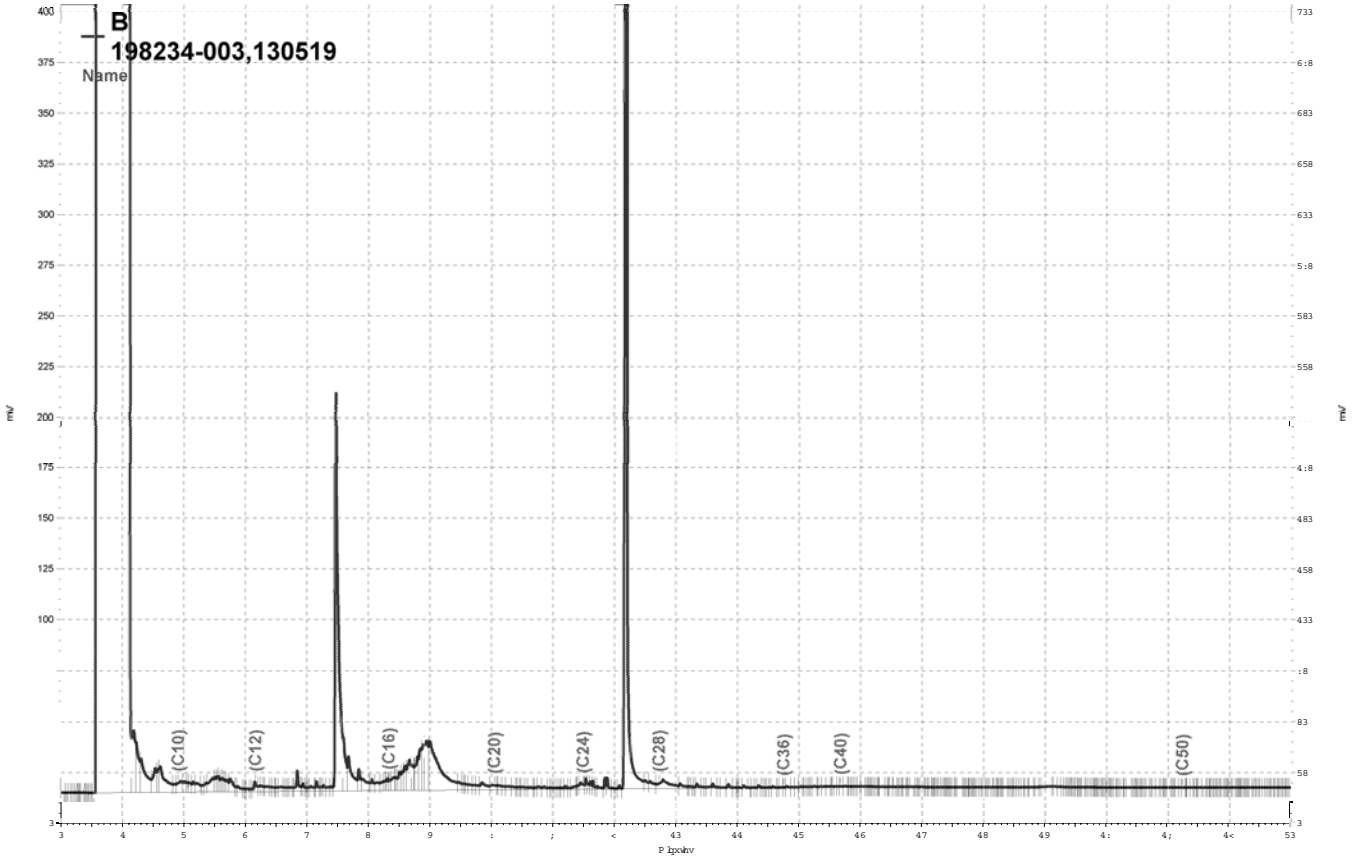
Surrogate	%REC	Limits
Hexacosane	77	61-133

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410435

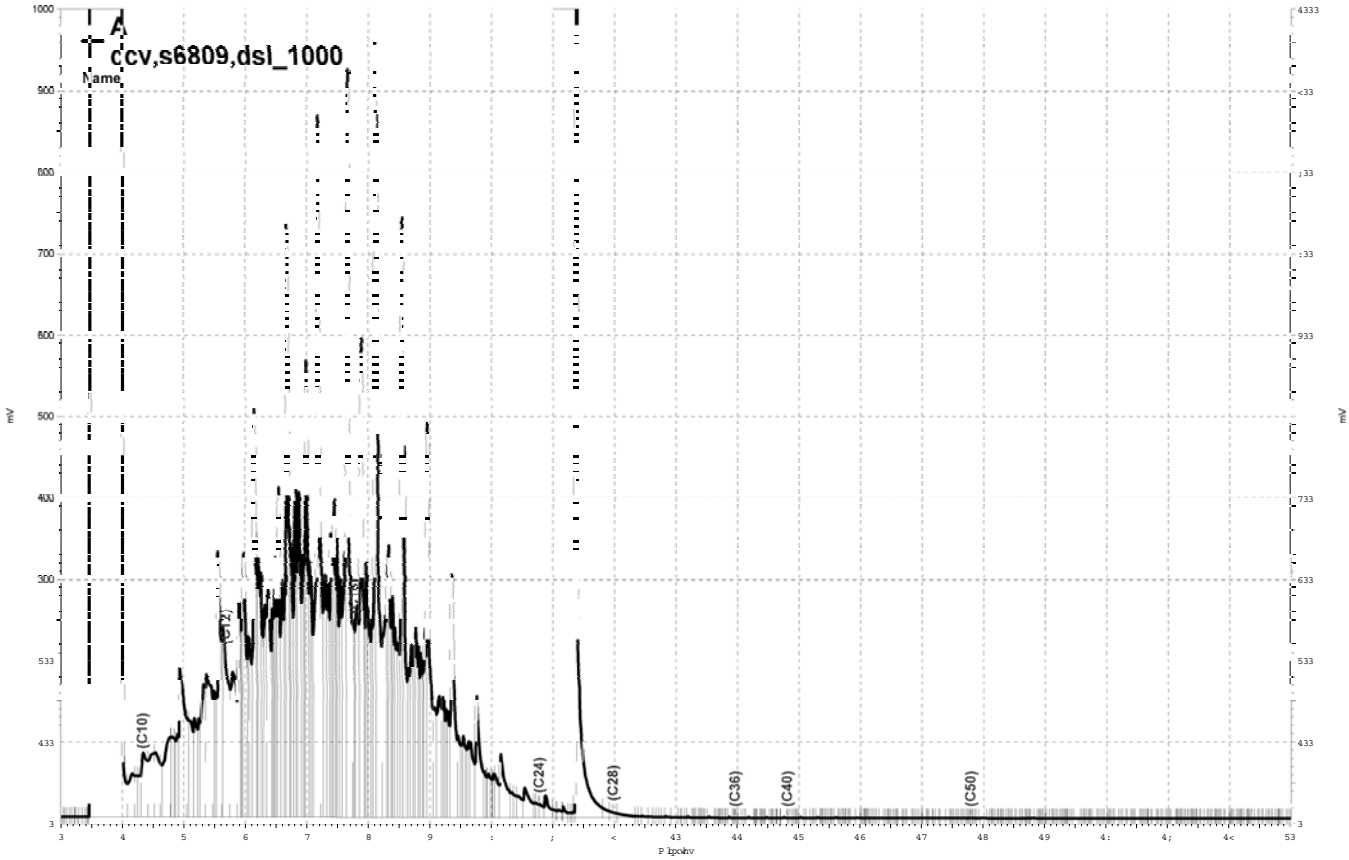
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,547	99	58-129	22	27

Surrogate	%REC	Limits
Hexacosane	99	61-133

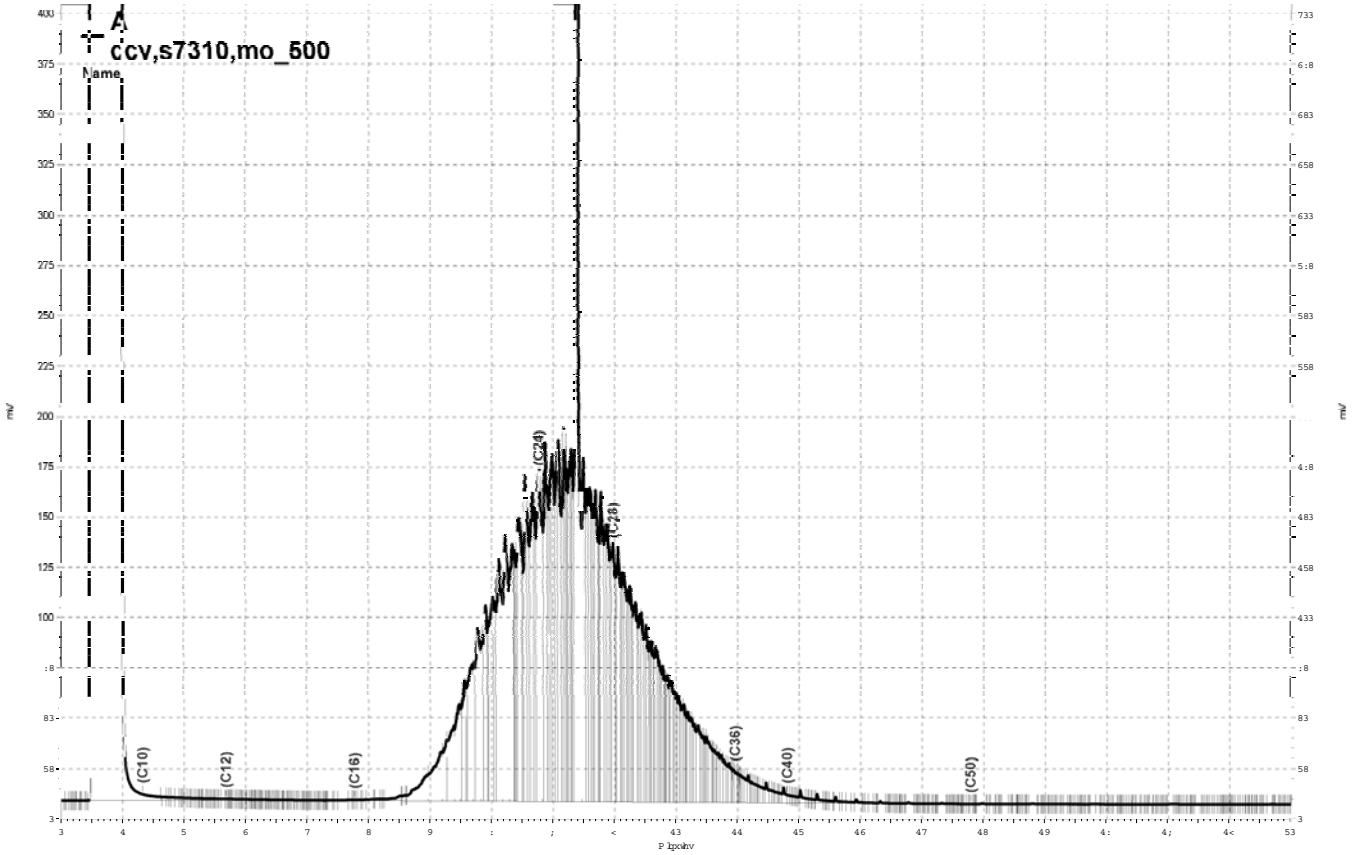
RPD= Relative Percent Difference



_Olp vjgulyh h}fkurp _Surmfw JF47E_Gdwd_5;<e363/E



_Olp v jgulyh h}fkurp _Surmnfw J F44D_Gdwd_5;<d3;4/D



_Olp v jgulyh h}fkurp _Surmnfwr J F44D_Gdwd_5;<d3;3/D

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130512
Units:	mg/Kg	Received:	10/10/07
Basis:	as received	Prepared:	10/13/07

Field ID:	B-8-SS-0.0'	Diln Fac:	25.00
Type:	SAMPLE	Sampled:	10/08/07
Lab ID:	198234-001	Analyzed:	10/16/07

Analyte	Result	RL
Diesel C10-C24	29 Y	25
Motor Oil C24-C36	240	120

Surrogate	%REC	Limits
Hexacosane	DO	46-128

Field ID:	B-8-SS-68'	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	10/09/07
Lab ID:	198234-002	Cleanup Method:	EPA 3630C

Analyte	Result	RL	Analyzed
Diesel C10-C24	17 Y	1.0	10/15/07
Diesel C10-C24 (SGCU)	13 Y	1.0	11/02/07
Motor Oil C24-C36	11	5.0	10/15/07
Motor Oil C24-C36 (SGCU)	8.9	5.0	11/02/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	102	46-128	10/15/07
Hexacosane (SGCU)	100	46-128	11/02/07

Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC410400	Cleanup Method:	EPA 3630C

Analyte	Result	RL	Analyzed
Diesel C10-C24	ND	0.99	10/15/07
Diesel C10-C24 (SGCU)	ND	0.99	10/16/07
Motor Oil C24-C36	ND	5.0	10/15/07
Motor Oil C24-C36 (SGCU)	ND	5.0	10/16/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	98	46-128	10/15/07
Hexacosane (SGCU)	88	46-128	10/16/07

Y= Sample exhibits chromatographic pattern which does not resemble standard
DO= Diluted Out
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC410401	Batch#:	130512
Matrix:	Soil	Prepared:	10/13/07
Units:	mg/Kg	Analyzed:	10/15/07
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	49.77	36.17	73	55-131

Surrogate	%REC	Limits
Hexacosane (SGCU)	77	46-128

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130512
MSS Lab ID:	198070-001	Sampled:	10/02/07
Matrix:	Soil	Received:	10/03/07
Units:	mg/Kg	Prepared:	10/13/07
Basis:	as received	Analyzed:	10/16/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410402

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	0.5333	49.99	46.40	92	31-150

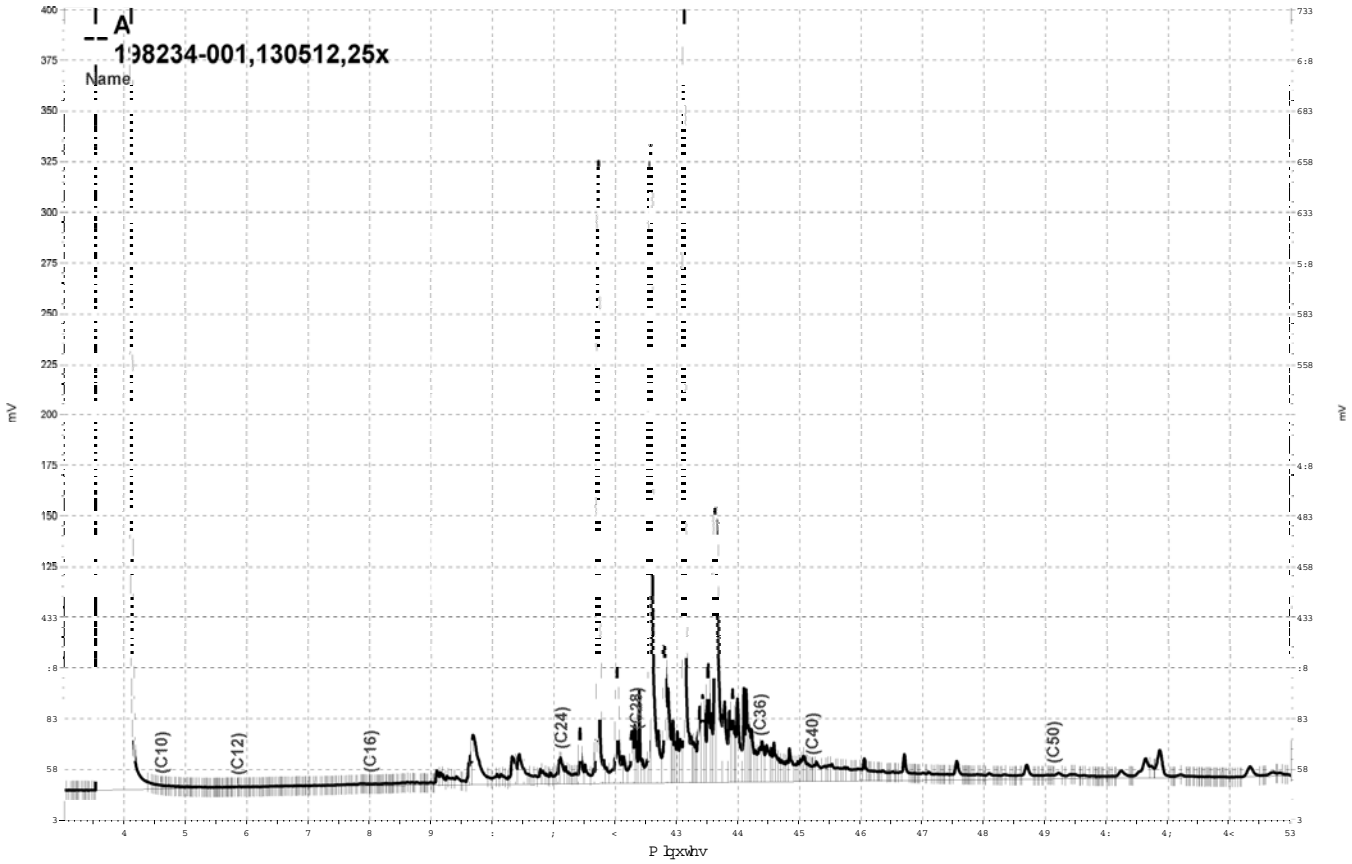
Surrogate	%REC	Limits
Hexacosane (SGCU)	102	46-128

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410403

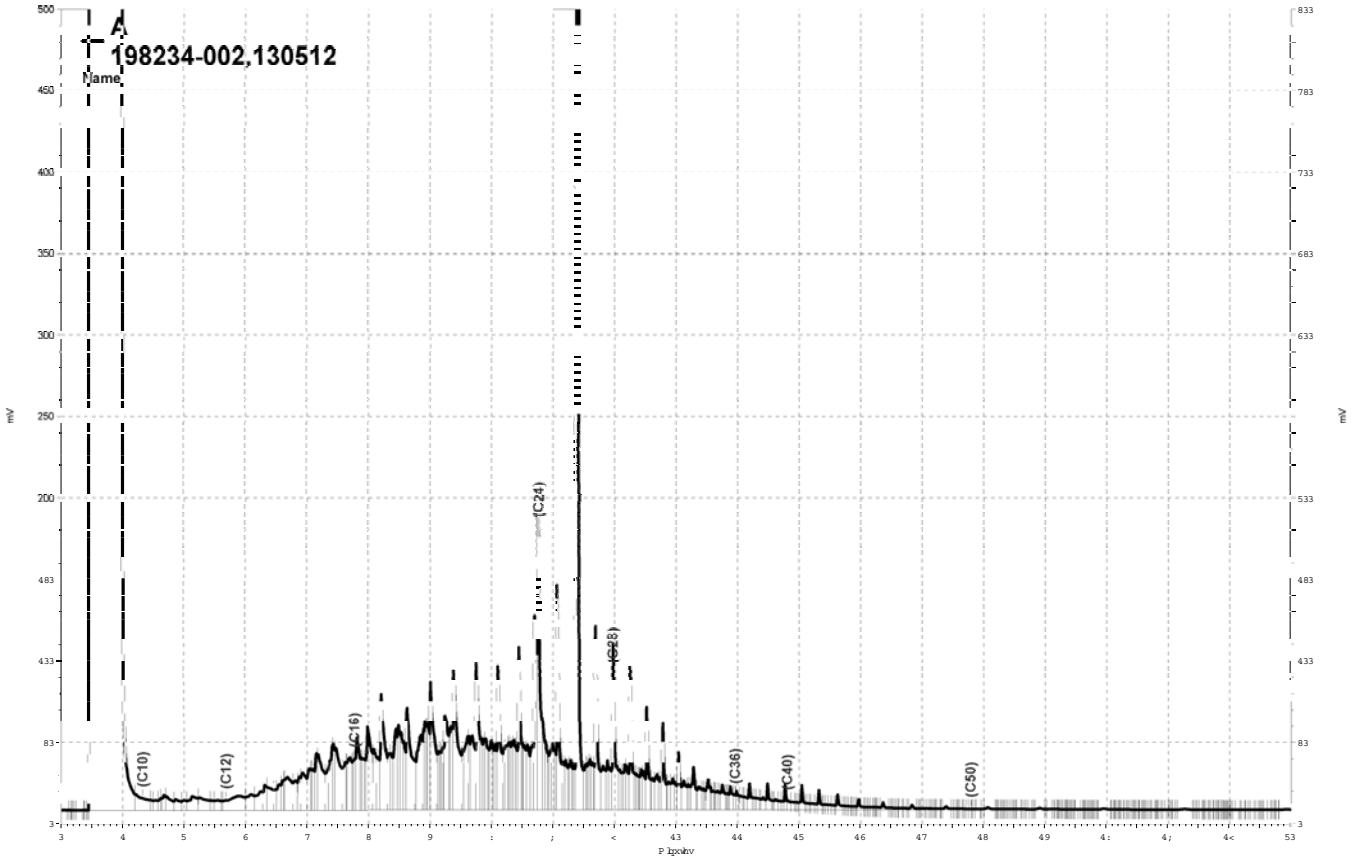
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	49.60	41.26	82	31-150	11	42

Surrogate	%REC	Limits
Hexacosane (SGCU)	89	46-128

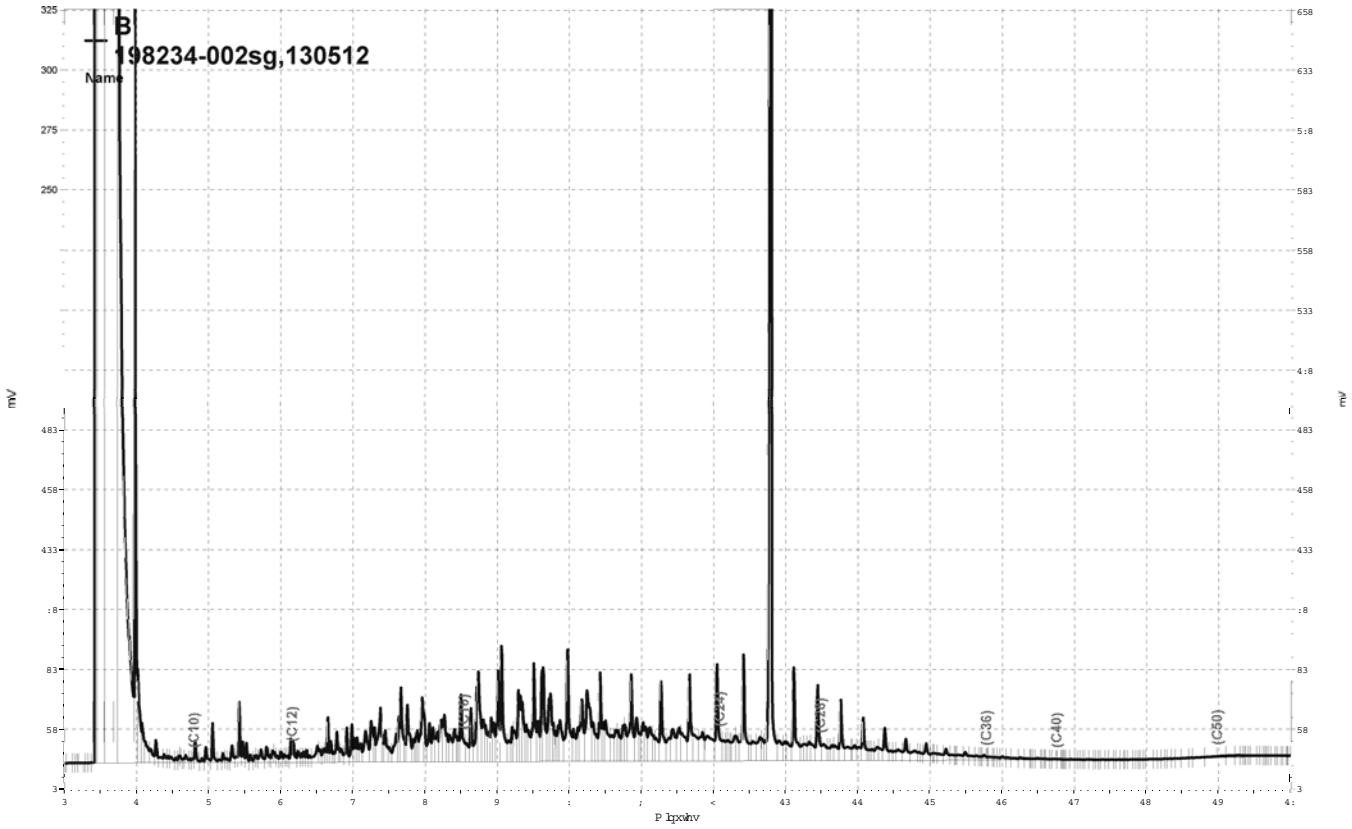
RPD= Relative Percent Difference
SGCU= Silica gel cleanup



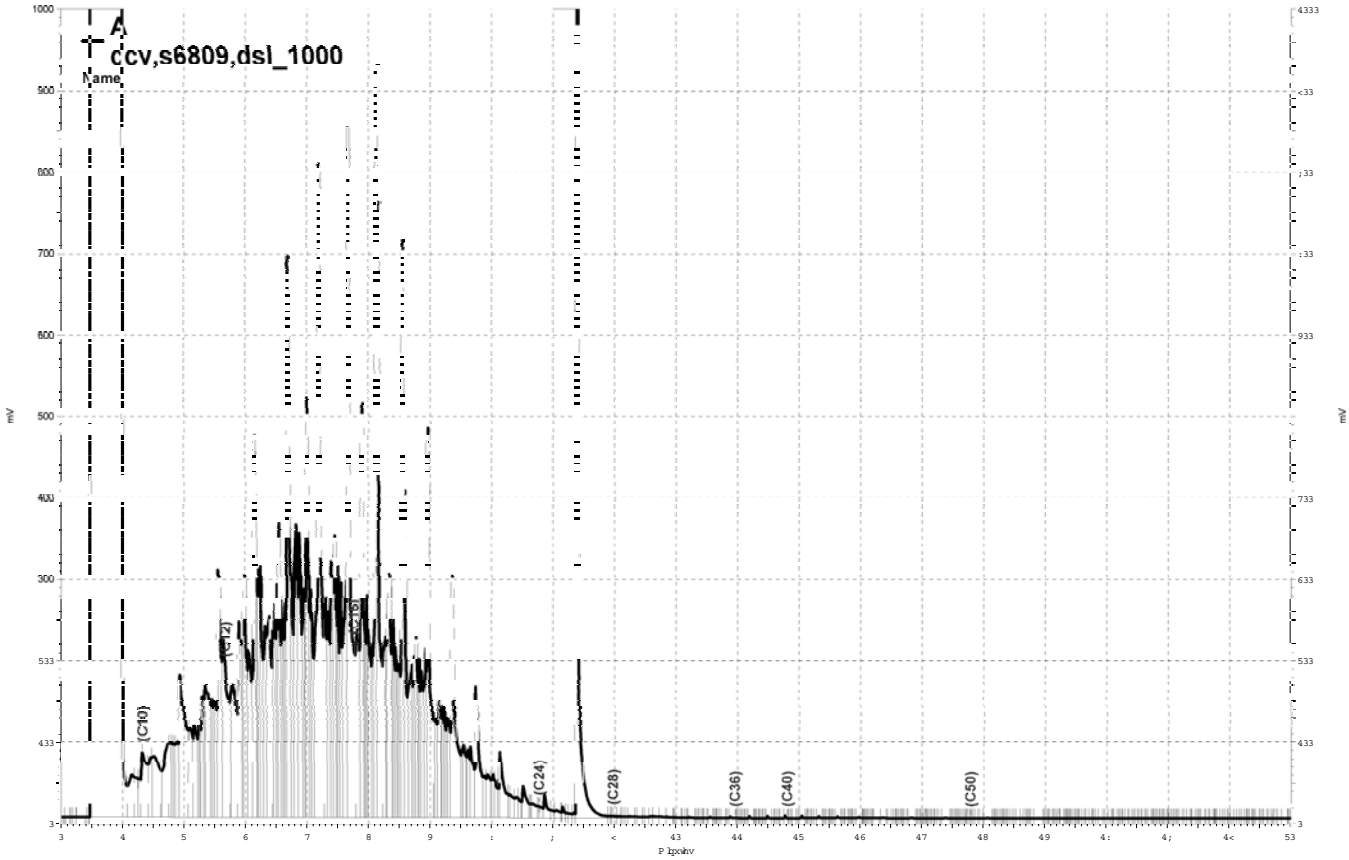
_Olpvjgulyh_h}fkurp_Surmfwr_JF4:D_Gdwd_5;:d398/D



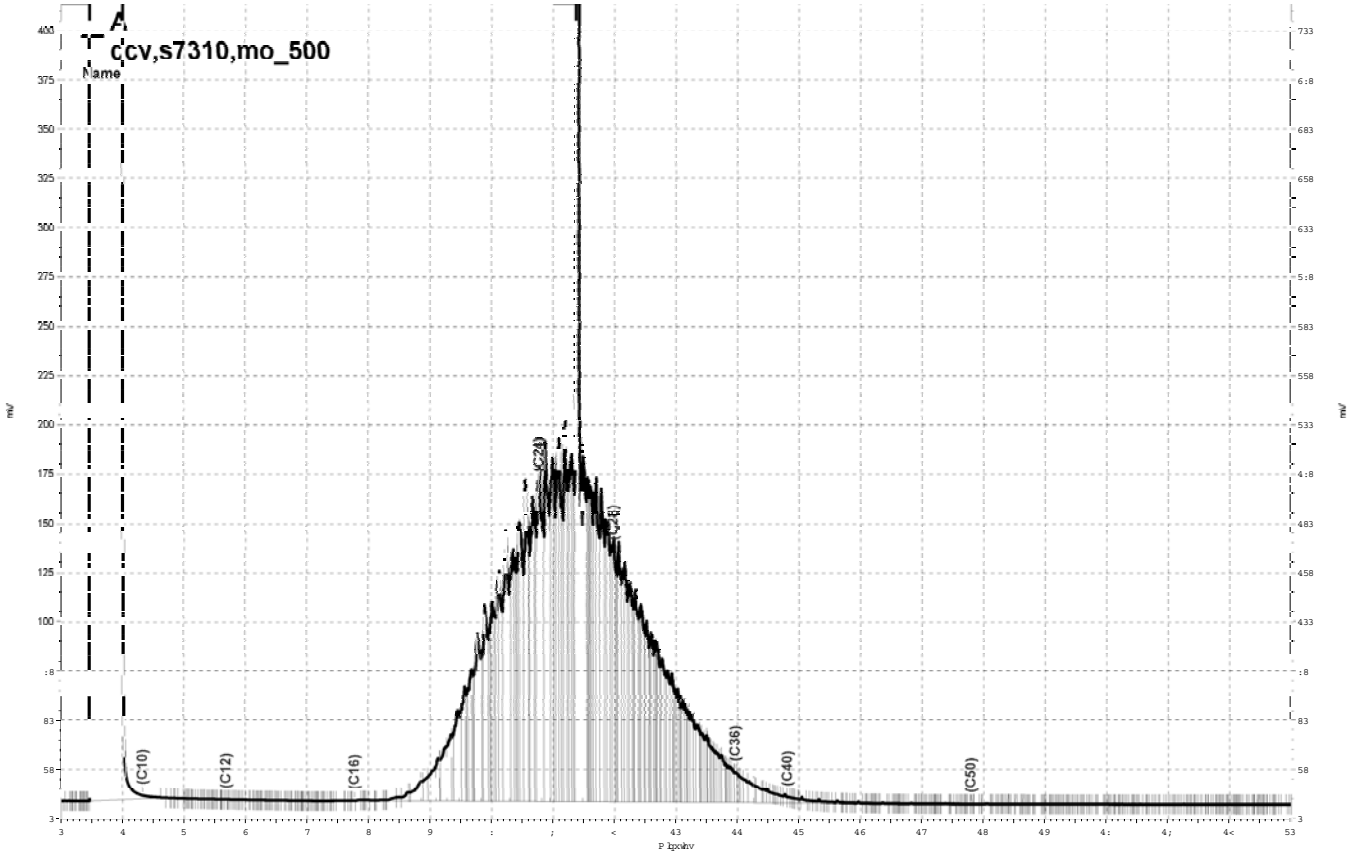
_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5;:d385/D



_Olp v jgulyh h}fkurp _Surmfw J F59 Gdwd 639e346/E



_Olp v jgulyh h}fkurp _Surmnfw J F44D_Gdwd_5;:d376/D



_Olp v jgulyh h}fkurp _Surmnfw J F44D_Gdwd_5;:d373/D

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-8-GW-+1.25'	Batch#:	130459
Lab ID:	198234-003	Sampled:	10/09/07
Matrix:	Water	Received:	10/10/07
Units:	ug/L	Analyzed:	10/12/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-8-GW-+1.25'	Batch#:	130459
Lab ID:	198234-003	Sampled:	10/09/07
Matrix:	Water	Received:	10/10/07
Units:	ug/L	Analyzed:	10/12/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	122	74-137
Toluene-d8	104	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected
RL= Reporting Limit

35.0

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC410186	Batch#:	130459
Matrix:	Water	Analyzed:	10/12/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC410186	Batch#:	130459
Matrix:	Water	Analyzed:	10/12/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-122
1,2-Dichloroethane-d4	113	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC410187	Batch#:	130459
Matrix:	Water	Analyzed:	10/12/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	28.45	114	80-133
Benzene	25.00	26.41	106	80-120
Trichloroethene	25.00	29.83	119	80-120
Toluene	25.00	26.93	108	80-122
Chlorobenzene	25.00	25.30	101	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-122
1,2-Dichloroethane-d4	112	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	102	80-120

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	130459
MSS Lab ID:	198188-008	Sampled:	10/08/07
Matrix:	Water	Received:	10/08/07
Units:	ug/L	Analyzed:	10/16/07
Diln Fac:	1.000		

Type: MS Lab ID: QC410312

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.09386	25.00	26.85	107	80-141
Benzene	<0.2500	25.00	24.88	100	80-123
Trichloroethene	<0.1151	25.00	26.30	105	73-129
Toluene	<0.1338	25.00	25.55	102	80-124
Chlorobenzene	<0.1569	25.00	24.93	100	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	101	74-137
Toluene-d8	98	80-120
Bromofluorobenzene	104	80-120

Type: MSD Lab ID: QC410313

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	26.10	104	80-141	3	20
Benzene	25.00	23.57	94	80-123	5	20
Trichloroethene	25.00	25.17	101	73-129	4	20
Toluene	25.00	23.97	96	80-124	6	20
Chlorobenzene	25.00	23.88	96	80-120	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-122
1,2-Dichloroethane-d4	102	74-137
Toluene-d8	95	80-120
Bromofluorobenzene	103	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-8-SS-0.0'	Diln Fac:	0.9434
Lab ID:	198234-001	Batch#:	130465
Matrix:	Soil	Sampled:	10/08/07
Units:	ug/Kg	Received:	10/10/07
Basis:	as received	Analyzed:	10/12/07

Analyte	Result	RL
Freon 12	ND	9.4
Chloromethane	ND	9.4
Vinyl Chloride	ND	9.4
Bromomethane	ND	9.4
Chloroethane	ND	9.4
Trichlorofluoromethane	ND	4.7
Acetone	ND	24
Freon 113	ND	4.7
1,1-Dichloroethene	ND	4.7
Methylene Chloride	71	19
Carbon Disulfide	ND	4.7
MTBE	ND	4.7
trans-1,2-Dichloroethene	ND	4.7
Vinyl Acetate	ND	47
1,1-Dichloroethane	ND	4.7
2-Butanone	ND	9.4
cis-1,2-Dichloroethene	ND	4.7
2,2-Dichloropropane	ND	4.7
Chloroform	ND	4.7
Bromochloromethane	ND	4.7
1,1,1-Trichloroethane	ND	4.7
1,1-Dichloropropene	ND	4.7
Carbon Tetrachloride	ND	4.7
1,2-Dichloroethane	ND	4.7
Benzene	ND	4.7
Trichloroethene	ND	4.7
1,2-Dichloropropane	ND	4.7
Bromodichloromethane	ND	4.7
Dibromomethane	ND	4.7
4-Methyl-2-Pentanone	ND	9.4
cis-1,3-Dichloropropene	ND	4.7
Toluene	ND	4.7
trans-1,3-Dichloropropene	ND	4.7
1,1,2-Trichloroethane	ND	4.7
2-Hexanone	ND	9.4
1,3-Dichloropropane	ND	4.7
Tetrachloroethene	ND	4.7

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-8-SS-0.0'	Diln Fac:	0.9434
Lab ID:	198234-001	Batch#:	130465
Matrix:	Soil	Sampled:	10/08/07
Units:	ug/Kg	Received:	10/10/07
Basis:	as received	Analyzed:	10/12/07

Analyte	Result	RL
Dibromochloromethane	ND	4.7
1,2-Dibromoethane	ND	4.7
Chlorobenzene	ND	4.7
1,1,1,2-Tetrachloroethane	ND	4.7
Ethylbenzene	ND	4.7
m,p-Xylenes	ND	4.7
o-Xylene	ND	4.7
Styrene	ND	4.7
Bromoform	ND	4.7
Isopropylbenzene	ND	4.7
1,1,2,2-Tetrachloroethane	ND	4.7
1,2,3-Trichloropropane	ND	4.7
Propylbenzene	ND	4.7
Bromobenzene	ND	4.7
1,3,5-Trimethylbenzene	ND	4.7
2-Chlorotoluene	ND	4.7
4-Chlorotoluene	ND	4.7
tert-Butylbenzene	ND	4.7
1,2,4-Trimethylbenzene	ND	4.7
sec-Butylbenzene	ND	4.7
para-Isopropyl Toluene	ND	4.7
1,3-Dichlorobenzene	ND	4.7
1,4-Dichlorobenzene	ND	4.7
n-Butylbenzene	ND	4.7
1,2-Dichlorobenzene	ND	4.7
1,2-Dibromo-3-Chloropropane	ND	4.7
1,2,4-Trichlorobenzene	ND	4.7
Hexachlorobutadiene	ND	4.7
Naphthalene	ND	4.7
1,2,3-Trichlorobenzene	ND	4.7

Surrogate	%REC	Limits
Dibromofluoromethane	123	80-124
1,2-Dichloroethane-d4	123	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	103	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-8-SS-68'	Diln Fac:	0.9434
Lab ID:	198234-002	Batch#:	130426
Matrix:	Soil	Sampled:	10/09/07
Units:	ug/Kg	Received:	10/10/07
Basis:	as received	Analyzed:	10/11/07

Analyte	Result	RL
Freon 12	ND	9.4
Chloromethane	ND	9.4
Vinyl Chloride	ND	9.4
Bromomethane	ND	9.4
Chloroethane	ND	9.4
Trichlorofluoromethane	ND	4.7
Acetone	ND	24
Freon 113	ND	4.7
1,1-Dichloroethene	ND	4.7
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.7
MTBE	ND	4.7
trans-1,2-Dichloroethene	ND	4.7
Vinyl Acetate	ND	47
1,1-Dichloroethane	ND	4.7
2-Butanone	ND	9.4
cis-1,2-Dichloroethene	ND	4.7
2,2-Dichloropropane	ND	4.7
Chloroform	ND	4.7
Bromochloromethane	ND	4.7
1,1,1-Trichloroethane	ND	4.7
1,1-Dichloropropene	ND	4.7
Carbon Tetrachloride	ND	4.7
1,2-Dichloroethane	ND	4.7
Benzene	ND	4.7
Trichloroethene	ND	4.7
1,2-Dichloropropane	ND	4.7
Bromodichloromethane	ND	4.7
Dibromomethane	ND	4.7
4-Methyl-2-Pentanone	ND	9.4
cis-1,3-Dichloropropene	ND	4.7
Toluene	ND	4.7
trans-1,3-Dichloropropene	ND	4.7
1,1,2-Trichloroethane	ND	4.7
2-Hexanone	ND	9.4
1,3-Dichloropropane	ND	4.7
Tetrachloroethene	ND	4.7

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-8-SS-68'	Diln Fac:	0.9434
Lab ID:	198234-002	Batch#:	130426
Matrix:	Soil	Sampled:	10/09/07
Units:	ug/Kg	Received:	10/10/07
Basis:	as received	Analyzed:	10/11/07

Analyte	Result	RL
Dibromochloromethane	ND	4.7
1,2-Dibromoethane	ND	4.7
Chlorobenzene	ND	4.7
1,1,1,2-Tetrachloroethane	ND	4.7
Ethylbenzene	ND	4.7
m,p-Xylenes	ND	4.7
o-Xylene	ND	4.7
Styrene	ND	4.7
Bromoform	ND	4.7
Isopropylbenzene	ND	4.7
1,1,2,2-Tetrachloroethane	ND	4.7
1,2,3-Trichloropropane	ND	4.7
Propylbenzene	ND	4.7
Bromobenzene	ND	4.7
1,3,5-Trimethylbenzene	ND	4.7
2-Chlorotoluene	ND	4.7
4-Chlorotoluene	ND	4.7
tert-Butylbenzene	ND	4.7
1,2,4-Trimethylbenzene	ND	4.7
sec-Butylbenzene	ND	4.7
para-Isopropyl Toluene	ND	4.7
1,3-Dichlorobenzene	ND	4.7
1,4-Dichlorobenzene	ND	4.7
n-Butylbenzene	ND	4.7
1,2-Dichlorobenzene	ND	4.7
1,2-Dibromo-3-Chloropropane	ND	4.7
1,2,4-Trichlorobenzene	ND	4.7
Hexachlorobutadiene	ND	4.7
Naphthalene	ND	4.7
1,2,3-Trichlorobenzene	ND	4.7

Surrogate	%REC	Limits
Dibromofluoromethane	119	80-124
1,2-Dichloroethane-d4	117	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	98	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC410040	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130426
Units:	ug/Kg	Analyzed:	10/11/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC410040	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130426
Units:	ug/Kg	Analyzed:	10/11/07

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-124
1,2-Dichloroethane-d4	100	79-136
Toluene-d8	97	80-120
Bromofluorobenzene	98	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC410041	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130426
Units:	ug/Kg	Analyzed:	10/11/07

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	51.51	103	74-131
Benzene	50.00	48.97	98	77-121
Trichloroethene	50.00	52.76	106	77-121
Toluene	50.00	50.52	101	79-122
Chlorobenzene	50.00	48.85	98	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-124
1,2-Dichloroethane-d4	98	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	99	80-122

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC410204	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130465
Units:	ug/Kg	Analyzed:	10/12/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC410204	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130465
Units:	ug/Kg	Analyzed:	10/12/07

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	112	80-124
1,2-Dichloroethane-d4	107	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	98	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC410205	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130465
Units:	ug/Kg	Analyzed:	10/12/07

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	51.88	104	74-131
Benzene	50.00	50.79	102	77-121
Trichloroethene	50.00	54.80	110	77-121
Toluene	50.00	51.88	104	79-122
Chlorobenzene	50.00	48.98	98	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-124
1,2-Dichloroethane-d4	109	79-136
Toluene-d8	101	80-120
Bromofluorobenzene	97	80-122

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	130465
MSS Lab ID:	198291-002	Sampled:	10/11/07
Matrix:	Soil	Received:	10/11/07
Units:	ug/Kg	Analyzed:	10/12/07
Basis:	as received		

Type: MS Diln Fac: 0.8065
Lab ID: QC410228

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.3248	40.32	28.06	70	61-145
Benzene	<0.4187	40.32	28.55	71	57-123
Trichloroethene	5.261	40.32	36.21	77	52-141
Toluene	<0.4532	40.32	28.56	71	53-126
Chlorobenzene	<0.2924	40.32	26.79	66	49-121

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-124
1,2-Dichloroethane-d4	107	79-136
Toluene-d8	101	80-120
Bromofluorobenzene	99	80-122

Type: MSD Diln Fac: 0.8197
Lab ID: QC410229

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	40.98	32.17	78	61-145	12	26
Benzene	40.98	32.68	80	57-123	12	25
Trichloroethene	40.98	41.53	88	52-141	12	26
Toluene	40.98	32.59	80	53-126	12	27
Chlorobenzene	40.98	30.47	74	49-121	11	27

Surrogate	%REC	Limits
Dibromofluoromethane	109	80-124
1,2-Dichloroethane-d4	106	79-136
Toluene-d8	101	80-120
Bromofluorobenzene	98	80-122

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198234	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-8-SS-0.0'	Basis:	as received
Lab ID:	198234-001	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/08/07
Units:	mg/Kg	Received:	10/10/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	1.4	0.50	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Arsenic	5.1	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Barium	130	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Beryllium	0.36	0.10	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Chromium	92	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Cobalt	22	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Copper	26	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Lead	7.3	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Mercury	0.049	0.020	130479	10/12/07	10/12/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Nickel	130	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Selenium	ND	0.50	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Vanadium	57	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Zinc	48	1.0	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198234	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-8-SS-68'	Basis:	as received
Lab ID:	198234-002	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/09/07
Units:	mg/Kg	Received:	10/10/07

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	0.64	0.50	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Arsenic	5.6	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Barium	110	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Beryllium	0.41	0.10	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Chromium	120	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Cobalt	12	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Copper	45	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Lead	8.2	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Mercury	0.26	0.020	130479	10/12/07	10/12/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Nickel	48	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Selenium	1.8	0.50	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Vanadium	41	0.25	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B
Zinc	60	1.0	130413	10/10/07	10/11/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC409975	Batch#:	130413
Matrix:	Soil	Prepared:	10/10/07
Units:	mg/Kg	Analyzed:	10/11/07
Basis:	as received		

Analyte	Result	RL
Antimony	ND	0.50
Arsenic	ND	0.25
Barium	ND	0.25
Beryllium	ND	0.10
Cadmium	ND	0.25
Chromium	ND	0.25
Cobalt	ND	0.25
Copper	ND	0.25
Lead	ND	0.25
Molybdenum	ND	0.25
Nickel	ND	0.25
Selenium	ND	0.50
Silver	ND	0.25
Thallium	ND	0.50
Vanadium	ND	0.25
Zinc	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	130413
Units:	mg/Kg	Prepared:	10/10/07
Basis:	as received	Analyzed:	10/11/07
Diln Fac:	1.000		

Type: BS Lab ID: QC409976

Analyte	Spiked	Result	%REC	Limits
Antimony	100.0	93.26	93	80-120
Arsenic	50.00	50.44	101	80-120
Barium	100.0	96.97	97	80-120
Beryllium	2.500	2.545	102	80-120
Cadmium	10.00	9.809	98	80-120
Chromium	100.0	94.41	94	80-120
Cobalt	25.00	23.25	93	80-120
Copper	12.50	11.75	94	80-120
Lead	100.0	93.54	94	80-120
Molybdenum	20.00	19.68	98	80-120
Nickel	25.00	23.53	94	80-120
Selenium	50.00	48.37	97	80-120
Silver	10.00	9.099	91	80-120
Thallium	50.00	47.57	95	80-120
Vanadium	25.00	23.42	94	80-120
Zinc	25.00	23.74	95	80-120

Type: BSD Lab ID: QC409977

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	100.0	95.05	95	80-120	2	20
Arsenic	50.00	51.12	102	80-120	1	20
Barium	100.0	99.14	99	80-120	2	20
Beryllium	2.500	2.610	104	80-120	3	20
Cadmium	10.00	10.07	101	80-120	3	20
Chromium	100.0	96.29	96	80-120	2	20
Cobalt	25.00	23.84	95	80-120	3	20
Copper	12.50	12.00	96	80-120	2	20
Lead	100.0	96.50	97	80-120	3	20
Molybdenum	20.00	20.00	100	80-120	2	20
Nickel	25.00	24.07	96	80-120	2	20
Selenium	50.00	49.23	98	80-120	2	20
Silver	10.00	9.258	93	80-120	2	20
Thallium	50.00	48.46	97	80-120	2	20
Vanadium	25.00	23.86	95	80-120	2	20
Zinc	25.00	24.26	97	80-120	2	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130413
MSS Lab ID:	198257-001	Sampled:	10/10/07
Matrix:	Soil	Received:	10/10/07
Units:	mg/Kg	Prepared:	10/10/07
Basis:	as received	Analyzed:	10/11/07
Diln Fac:	1.000		

Type: MS Lab ID: QC409978

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	1.602	89.29	50.52	55	1-122
Arsenic	4.196	44.64	50.42	104	72-120
Barium	35.92	89.29	123.7	98	49-139
Beryllium	0.1547	2.232	2.436	102	80-120
Cadmium	0.07861	8.929	8.636	96	74-120
Chromium	28.72	89.29	109.5	91	65-120
Cobalt	4.997	22.32	25.47	92	60-120
Copper	12.08	11.16	19.36	65	47-146
Lead	20.74	89.29	101.0	90	53-123
Molybdenum	<0.02165	17.86	16.97	95	66-120
Nickel	30.85	22.32	48.44	79	43-142
Selenium	0.2938	44.64	44.20	98	71-120
Silver	0.03701	8.929	8.511	95	66-120
Thallium	<0.03334	44.64	40.38	90	62-120
Vanadium	22.21	22.32	42.80	92	52-139
Zinc	39.89	22.32	65.01	113	42-147

Type: MSD Lab ID: QC409979

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	89.29	49.45	54	1-122	2	30
Arsenic	44.64	50.41	104	72-120	0	20
Barium	89.29	122.9	97	49-139	1	23
Beryllium	2.232	2.467	104	80-120	1	20
Cadmium	8.929	8.719	97	74-120	1	20
Chromium	89.29	110.1	91	65-120	1	20
Cobalt	22.32	25.07	90	60-120	2	24
Copper	11.16	20.95	79	47-146	8	21
Lead	89.29	108.2	98	53-123	7	28
Molybdenum	17.86	17.06	96	66-120	1	20
Nickel	22.32	48.15	78	43-142	1	26
Selenium	44.64	44.51	99	71-120	1	20
Silver	8.929	8.578	96	66-120	1	20
Thallium	44.64	40.69	91	62-120	1	20
Vanadium	22.32	43.33	95	52-139	1	20
Zinc	22.32	64.59	111	42-147	1	27

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC410274	Batch#:	130479
Matrix:	Soil	Prepared:	10/12/07
Units:	mg/Kg	Analyzed:	10/12/07

Result	RL
ND	0.020

ND= Not Detected
RL= Reporting Limit

25.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130479
Units:	mg/Kg	Prepared:	10/12/07
Basis:	as received	Analyzed:	10/12/07

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC410275	0.5000	0.5120	102	80-120		
BSD	QC410276	0.5000	0.5130	103	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	B-8-SS-0.0'	Batch#:	130479
MSS Lab ID:	198234-001	Sampled:	10/08/07
Matrix:	Soil	Received:	10/10/07
Units:	mg/Kg	Prepared:	10/12/07
Basis:	as received	Analyzed:	10/12/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC410278	0.04902	0.3906	0.4617	106	70-143		
MSD	QC410279		0.3906	0.4352	99	70-143	6	22

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	198234	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-8-GW-+1.25'	Diln Fac:	1.000
Lab ID:	198234-003	Sampled:	10/09/07
Matrix:	Filtrate	Received:	10/10/07
Units:	ug/L		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	10	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Arsenic	ND	6.1	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Barium	54	5.0	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Copper	ND	5.0	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Lead	ND	3.0	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130467	10/12/07	10/12/07	METHOD	EPA 7470A
Molybdenum	130	5.0	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Selenium	ND	10	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Silver	ND	5.0	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Thallium	ND	10	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B
Zinc	ND	20	130423	10/11/07	10/11/07	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

28.0

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC410023	Batch#:	130423
Matrix:	Water	Prepared:	10/11/07
Units:	ug/L		

Analyte	Result	RL	Analyzed
Antimony	ND	10	10/11/07
Arsenic	ND	6.1	10/11/07
Barium	ND	5.0	10/11/07
Beryllium	ND	2.0	10/11/07
Cadmium	ND	5.0	10/11/07
Chromium	ND	5.0	10/11/07
Cobalt	ND	5.0	10/11/07
Copper	ND	5.0	10/11/07
Lead	ND	3.0	10/11/07
Molybdenum	ND	5.0	10/11/07
Nickel	ND	5.0	10/11/07
Selenium	ND	10	10/11/07
Silver	ND	5.0	10/12/07
Thallium	ND	10	10/11/07
Vanadium	ND	5.0	10/11/07
Zinc	ND	20	10/11/07

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Water	Batch#:	130423
Units:	ug/L	Prepared:	10/11/07
Diln Fac:	1.000		

Type: BS Lab ID: QC410024

Analyte	Spiked	Result	%REC	Limits	Analyzed
Antimony	500.0	466.7	93	80-120	10/11/07
Arsenic	100.0	95.38	95	80-120	10/11/07
Barium	2,000	1,928	96	80-120	10/11/07
Beryllium	50.00	51.88	104	80-120	10/11/07
Cadmium	50.00	51.19	102	80-120	10/11/07
Chromium	200.0	192.9	96	80-120	10/11/07
Cobalt	500.0	478.6	96	80-120	10/11/07
Copper	250.0	238.5	95	80-120	10/11/07
Lead	100.0	96.36	96	80-120	10/11/07
Molybdenum	400.0	387.9	97	80-120	10/11/07
Nickel	500.0	481.8	96	80-120	10/11/07
Selenium	100.0	95.34	95	80-120	10/11/07
Silver	50.00	50.68	101	80-120	10/12/07
Thallium	100.0	90.77	91	80-120	10/11/07
Vanadium	500.0	488.5	98	80-120	10/11/07
Zinc	500.0	494.1	99	80-120	10/11/07

Type: BSD Lab ID: QC410025

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
Antimony	500.0	468.4	94	80-120	0	20	10/11/07
Arsenic	100.0	96.36	96	80-120	1	20	10/11/07
Barium	2,000	1,915	96	80-120	1	20	10/11/07
Beryllium	50.00	51.33	103	80-120	1	20	10/11/07
Cadmium	50.00	50.78	102	80-120	1	20	10/11/07
Chromium	200.0	190.6	95	80-120	1	20	10/11/07
Cobalt	500.0	466.2	93	80-120	3	20	10/11/07
Copper	250.0	235.1	94	80-120	1	20	10/11/07
Lead	100.0	96.57	97	80-120	0	20	10/11/07
Molybdenum	400.0	387.9	97	80-120	0	20	10/11/07
Nickel	500.0	477.1	95	80-120	1	20	10/11/07
Selenium	100.0	97.32	97	80-120	2	20	10/11/07
Silver	50.00	47.21	94	80-120	7	20	10/12/07
Thallium	100.0	89.65	90	80-120	1	20	10/11/07
Vanadium	500.0	482.1	96	80-120	1	20	10/11/07
Zinc	500.0	487.7	98	80-120	1	20	10/11/07

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130423
MSS Lab ID:	198264-001	Sampled:	10/10/07
Matrix:	Water	Received:	10/10/07
Units:	ug/L	Prepared:	10/11/07
Diln Fac:	1.000		

Type: MS Lab ID: QC410026

Analyte	MSS Result	Spiked	Result	%REC	Limits	Analyzed
Antimony	3.905	500.0	463.6	92	80-120	10/11/07
Arsenic	6.011	100.0	104.4	98	80-127	10/11/07
Barium	80.40	2,000	1,962	94	80-120	10/11/07
Beryllium	0.1085	50.00	50.96	102	80-120	10/11/07
Cadmium	<0.1091	50.00	49.76	100	80-120	10/11/07
Chromium	21.10	200.0	196.4	88	80-120	10/11/07
Cobalt	8.736	500.0	467.5	92	80-120	10/11/07
Copper	41.85	250.0	278.7	95	80-120	10/11/07
Lead	42.63	100.0	133.9	91	76-120	10/11/07
Molybdenum	1.071	400.0	381.1	95	80-120	10/11/07
Nickel	79.58	500.0	513.8	87	80-120	10/11/07
Selenium	<1.469	100.0	93.90	94	80-128	10/11/07
Silver	<0.7459	50.00	47.52	95	73-122	10/12/07
Thallium	<1.616	100.0	83.08	83	78-120	10/11/07
Vanadium	11.71	500.0	485.4	95	80-120	10/11/07
Zinc	173.8	500.0	641.9	94	80-123	10/11/07

Type: MSD Lab ID: QC410027

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
Antimony	500.0	462.5	92	80-120	0	20	10/11/07
Arsenic	100.0	102.3	96	80-127	2	20	10/11/07
Barium	2,000	1,938	93	80-120	1	20	10/11/07
Beryllium	50.00	49.63	99	80-120	3	20	10/11/07
Cadmium	50.00	48.50	97	80-120	3	20	10/11/07
Chromium	200.0	191.7	85	80-120	2	20	10/11/07
Cobalt	500.0	456.4	90	80-120	2	20	10/11/07
Copper	250.0	273.1	93	80-120	2	20	10/11/07
Lead	100.0	131.7	89	76-120	2	20	10/11/07
Molybdenum	400.0	375.8	94	80-120	1	20	10/11/07
Nickel	500.0	501.7	84	80-120	2	20	10/11/07
Selenium	100.0	91.10	91	80-128	3	20	10/11/07
Silver	50.00	46.88	94	73-122	1	20	10/12/07
Thallium	100.0	83.98	84	78-120	1	20	10/11/07
Vanadium	500.0	472.9	92	80-120	3	20	10/11/07
Zinc	500.0	626.2	90	80-123	2	20	10/11/07

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	130467
Lab ID:	QC410211	Prepared:	10/12/07
Matrix:	Filtrate	Analyzed:	10/12/07
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

30.0

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130467
Matrix:	Filtrate	Prepared:	10/12/07
Units:	ug/L	Analyzed:	10/12/07
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC410212	5.000	5.070	101	80-120		
BSD	QC410213	5.000	5.050	101	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130467
Field ID:	ZZZZZZZZZZ	Sampled:	10/04/07
MSS Lab ID:	198120-001	Received:	10/04/07
Matrix:	Filtrate	Prepared:	10/12/07
Units:	ug/L	Analyzed:	10/12/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC410215	<0.05879	5.000	4.650	93	79-125		
MSD	QC410216		5.000	4.590	92	79-125	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Field ID:	B-8-GW-+1.25'	Batch#:	130399
Matrix:	Water	Sampled:	10/09/07 07:40
Units:	mg/L	Received:	10/10/07

Type	Lab ID	Result	RL	Analyzed
SAMPLE	198234-003	1.7	0.05	10/11/07 01:53
BLANK	QC409933	ND	0.05	10/10/07 13:24

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	ZZZZZZZZZZ	Batch#:	130399
MSS Lab ID:	198240-015	Sampled:	10/08/07 15:25
Matrix:	Water	Received:	10/10/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC409934		1.000	1.033	103	80-120			1.000	10/10/07 22:41
BSD	QC409935		1.000	1.036	104	80-120	0	20	1.000	10/10/07 22:58
MS	QC410166	1.598	25.00	27.44	103	80-120			50.00	10/11/07 19:07
MSD	QC410167		25.00	27.30	103	80-120	1	20	50.00	10/11/07 19:25

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Field ID:	B-8-SS-68'	Batch#:	130516
Matrix:	Soil	Sampled:	10/09/07 13:15
Units:	mg/Kg	Received:	10/10/07
Basis:	as received		

Type	Lab ID	Result	RL	Analyzed
SAMPLE	198234-002	ND	0.5	10/13/07 22:44
BLANK	QC410418	ND	0.5	10/13/07 21:17

ND= Not Detected
RL= Reporting Limit

19.0

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198234	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Basis:	as received
Field ID:	B-8-SS-68'	Diln Fac:	1.000
MSS Lab ID:	198234-002	Batch#:	130516
Matrix:	Soil	Sampled:	10/09/07 13:15
Units:	mg/Kg	Received:	10/10/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
BS	QC410419		10.00	10.16	102	80-120			10/13/07 21:34
BSD	QC410420		10.00	9.861	99	80-120	3	20	10/13/07 21:52
MS	QC410421	0.1512	5.000	5.225	101	50-120			10/13/07 23:19
MSD	QC410422		5.000	5.266	102	50-120	1	30	10/13/07 23:36

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

198234

Chain of Custody Record

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 10/9/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier: UPS - 9X3169
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☐ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15 - J
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
B-8-SS-0.0'	10/8/07	15:30		SO	1	✓	✓	✓	✓		✓		
B-8-SS-68'	10/9/07	13:15		SO	1	✓	✓	✓	✓	✓			
B-8-GW-+1.25'	10/9/07	07:40	VOA	GW	3	✓							
			VOA		3				✓				
			1L poly		2			✓					
			750 ml poly		1	✓	✓						
			500 ml poly		1					✓			
Trip Blank	10/9/07		VOA	AQ									

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Weiss Associates	10/9/07, 15:00	[signature]	C&T	10-10-07 1050
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 198234 Date Received: 10-10-07 Number of Coolers: 1
Client: Weiss Project: Cloverdale

A. Preliminary Examination Phase
Date Opened: 10-10-07 By (print): Faith Nichols (sign) Faith

1. Did cooler come with a shipping slip (airbill, etc.)? ..... (YES) NO
   If YES, enter carrier name and airbill number: UPS 12 832 32E 01 4339 1827
2. Were custody seals on outside of cooler? ..... YES (NO)
   How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO N/A
4. Were custody papers dry and intact when received? ..... (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO
6. Did you sign the custody papers in the appropriate place? ..... (YES) NO
7. Was project identifiable from custody papers? ..... (YES) NO
   If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bubble wrap, Voa foam
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... (YES) NO
   Type of ice: Wet Temperature: No temp blank, All cold
10. Were Encore sampling devices present in the cooler? ..... YES (NO)
    If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10-10-07 By (print): Faith Nichols (sign) Faith

1. Did all bottles arrive unbroken? ..... (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? .. (YES) NO
3. Did bottle labels agree with custody papers? ..... (YES) NO
4. Were appropriate containers used for the tests indicated? ..... (YES) NO
5. Were correct preservatives added to samples? ..... (YES) NO
6. Was sufficient amount of sample sent for tests indicated? ..... (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below ..... (YES) NO
8. Was the client contacted concerning this sample delivery? ..... YES NO
   If YES, give details below.
   Who was called? _____ By whom? _____ Date: _____

Additional Comments:
Trip Blank listed on COC but not in cooler

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates 5801 Christie Avenue Emeryville, CA 94608	Project : 379-1827-15-02 Location : Cloverdale Project Level : II

Sample ID	Lab ID
B-9-SS-0.0	198317-001
B-9-GW-25	198317-002
B-7-GW-41	198317-003
B-14-SS-0.0	198317-004
B-7-SS-0.0	198317-005
B-7-SS-47	198317-006

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 11/05/2007
Project Manager

Signature: _____ Date: 11/05/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198317**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/18/07**
Samples Received:	**10/12/07**

This hardcopy data package contains sample and QC results for three soil samples and two water samples, requested for the above referenced project on 10/18/07. The samples were received cool, but above 6 degrees C, and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Soil:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Water:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Soil:
High recoveries were observed for trichloroethene in the MS/MSD for batch 130460; the parent sample was not a project sample, the LCS was within limits, the associated RPD was within limits, and this analyte was not detected at or above the RL in the associated samples. Low surrogate recoveries were observed for dibromofluoromethane in the MS/MSD for batch 130460; the parent sample was not a project sample. High surrogate recoveries were also observed for dibromofluoromethane in B-9-SS-0.0 (lab # 198317-001), B-14-SS-0.0 (lab # 198317-004), and B-7-SS-0.0 (lab # 198317-005); no target analytes were detected in these samples. No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A) Soil:
Low recovery was observed for copper in the MSD for batch 130500; the parent sample was not a project sample, the BS/BSD were within limits, and the associated RPD was within limits. No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7470A) Filtrate:
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198317**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/18/07**
Samples Received:	**10/12/07**

Ion Chromatography (EPA 300.0):
No analytical problems were encountered.

Asbestos PLM (EPA 600/R-93-116):
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130550
Units:	ug/L	Sampled:	10/11/07
Diln Fac:	1.000	Received:	10/12/07

Field ID:	B-9-GW-25	Lab ID:	198317-002
Type:	SAMPLE	Analyzed:	10/16/07

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	92	73-134
Bromofluorobenzene (FID)	103	77-140

Field ID:	B-7-GW-41	Lab ID:	198317-003
Type:	SAMPLE	Analyzed:	10/15/07

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	89	73-134
Bromofluorobenzene (FID)	99	77-140

Type:	BLANK	Analyzed:	10/15/07
Lab ID:	QC410566		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	96	73-134
Bromofluorobenzene (FID)	102	77-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC410567	Batch#:	130550
Matrix:	Water	Analyzed:	10/15/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	906.3	91	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	105	73-134
Bromofluorobenzene (FID)	104	77-140

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130550
MSS Lab ID:	198263-003	Sampled:	10/10/07
Matrix:	Water	Received:	10/10/07
Units:	ug/L	Analyzed:	10/15/07
Diln Fac:	1.000		

Type: MS Lab ID: QC410568

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	57.12	2,000	1,788	87	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	113	73-134
Bromofluorobenzene (FID)	108	77-140

Type: MSD Lab ID: QC410569

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,722	83	72-120	4	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	114	73-134
Bromofluorobenzene (FID)	108	77-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Diln Fac:	1.000
Units:	mg/Kg	Batch#:	130542
Basis:	as received	Received:	10/12/07

Field ID:	B-9-SS-0.0	Sampled:	10/11/07
Type:	SAMPLE	Analyzed:	10/16/07
Lab ID:	198317-001		

Analyte	Result	RL
Gasoline C7-C12	ND	0.93

Surrogate	%REC	Limits
Trifluorotoluene (FID)	98	71-132
Bromofluorobenzene (FID)	94	69-145

Field ID:	B-14-SS-0.0	Sampled:	10/08/07
Type:	SAMPLE	Analyzed:	10/16/07
Lab ID:	198317-004		

Analyte	Result	RL
Gasoline C7-C12	ND	1.1

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	71-132
Bromofluorobenzene (FID)	97	69-145

Field ID:	B-7-SS-0.0	Sampled:	10/11/07
Type:	SAMPLE	Analyzed:	10/16/07
Lab ID:	198317-005		

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	94	71-132
Bromofluorobenzene (FID)	88	69-145

Type:	BLANK	Analyzed:	10/15/07
Lab ID:	QC410537		

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	71-132
Bromofluorobenzene (FID)	94	69-145

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC410538	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130542
Units:	mg/Kg	Analyzed:	10/15/07

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	5.000	4.895	98	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	119	71-132
Bromofluorobenzene (FID)	94	69-145

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	198322-002	Batch#:	130542
Matrix:	Soil	Sampled:	10/11/07
Units:	mg/Kg	Received:	10/12/07
Basis:	as received	Analyzed:	10/15/07

Type: MS Lab ID: QC410539

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<0.07746	10.42	6.979	67	43-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	132	71-132
Bromofluorobenzene (FID)	100	69-145

Type: MSD Lab ID: QC410540

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.20	6.200	61	43-120	10	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	127	71-132
Bromofluorobenzene (FID)	95	69-145

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	10/11/07
Units:	ug/L	Received:	10/12/07
Diln Fac:	1.000	Prepared:	10/24/07
Batch#:	130895	Analyzed:	10/25/07

Field ID: B-9-GW-25 Lab ID: 198317-002
Type: SAMPLE

Analyte	Result	RL	MDL
Diesel C10-C24	57 Y	50	
Motor Oil C24-C36	ND	300	85

Surrogate	%REC	Limits
Hexacosane	110	61-133

Field ID: B-7-GW-41 Lab ID: 198317-003
Type: SAMPLE

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	ND	300	85

Surrogate	%REC	Limits
Hexacosane	106	61-133

Type: BLANK Lab ID: QC412019

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	ND	300	64

Surrogate	%REC	Limits
Hexacosane	120	61-133

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC412020	Batch#:	130895
Matrix:	Water	Prepared:	10/24/07
Units:	ug/L	Analyzed:	10/25/07

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,162	86	58-128

Surrogate	%REC	Limits
Hexacosane	93	61-133

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130895
MSS Lab ID:	198501-001	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Prepared:	10/24/07
Diln Fac:	1.000	Analyzed:	10/25/07

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC412021

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	<15.44	2,500	2,058	82	58-129

Surrogate	%REC	Limits
Hexacosane	110	61-133

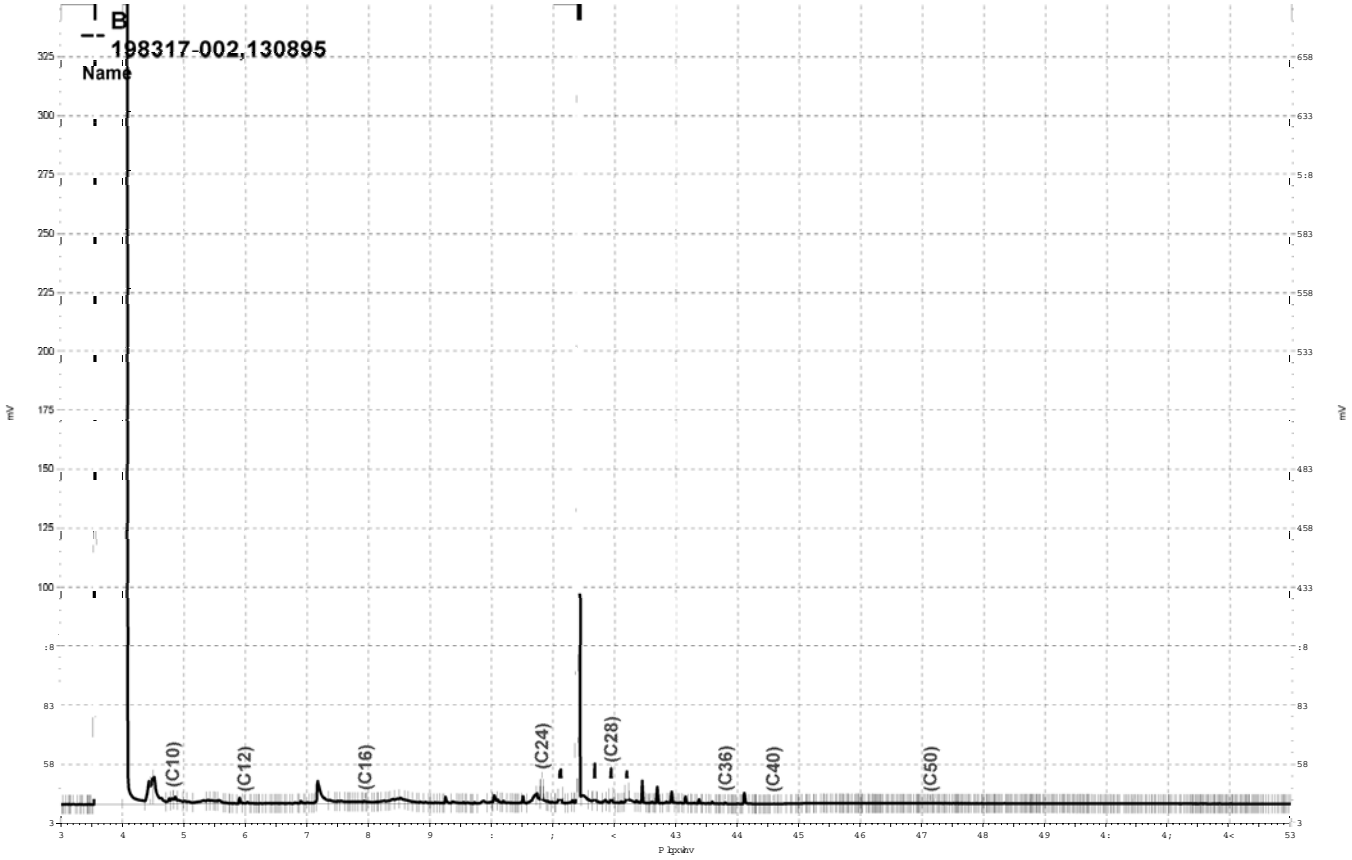
Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC412022

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,045	82	58-129	1	27

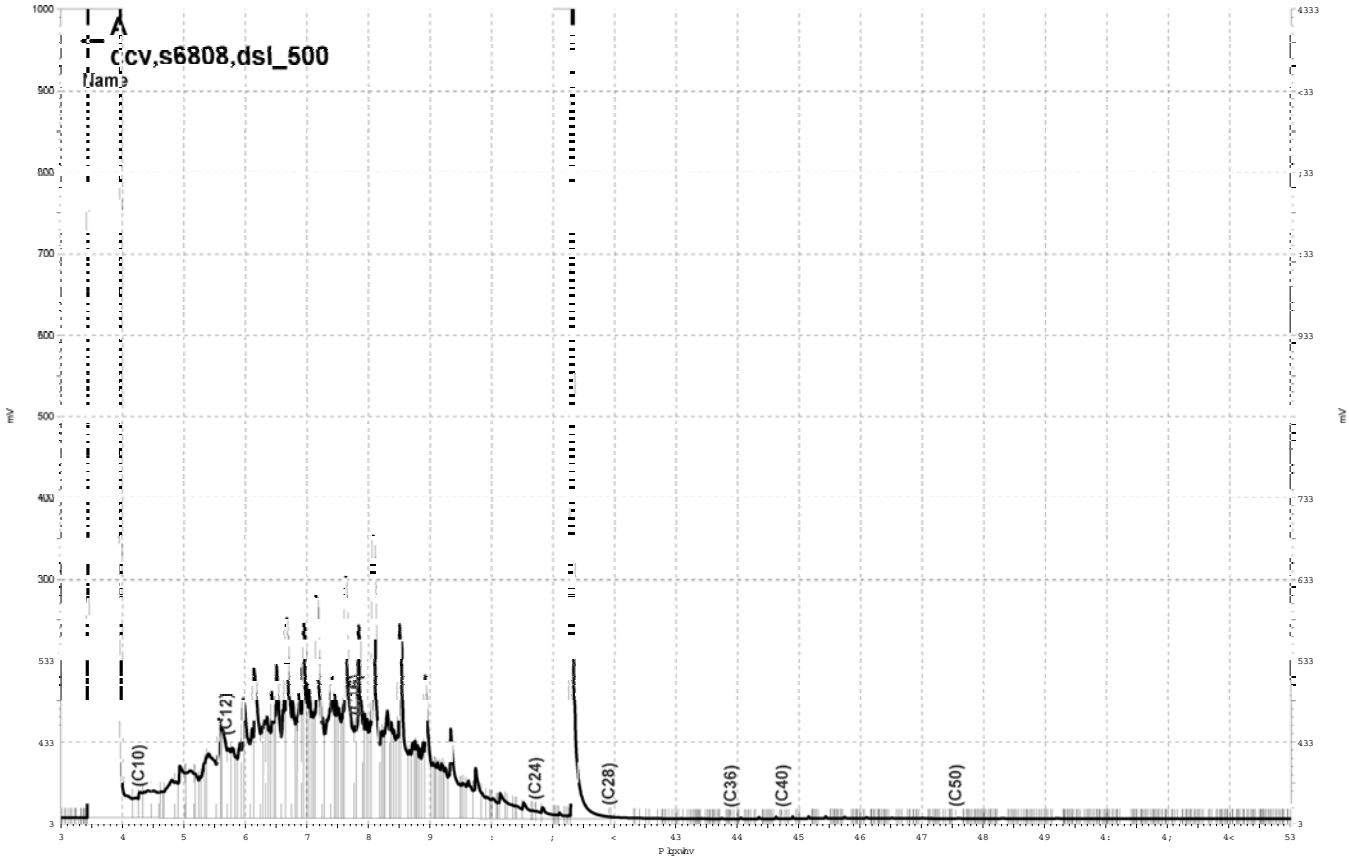
Surrogate	%REC	Limits
Hexacosane	108	61-133

RPD= Relative Percent Difference

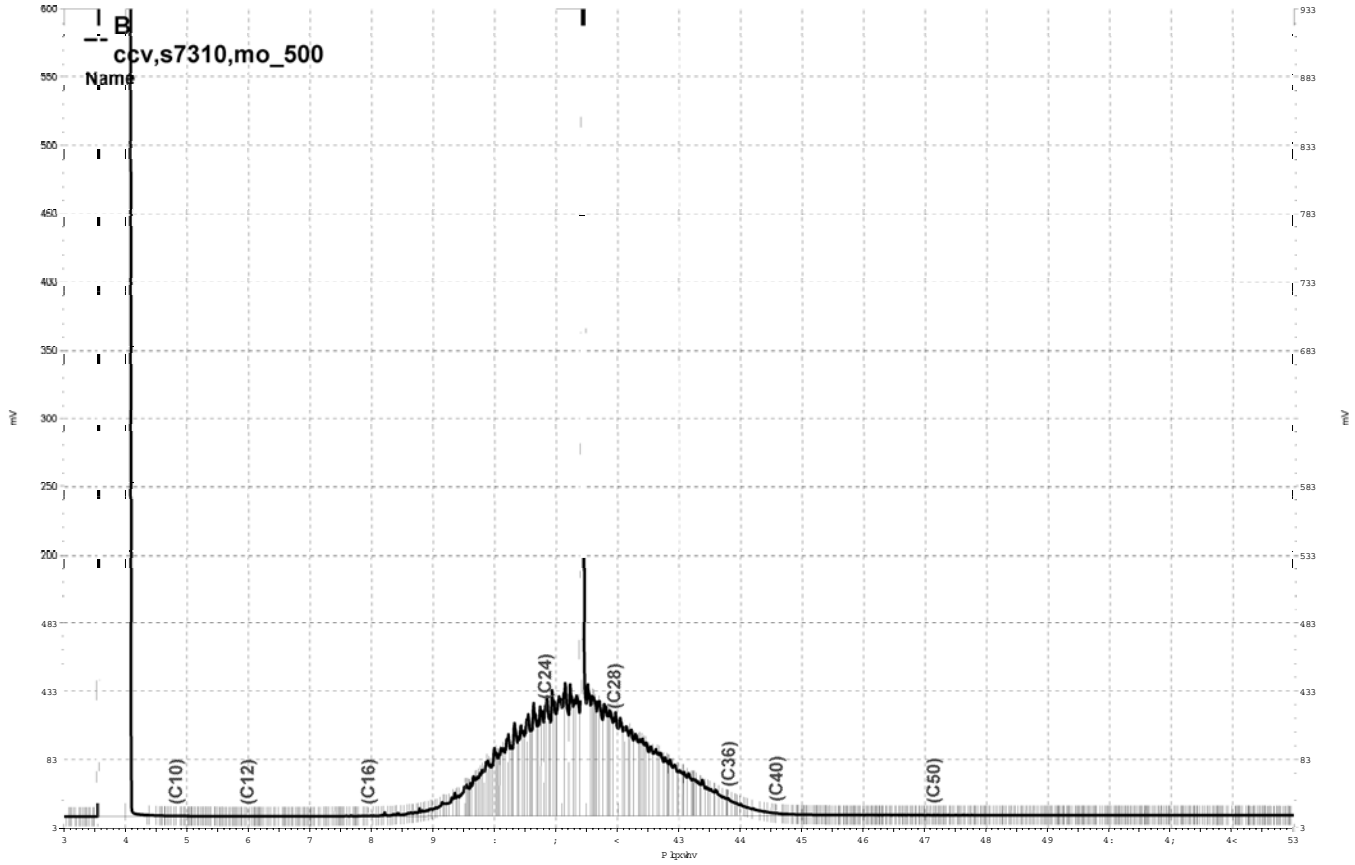
51.1



_Olp vjgulyh h}fkurp _Surmfw_J F48E_Gdwd_5<:e377/E



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5<:d373/D



_Olp vjgulyh h}fkurp_Surmfw_JF48E_Gdwd_5<:e376/E

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 8015B
Project#:	379-1827-15-02		
Matrix:	Soil	Diln Fac:	1.000
Units:	mg/Kg	Received:	10/12/07
Basis:	as received		

Field ID:	B-9-SS-0.0	Sampled:	10/11/07
Type:	SAMPLE	Prepared:	10/23/07
Lab ID:	198317-001	Analyzed:	10/24/07
Batch#:	130866	Prep:	SHAKER TABLE

Analyte	Result	RL
Diesel C10-C24	15 Y	1.0
Motor Oil C24-C36	81	5.0

Surrogate	%REC	Limits
Hexacosane	91	46-128

Field ID:	B-14-SS-0.0	Sampled:	10/08/07
Type:	SAMPLE	Prepared:	10/22/07
Lab ID:	198317-004	Analyzed:	10/23/07
Batch#:	130813	Prep:	EPA 3550B

Analyte	Result	RL
Diesel C10-C24	28 Y	1.0
Motor Oil C24-C36	140	5.0

Surrogate	%REC	Limits
Hexacosane	101	46-128

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 8015B
Project#:	379-1827-15-02		
Matrix:	Soil	Diln Fac:	1.000
Units:	mg/Kg	Received:	10/12/07
Basis:	as received		

Field ID:	B-7-SS-0.0	Sampled:	10/11/07
Type:	SAMPLE	Prepared:	10/23/07
Lab ID:	198317-005	Analyzed:	10/24/07
Batch#:	130866	Prep:	SHAKER TABLE

Analyte	Result	RL
Diesel C10-C24	28 Y	0.99
Motor Oil C24-C36	140	5.0

Surrogate	%REC	Limits
Hexacosane	85	46-128

Type:	BLANK	Prepared:	10/22/07
Lab ID:	QC411666	Analyzed:	10/23/07
Batch#:	130813	Prep:	EPA 3550B

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
Hexacosane	101	46-128

Type:	BLANK	Prepared:	10/23/07
Lab ID:	QC411906	Analyzed:	10/24/07
Batch#:	130866	Prep:	SHAKER TABLE

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
Hexacosane	92	46-128

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC411667	Batch#:	130813
Matrix:	Soil	Prepared:	10/22/07
Units:	mg/Kg	Analyzed:	10/23/07
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.95	50.99	102	55-131

Surrogate	%REC	Limits
Hexacosane	109	46-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-14-SS-0.0	Batch#:	130813
MSS Lab ID:	198317-004	Sampled:	10/08/07
Matrix:	Soil	Received:	10/12/07
Units:	mg/Kg	Prepared:	10/22/07
Basis:	as received	Analyzed:	10/23/07
Diln Fac:	1.000		

Type: MS Lab ID: QC411668

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	27.92	50.00	68.00	80	31-150

Surrogate	%REC	Limits
Hexacosane	95	46-128

Type: MSD Lab ID: QC411669

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	49.70	69.48	84	31-150	3	42

Surrogate	%REC	Limits
Hexacosane	106	46-128

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC411907	Batch#:	130866
Matrix:	Soil	Prepared:	10/23/07
Units:	mg/Kg	Analyzed:	10/25/07
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.87	38.21	77	55-131

Surrogate	%REC	Limits
Hexacosane	76	46-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	SHAKER TABLE
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130866
MSS Lab ID:	198326-001	Sampled:	10/12/07
Matrix:	Soil	Received:	10/12/07
Units:	mg/Kg	Prepared:	10/23/07
Basis:	as received	Analyzed:	10/25/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC411908

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	0.2374	49.90	36.01	72	31-150

Surrogate	%REC	Limits
Hexacosane	77	46-128

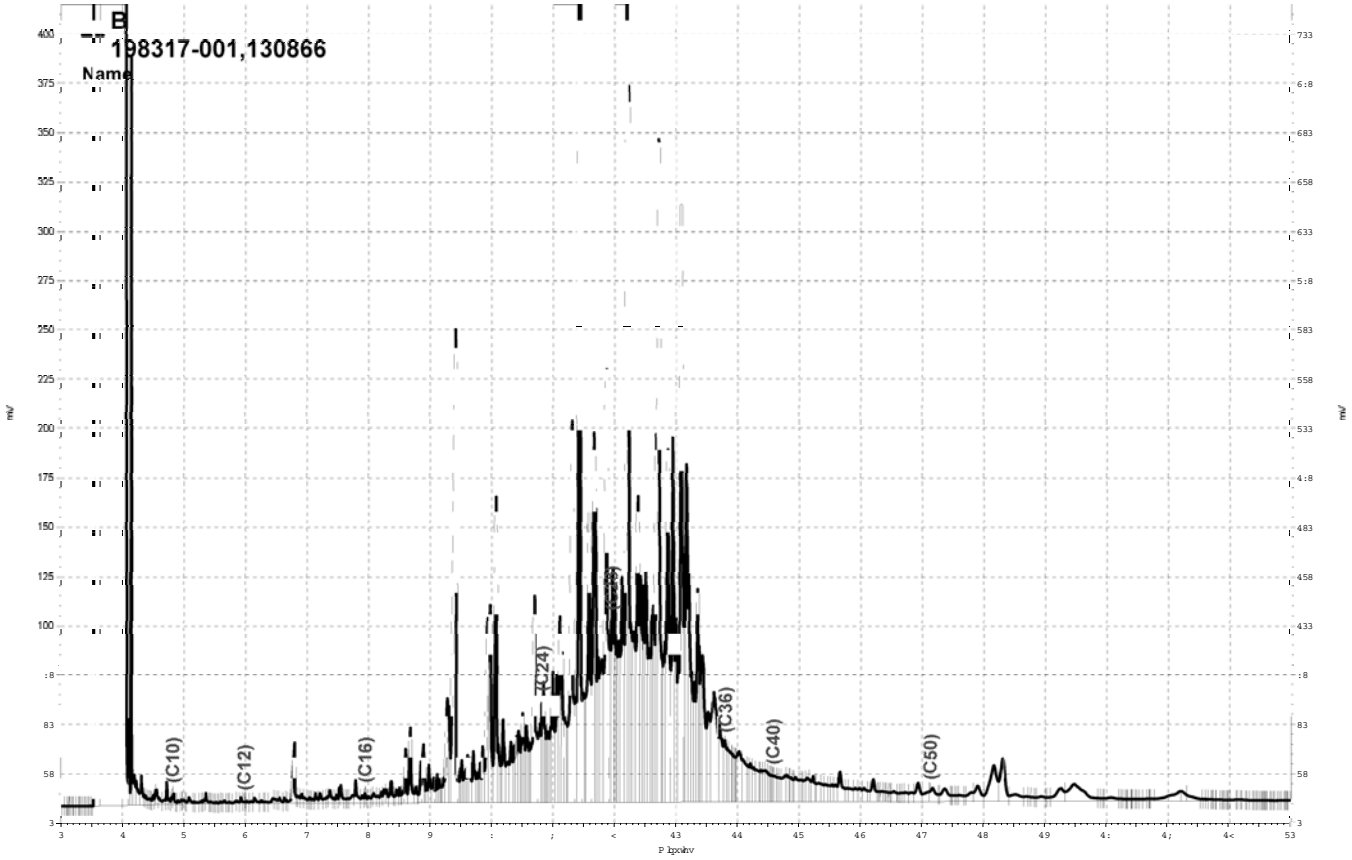
Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC411909

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	49.75	38.62	77	31-150	7	42

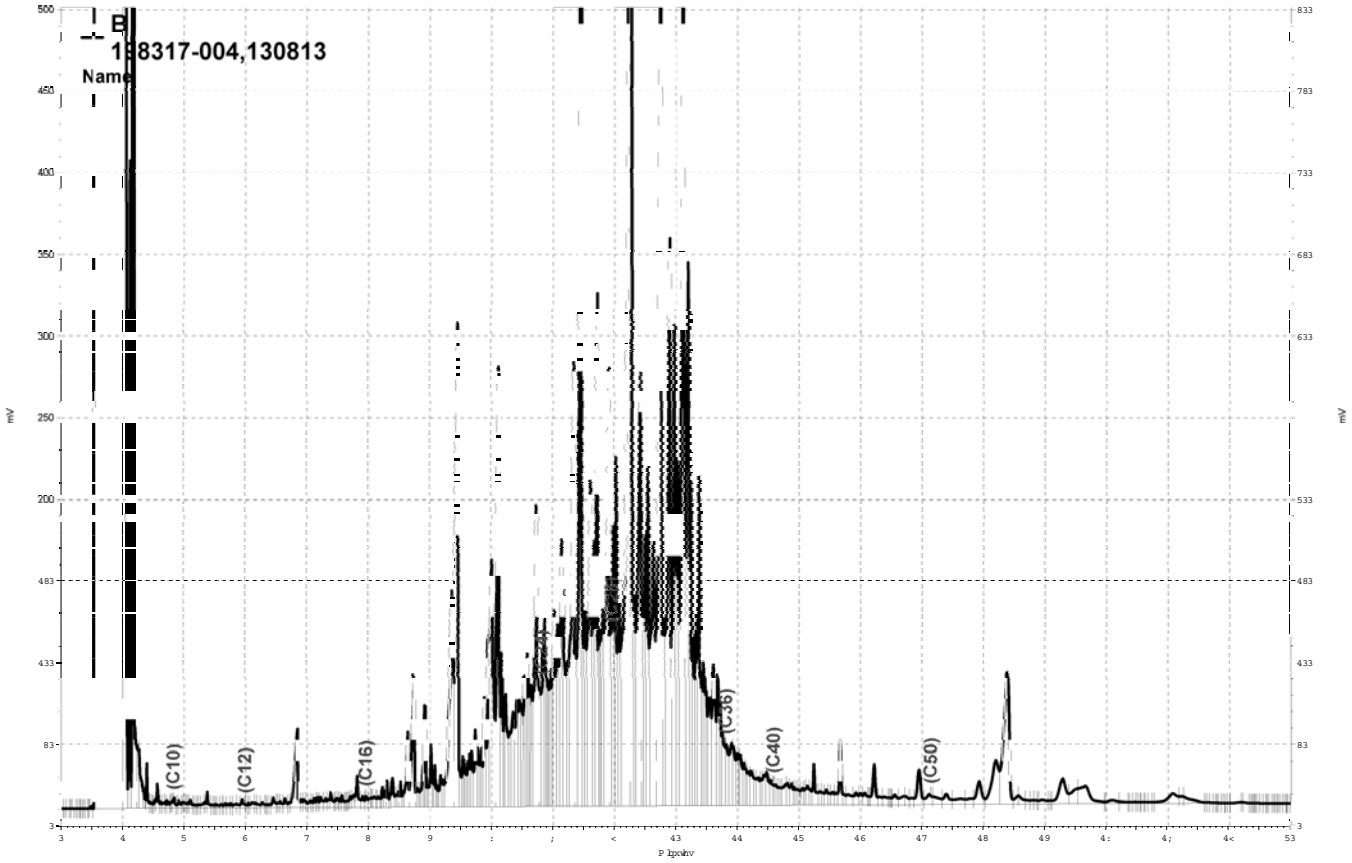
Surrogate	%REC	Limits
Hexacosane	81	46-128

RPD= Relative Percent Difference

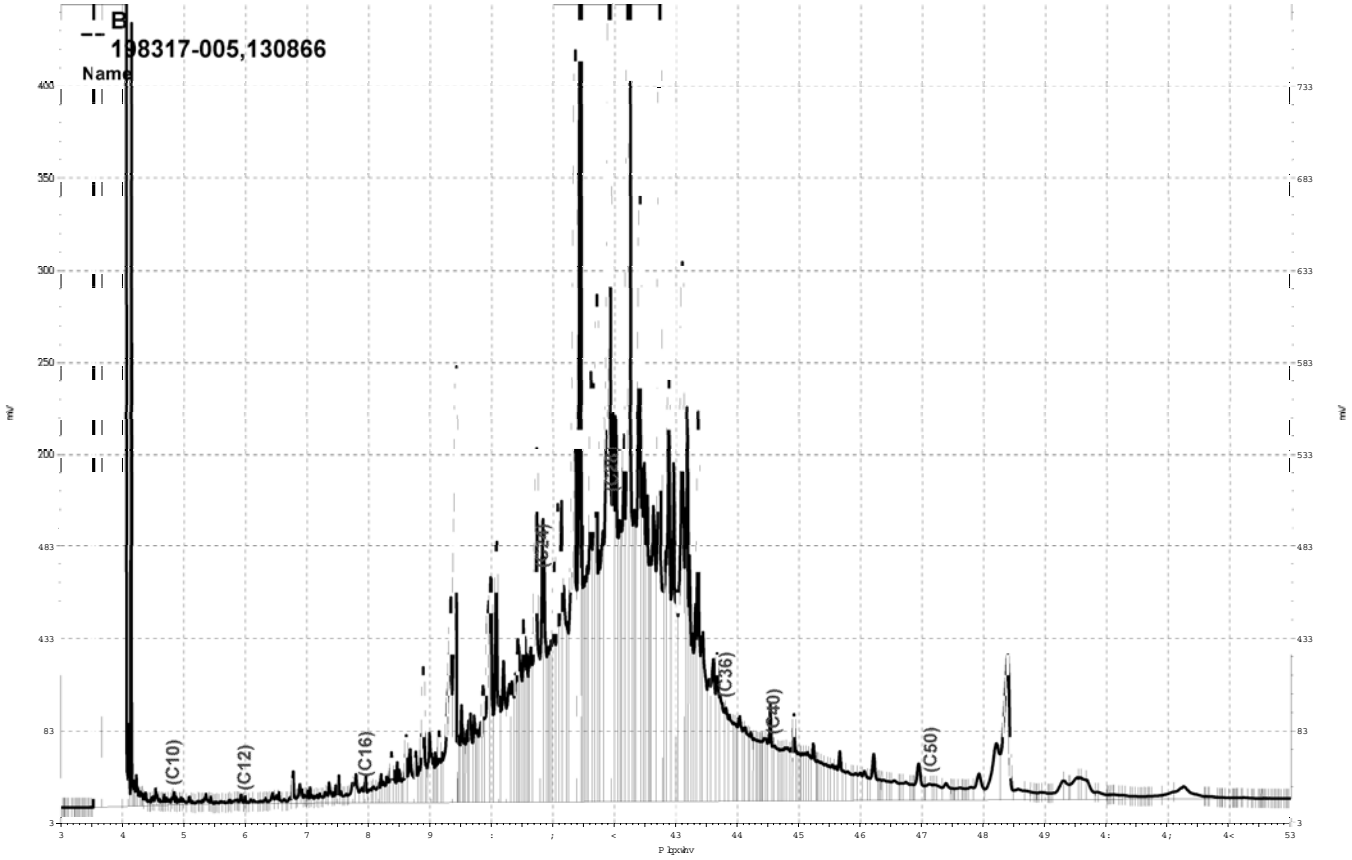
48.0



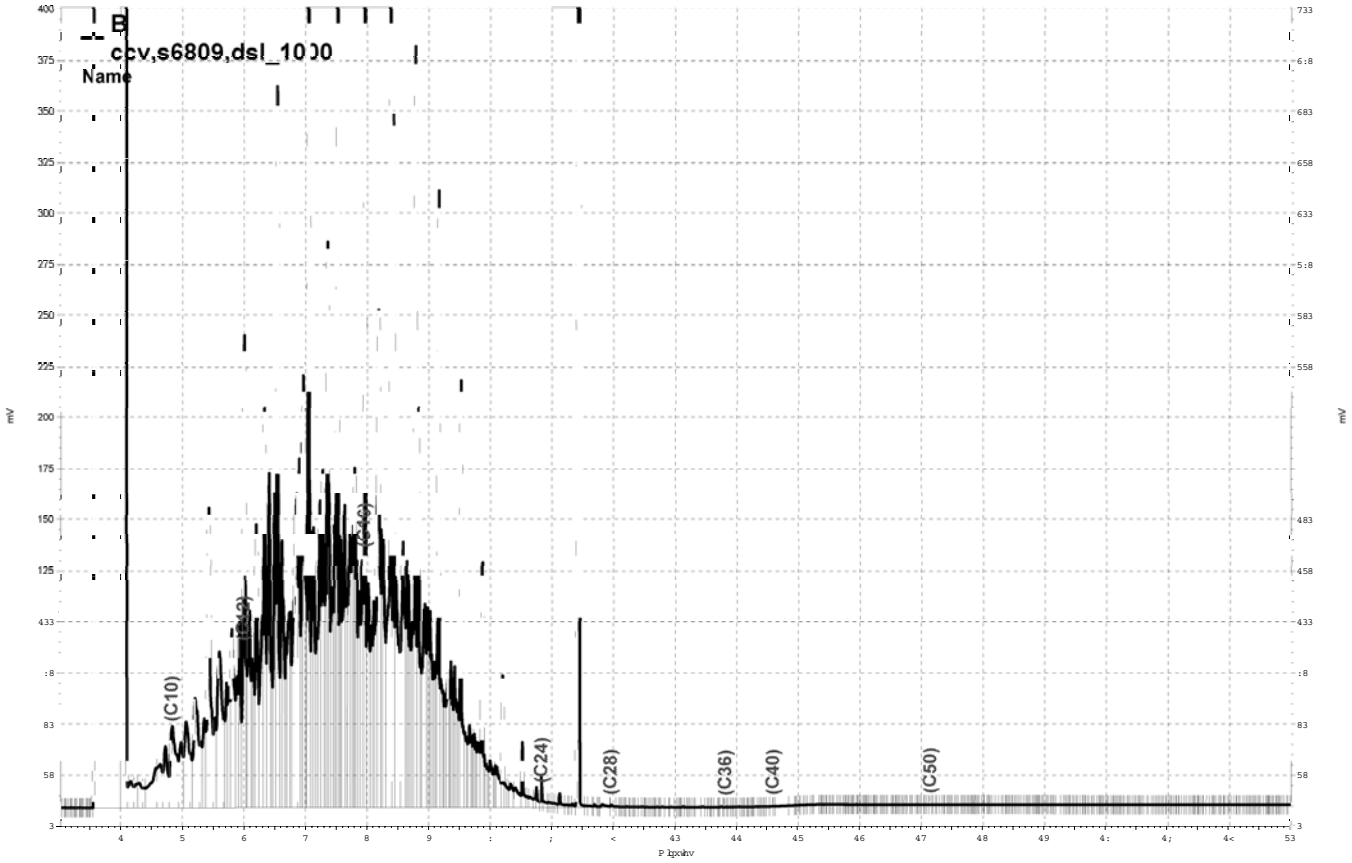
_Olp vjgulyh h}fkurp_Surmfw_JF48E_Gdwd_5<:e33:/E



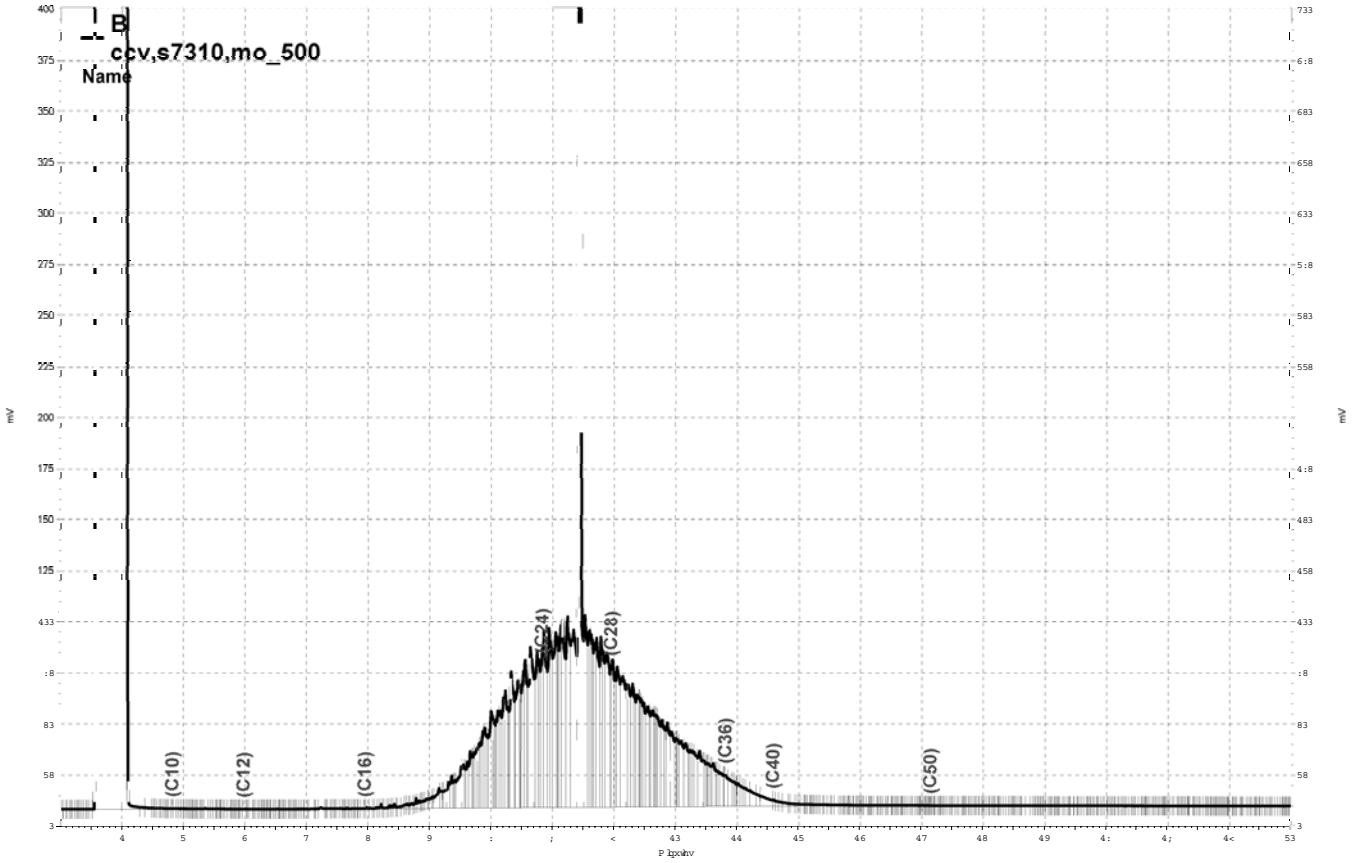
_Olpvjgulyh_h}fkurp_Surmfw_JF48E_Gdwd_5<8e367/E



_Olp vjgulyh_h}fkurp_Surmfw_JF48E_Gdwd_5<:e33;/E



_Olp vjgulyh h}fkurp _Surmfw_J F48E_Gdwd_5<8e35:/E



_Olp vjgulyh h}fkurp_Surmfw_JF48E_Gdwd_5<8e35;/E

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-9-GW-25	Batch#:	130530
Lab ID:	198317-002	Sampled:	10/11/07
Matrix:	Water	Received:	10/12/07
Units:	ug/L	Analyzed:	10/15/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-9-GW-25	Batch#:	130530
Lab ID:	198317-002	Sampled:	10/11/07
Matrix:	Water	Received:	10/12/07
Units:	ug/L	Analyzed:	10/15/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	101	74-137
Toluene-d8	94	80-120
Bromofluorobenzene	101	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-7-GW-41	Batch#:	130530
Lab ID:	198317-003	Sampled:	10/11/07
Matrix:	Water	Received:	10/12/07
Units:	ug/L	Analyzed:	10/15/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-7-GW-41	Batch#:	130530
Lab ID:	198317-003	Sampled:	10/11/07
Matrix:	Water	Received:	10/12/07
Units:	ug/L	Analyzed:	10/15/07
Diln Fac:	1.000		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-122
1,2-Dichloroethane-d4	100	74-137
Toluene-d8	97	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
RL= Reporting Limit

26.0

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC410481	Batch#:	130530
Matrix:	Water	Analyzed:	10/15/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
2-Chloroethylvinylether	ND	10
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC410481	Batch#:	130530
Matrix:	Water	Analyzed:	10/15/07
Units:	ug/L		

Analyte	Result	RL
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	0.5
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	0.5
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-122
1,2-Dichloroethane-d4	101	74-137
Toluene-d8	96	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	130530
Units:	ug/L	Analyzed:	10/15/07
Diln Fac:	1.000		

Type: BS Lab ID: QC410482

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	25.31	101	80-133
Benzene	25.00	23.31	93	80-120
Trichloroethene	25.00	25.09	100	80-120
Toluene	25.00	23.03	92	80-122
Chlorobenzene	25.00	22.92	92	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	94	74-137
Toluene-d8	94	80-120
Bromofluorobenzene	102	80-120

Type: BSD Lab ID: QC410483

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	27.06	108	80-133	7	20
Benzene	25.00	24.76	99	80-120	6	20
Trichloroethene	25.00	26.23	105	80-120	4	20
Toluene	25.00	25.30	101	80-122	9	20
Chlorobenzene	25.00	25.11	100	80-120	9	20

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	97	74-137
Toluene-d8	95	80-120
Bromofluorobenzene	106	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-9-SS-0.0	Diln Fac:	0.8772
Lab ID:	198317-001	Batch#:	130460
Matrix:	Soil	Sampled:	10/11/07
Units:	ug/Kg	Received:	10/12/07
Basis:	as received	Analyzed:	10/12/07

Analyte	Result	RL
Freon 12	ND	8.8
Chloromethane	ND	8.8
Vinyl Chloride	ND	8.8
Bromomethane	ND	8.8
Chloroethane	ND	8.8
Trichlorofluoromethane	ND	4.4
Acetone	ND	22
Freon 113	ND	4.4
1,1-Dichloroethene	ND	4.4
Methylene Chloride	ND	18
Carbon Disulfide	ND	4.4
MTBE	ND	4.4
trans-1,2-Dichloroethene	ND	4.4
Vinyl Acetate	ND	44
1,1-Dichloroethane	ND	4.4
2-Butanone	ND	8.8
cis-1,2-Dichloroethene	ND	4.4
2,2-Dichloropropane	ND	4.4
Chloroform	ND	4.4
Bromochloromethane	ND	4.4
1,1,1-Trichloroethane	ND	4.4
1,1-Dichloropropene	ND	4.4
Carbon Tetrachloride	ND	4.4
1,2-Dichloroethane	ND	4.4
Benzene	ND	4.4
Trichloroethene	ND	4.4
1,2-Dichloropropane	ND	4.4
Bromodichloromethane	ND	4.4
Dibromomethane	ND	4.4
4-Methyl-2-Pentanone	ND	8.8
cis-1,3-Dichloropropene	ND	4.4
Toluene	ND	4.4
trans-1,3-Dichloropropene	ND	4.4
1,1,2-Trichloroethane	ND	4.4
2-Hexanone	ND	8.8
1,3-Dichloropropane	ND	4.4
Tetrachloroethene	ND	4.4
Dibromochloromethane	ND	4.4
1,2-Dibromoethane	ND	4.4
Chlorobenzene	ND	4.4
1,1,1,2-Tetrachloroethane	ND	4.4
Ethylbenzene	ND	4.4
m,p-Xylenes	ND	4.4
o-Xylene	ND	4.4
Styrene	ND	4.4
Bromoform	ND	4.4
Isopropylbenzene	ND	4.4
1,1,2,2-Tetrachloroethane	ND	4.4
1,2,3-Trichloropropane	ND	4.4
Propylbenzene	ND	4.4
Bromobenzene	ND	4.4
1,3,5-Trimethylbenzene	ND	4.4
2-Chlorotoluene	ND	4.4

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-9-SS-0.0	Diln Fac:	0.8772
Lab ID:	198317-001	Batch#:	130460
Matrix:	Soil	Sampled:	10/11/07
Units:	ug/Kg	Received:	10/12/07
Basis:	as received	Analyzed:	10/12/07

Analyte	Result	RL
4-Chlorotoluene	ND	4.4
tert-Butylbenzene	ND	4.4
1,2,4-Trimethylbenzene	ND	4.4
sec-Butylbenzene	ND	4.4
para-Isopropyl Toluene	ND	4.4
1,3-Dichlorobenzene	ND	4.4
1,4-Dichlorobenzene	ND	4.4
n-Butylbenzene	ND	4.4
1,2-Dichlorobenzene	ND	4.4
1,2-Dibromo-3-Chloropropane	ND	4.4
1,2,4-Trichlorobenzene	ND	4.4
Hexachlorobutadiene	ND	4.4
Naphthalene	ND	4.4
1,2,3-Trichlorobenzene	ND	4.4

Surrogate	%REC	Limits
Dibromofluoromethane	139 *	80-124
1,2-Dichloroethane-d4	118	79-136
Toluene-d8	100	80-120
Bromofluorobenzene	91	80-122

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-14-SS-0.0	Diln Fac:	0.9091
Lab ID:	198317-004	Batch#:	130460
Matrix:	Soil	Sampled:	10/08/07
Units:	ug/Kg	Received:	10/12/07
Basis:	as received	Analyzed:	10/12/07

Analyte	Result	RL
Freon 12	ND	9.1
Chloromethane	ND	9.1
Vinyl Chloride	ND	9.1
Bromomethane	ND	9.1
Chloroethane	ND	9.1
Trichlorofluoromethane	ND	4.5
Acetone	ND	23
Freon 113	ND	4.5
1,1-Dichloroethene	ND	4.5
Methylene Chloride	ND	18
Carbon Disulfide	ND	4.5
MTBE	ND	4.5
trans-1,2-Dichloroethene	ND	4.5
Vinyl Acetate	ND	45
1,1-Dichloroethane	ND	4.5
2-Butanone	ND	9.1
cis-1,2-Dichloroethene	ND	4.5
2,2-Dichloropropane	ND	4.5
Chloroform	ND	4.5
Bromochloromethane	ND	4.5
1,1,1-Trichloroethane	ND	4.5
1,1-Dichloropropene	ND	4.5
Carbon Tetrachloride	ND	4.5
1,2-Dichloroethane	ND	4.5
Benzene	ND	4.5
Trichloroethene	ND	4.5
1,2-Dichloropropane	ND	4.5
Bromodichloromethane	ND	4.5
Dibromomethane	ND	4.5
4-Methyl-2-Pentanone	ND	9.1
cis-1,3-Dichloropropene	ND	4.5
Toluene	ND	4.5
trans-1,3-Dichloropropene	ND	4.5
1,1,2-Trichloroethane	ND	4.5
2-Hexanone	ND	9.1
1,3-Dichloropropane	ND	4.5
Tetrachloroethene	ND	4.5
Dibromochloromethane	ND	4.5
1,2-Dibromoethane	ND	4.5
Chlorobenzene	ND	4.5
1,1,1,2-Tetrachloroethane	ND	4.5
Ethylbenzene	ND	4.5
m,p-Xylenes	ND	4.5
o-Xylene	ND	4.5
Styrene	ND	4.5
Bromoform	ND	4.5
Isopropylbenzene	ND	4.5
1,1,2,2-Tetrachloroethane	ND	4.5
1,2,3-Trichloropropane	ND	4.5
Propylbenzene	ND	4.5
Bromobenzene	ND	4.5
1,3,5-Trimethylbenzene	ND	4.5
2-Chlorotoluene	ND	4.5

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-14-SS-0.0	Diln Fac:	0.9091
Lab ID:	198317-004	Batch#:	130460
Matrix:	Soil	Sampled:	10/08/07
Units:	ug/Kg	Received:	10/12/07
Basis:	as received	Analyzed:	10/12/07

Analyte	Result	RL
4-Chlorotoluene	ND	4.5
tert-Butylbenzene	ND	4.5
1,2,4-Trimethylbenzene	ND	4.5
sec-Butylbenzene	ND	4.5
para-Isopropyl Toluene	ND	4.5
1,3-Dichlorobenzene	ND	4.5
1,4-Dichlorobenzene	ND	4.5
n-Butylbenzene	ND	4.5
1,2-Dichlorobenzene	ND	4.5
1,2-Dibromo-3-Chloropropane	ND	4.5
1,2,4-Trichlorobenzene	ND	4.5
Hexachlorobutadiene	ND	4.5
Naphthalene	ND	4.5
1,2,3-Trichlorobenzene	ND	4.5

Surrogate	%REC	Limits
Dibromofluoromethane	143 *	80-124
1,2-Dichloroethane-d4	118	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	90	80-122

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-7-SS-0.0	Diln Fac:	0.9259
Lab ID:	198317-005	Batch#:	130460
Matrix:	Soil	Sampled:	10/11/07
Units:	ug/Kg	Received:	10/12/07
Basis:	as received	Analyzed:	10/12/07

Analyte	Result	RL
Freon 12	ND	9.3
Chloromethane	ND	9.3
Vinyl Chloride	ND	9.3
Bromomethane	ND	9.3
Chloroethane	ND	9.3
Trichlorofluoromethane	ND	4.6
Acetone	ND	23
Freon 113	ND	4.6
1,1-Dichloroethene	ND	4.6
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.6
MTBE	ND	4.6
trans-1,2-Dichloroethene	ND	4.6
Vinyl Acetate	ND	46
1,1-Dichloroethane	ND	4.6
2-Butanone	ND	9.3
cis-1,2-Dichloroethene	ND	4.6
2,2-Dichloropropane	ND	4.6
Chloroform	ND	4.6
Bromochloromethane	ND	4.6
1,1,1-Trichloroethane	ND	4.6
1,1-Dichloropropene	ND	4.6
Carbon Tetrachloride	ND	4.6
1,2-Dichloroethane	ND	4.6
Benzene	ND	4.6
Trichloroethene	ND	4.6
1,2-Dichloropropane	ND	4.6
Bromodichloromethane	ND	4.6
Dibromomethane	ND	4.6
4-Methyl-2-Pentanone	ND	9.3
cis-1,3-Dichloropropene	ND	4.6
Toluene	ND	4.6
trans-1,3-Dichloropropene	ND	4.6
1,1,2-Trichloroethane	ND	4.6
2-Hexanone	ND	9.3
1,3-Dichloropropane	ND	4.6
Tetrachloroethene	ND	4.6
Dibromochloromethane	ND	4.6
1,2-Dibromoethane	ND	4.6
Chlorobenzene	ND	4.6
1,1,1,2-Tetrachloroethane	ND	4.6
Ethylbenzene	ND	4.6
m,p-Xylenes	ND	4.6
o-Xylene	ND	4.6
Styrene	ND	4.6
Bromoform	ND	4.6
Isopropylbenzene	ND	4.6
1,1,2,2-Tetrachloroethane	ND	4.6
1,2,3-Trichloropropane	ND	4.6
Propylbenzene	ND	4.6
Bromobenzene	ND	4.6
1,3,5-Trimethylbenzene	ND	4.6
2-Chlorotoluene	ND	4.6

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-7-SS-0.0	Diln Fac:	0.9259
Lab ID:	198317-005	Batch#:	130460
Matrix:	Soil	Sampled:	10/11/07
Units:	ug/Kg	Received:	10/12/07
Basis:	as received	Analyzed:	10/12/07

Analyte	Result	RL
4-Chlorotoluene	ND	4.6
tert-Butylbenzene	ND	4.6
1,2,4-Trimethylbenzene	ND	4.6
sec-Butylbenzene	ND	4.6
para-Isopropyl Toluene	ND	4.6
1,3-Dichlorobenzene	ND	4.6
1,4-Dichlorobenzene	ND	4.6
n-Butylbenzene	ND	4.6
1,2-Dichlorobenzene	ND	4.6
1,2-Dibromo-3-Chloropropane	ND	4.6
1,2,4-Trichlorobenzene	ND	4.6
Hexachlorobutadiene	ND	4.6
Naphthalene	ND	4.6
1,2,3-Trichlorobenzene	ND	4.6

Surrogate	%REC	Limits
Dibromofluoromethane	146 *	80-124
1,2-Dichloroethane-d4	116	79-136
Toluene-d8	98	80-120
Bromofluorobenzene	91	80-122

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

4.0

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC410188	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130460
Units:	ug/Kg	Analyzed:	10/12/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC410188	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130460
Units:	ug/Kg	Analyzed:	10/12/07

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	116	80-124
1,2-Dichloroethane-d4	106	79-136
Toluene-d8	97	80-120
Bromofluorobenzene	94	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC410189	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130460
Units:	ug/Kg	Analyzed:	10/12/07

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	25.17	101	74-131
Benzene	25.00	26.73	107	77-121
Trichloroethene	25.00	25.46	102	77-121
Toluene	25.00	26.50	106	79-122
Chlorobenzene	25.00	26.34	105	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-124
1,2-Dichloroethane-d4	101	79-136
Toluene-d8	102	80-120
Bromofluorobenzene	93	80-122

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Diln Fac:	0.9804
MSS Lab ID:	198338-002	Batch#:	130460
Matrix:	Soil	Sampled:	10/12/07
Units:	ug/Kg	Received:	10/12/07
Basis:	as received	Analyzed:	10/12/07

Type: MS Lab ID: QC410334

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.4287	49.02	68.57	140	61-145
Benzene	<0.2988	49.02	48.28	98	57-123
Trichloroethene	3.725	49.02	89.47	175 *	52-141
Toluene	<0.4049	49.02	46.51	95	53-126
Chlorobenzene	<0.2737	49.02	42.27	86	49-121

Surrogate	%REC	Limits
Dibromofluoromethane	16 *	80-124
1,2-Dichloroethane-d4	117	79-136
Toluene-d8	107	80-120
Bromofluorobenzene	91	80-122

Type: MSD Lab ID: QC410335

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	49.02	70.56	144	61-145	3	26
Benzene	49.02	44.26	90	57-123	9	25
Trichloroethene	49.02	87.83	172 *	52-141	2	26
Toluene	49.02	42.18	86	53-126	10	27
Chlorobenzene	49.02	38.79	79	49-121	9	27

Surrogate	%REC	Limits
Dibromofluoromethane	19 *	80-124
1,2-Dichloroethane-d4	108	79-136
Toluene-d8	104	80-120
Bromofluorobenzene	91	80-122

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198317	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-9-SS-0.0	Diln Fac:	1.000
Lab ID:	198317-001	Sampled:	10/11/07
Matrix:	Soil	Received:	10/12/07
Units:	mg/Kg	Analyzed:	10/15/07
Basis:	as received		

Analyte	Result	RL	Batch#	Prepared	Prep	Analysis
Antimony	1.2	0.50	130500	10/12/07	EPA 3050B	EPA 6010B
Arsenic	5.8	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Barium	73	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Beryllium	0.35	0.10	130500	10/12/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Chromium	77	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Cobalt	18	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Copper	18	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Lead	14	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Mercury	0.39	0.020	130532	10/15/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Nickel	94	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Selenium	1.8	0.50	130500	10/12/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130500	10/12/07	EPA 3050B	EPA 6010B
Vanadium	45	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Zinc	30	1.0	130500	10/12/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

15.0

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198317	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-14-SS-0.0	Diln Fac:	1.000
Lab ID:	198317-004	Sampled:	10/08/07
Matrix:	Soil	Received:	10/12/07
Units:	mg/Kg	Analyzed:	10/15/07
Basis:	as received		

Analyte	Result	RL	Batch#	Prepared	Prep	Analysis
Antimony	1.6	0.50	130500	10/12/07	EPA 3050B	EPA 6010B
Arsenic	5.1	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Barium	140	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Beryllium	0.41	0.10	130500	10/12/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Chromium	100	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Cobalt	19	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Copper	28	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Lead	6.4	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Mercury	0.18	0.020	130532	10/15/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Nickel	200	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Selenium	1.0	0.50	130500	10/12/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130500	10/12/07	EPA 3050B	EPA 6010B
Vanadium	49	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Zinc	47	1.0	130500	10/12/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198317	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-7-SS-0.0	Diln Fac:	1.000
Lab ID:	198317-005	Sampled:	10/11/07
Matrix:	Soil	Received:	10/12/07
Units:	mg/Kg	Analyzed:	10/15/07
Basis:	as received		

Analyte	Result	RL	Batch#	Prepared	Prep	Analysis
Antimony	1.4	0.50	130500	10/12/07	EPA 3050B	EPA 6010B
Arsenic	6.8	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Barium	200	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Beryllium	0.45	0.10	130500	10/12/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Chromium	40	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Cobalt	12	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Copper	42	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Lead	10	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Mercury	0.21	0.020	130532	10/15/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Nickel	61	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Selenium	1.8	0.50	130500	10/12/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130500	10/12/07	EPA 3050B	EPA 6010B
Vanadium	45	0.25	130500	10/12/07	EPA 3050B	EPA 6010B
Zinc	120	1.0	130500	10/12/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

17.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC410351	Batch#:	130500
Matrix:	Soil	Prepared:	10/12/07
Units:	mg/Kg	Analyzed:	10/15/07
Basis:	as received		

Analyte	Result	RL
Antimony	ND	0.50
Arsenic	ND	0.25
Barium	ND	0.25
Beryllium	ND	0.10
Cadmium	ND	0.25
Chromium	ND	0.25
Cobalt	ND	0.25
Copper	ND	0.25
Lead	ND	0.25
Molybdenum	ND	0.25
Nickel	ND	0.25
Selenium	ND	0.50
Silver	ND	0.25
Thallium	ND	0.50
Vanadium	ND	0.25
Zinc	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	130500
Units:	mg/Kg	Prepared:	10/12/07
Basis:	as received	Analyzed:	10/15/07
Diln Fac:	1.000		

Type: BS Lab ID: QC410352

Analyte	Spiked	Result	%REC	Limits
Antimony	100.0	94.98	95	80-120
Arsenic	50.00	50.03	100	80-120
Barium	100.0	96.35	96	80-120
Beryllium	2.500	2.474	99	80-120
Cadmium	10.00	9.921	99	80-120
Chromium	100.0	93.79	94	80-120
Cobalt	25.00	23.11	92	80-120
Copper	12.50	11.49	92	80-120
Lead	100.0	94.47	94	80-120
Molybdenum	20.00	19.25	96	80-120
Nickel	25.00	23.40	94	80-120
Selenium	50.00	49.01	98	80-120
Silver	10.00	8.980	90	80-120
Thallium	50.00	46.70	93	80-120
Vanadium	25.00	23.39	94	80-120
Zinc	25.00	23.77	95	80-120

Type: BSD Lab ID: QC410353

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	100.0	94.66	95	80-120	0	20
Arsenic	50.00	49.68	99	80-120	1	20
Barium	100.0	95.32	95	80-120	1	20
Beryllium	2.500	2.430	97	80-120	2	20
Cadmium	10.00	9.776	98	80-120	1	20
Chromium	100.0	92.29	92	80-120	2	20
Cobalt	25.00	22.72	91	80-120	2	20
Copper	12.50	11.36	91	80-120	1	20
Lead	100.0	93.00	93	80-120	2	20
Molybdenum	20.00	19.17	96	80-120	0	20
Nickel	25.00	23.08	92	80-120	1	20
Selenium	50.00	48.42	97	80-120	1	20
Silver	10.00	8.791	88	80-120	2	20
Thallium	50.00	46.31	93	80-120	1	20
Vanadium	25.00	23.14	93	80-120	1	20
Zinc	25.00	23.21	93	80-120	2	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130500
MSS Lab ID:	198322-002	Sampled:	10/11/07
Matrix:	Soil	Received:	10/12/07
Units:	mg/Kg	Prepared:	10/12/07
Basis:	as received	Analyzed:	10/15/07
Diln Fac:	1.000		

Type: MS Lab ID: QC410354

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	1.352	93.46	40.57	42	1-122
Arsenic	22.61	46.73	61.39	83	72-120
Barium	35.51	93.46	115.8	86	49-139
Beryllium	0.4424	2.336	2.517	89	80-120
Cadmium	0.1353	9.346	8.051	85	74-120
Chromium	47.33	93.46	122.4	80	65-120
Cobalt	8.656	23.36	29.58	90	60-120
Copper	37.14	11.68	47.97	93	47-146
Lead	16.91	93.46	90.70	79	53-123
Molybdenum	0.1949	18.69	14.75	78	66-120
Nickel	46.31	23.36	64.49	78	43-142
Selenium	2.213	46.73	41.64	84	71-120
Silver	0.1486	9.346	7.916	83	66-120
Thallium	0.08405	46.73	35.49	76	62-120
Vanadium	54.00	23.36	71.59	75	52-139
Zinc	75.47	23.36	95.24	85	42-147

Type: MSD Lab ID: QC410355

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	98.04	41.98	41	1-122	1	30
Arsenic	49.02	70.65	98	72-120	11	20
Barium	98.04	120.3	87	49-139	0	23
Beryllium	2.451	2.564	87	80-120	2	20
Cadmium	9.804	8.616	87	74-120	2	20
Chromium	98.04	127.5	82	65-120	1	20
Cobalt	24.51	28.47	81	60-120	7	24
Copper	12.25	40.20	25 *	47-146	19	21
Lead	98.04	93.06	78	53-123	1	28
Molybdenum	19.61	15.72	79	66-120	2	20
Nickel	24.51	65.76	79	43-142	0	26
Selenium	49.02	44.01	85	71-120	1	20
Silver	9.804	8.407	84	66-120	1	20
Thallium	49.02	37.62	77	62-120	1	20
Vanadium	24.51	74.55	84	52-139	3	20
Zinc	24.51	93.54	74	42-147	3	27

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC410486	Batch#:	130532
Matrix:	Soil	Prepared:	10/15/07
Units:	mg/Kg	Analyzed:	10/15/07

Result	RL
ND	0.020

ND= Not Detected
RL= Reporting Limit

19.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130532
Units:	mg/Kg	Prepared:	10/15/07
Basis:	as received	Analyzed:	10/15/07

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC410487	0.5000	0.5090	102	80-120		
BSD	QC410488	0.5000	0.5090	102	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	130532
MSS Lab ID:	198315-001	Sampled:	10/12/07
Matrix:	Soil	Received:	10/12/07
Units:	mg/Kg	Prepared:	10/15/07
Basis:	as received	Analyzed:	10/15/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC410490	0.05662	0.4237	0.5059	106	70-143		
MSD	QC410491		0.3731	0.4299	100	70-143	5	22

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	2.000
Field ID:	ZZZZZZZZZZ	Batch#:	130532
MSS Lab ID:	198322-002	Sampled:	10/11/07
Matrix:	Soil	Received:	10/12/07
Units:	mg/Kg	Prepared:	10/15/07
Basis:	as received	Analyzed:	10/15/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC410493	0.6085	0.5000	1.040	86	70-143		
MSD	QC410494		0.4167	1.008	96	70-143	5	22

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	198317	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-9-GW-25	Diln Fac:	1.000
Lab ID:	198317-002	Sampled:	10/11/07
Matrix:	Filtrate	Received:	10/12/07
Units:	ug/L		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	10	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Arsenic	ND	6.1	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Barium	61	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Copper	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Lead	ND	3.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130568	10/16/07	10/16/07	METHOD	EPA 7470A
Molybdenum	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Selenium	ND	10	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Silver	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Thallium	ND	10	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Zinc	ND	20	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

35.0

Curtis & Tompkins, Ltd.

Dissolved California Title 26 Metals

Lab #:	198317	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-7-GW-41	Diln Fac:	1.000
Lab ID:	198317-003	Sampled:	10/11/07
Matrix:	Filtrate	Received:	10/12/07
Units:	ug/L		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	10	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Arsenic	ND	6.1	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Barium	51	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Copper	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Lead	ND	3.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130568	10/16/07	10/16/07	METHOD	EPA 7470A
Molybdenum	170	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Selenium	ND	10	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Silver	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Thallium	ND	10	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B
Zinc	ND	20	130536	10/15/07	10/15/07	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

36.0

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC410504	Batch#:	130536
Matrix:	Filtrate	Prepared:	10/15/07
Units:	ug/L	Analyzed:	10/15/07

Analyte	Result	RL
Antimony	ND	10
Arsenic	ND	6.1
Barium	ND	5.0
Beryllium	ND	2.0
Cadmium	ND	5.0
Chromium	ND	5.0
Cobalt	ND	5.0
Copper	ND	5.0
Lead	ND	3.0
Molybdenum	ND	5.0
Nickel	ND	5.0
Selenium	ND	10
Silver	ND	5.0
Thallium	ND	10
Vanadium	ND	5.0
Zinc	ND	20

ND= Not Detected
RL= Reporting Limit

41.0

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Filtrate	Batch#:	130536
Units:	ug/L	Prepared:	10/15/07
Diln Fac:	1.000	Analyzed:	10/15/07

Type: BS Lab ID: QC410505

Analyte	Spiked	Result	%REC	Limits
Antimony	500.0	475.5	95	80-120
Arsenic	100.0	104.7	105	80-120
Barium	2,000	1,984	99	80-120
Beryllium	50.00	53.30	107	80-120
Cadmium	50.00	52.82	106	80-120
Chromium	200.0	200.8	100	80-120
Cobalt	500.0	507.4	101	80-120
Copper	250.0	249.4	100	80-120
Lead	100.0	94.22	94	80-120
Molybdenum	400.0	394.5	99	80-120
Nickel	500.0	512.5	103	80-120
Selenium	100.0	102.6	103	80-120
Silver	50.00	49.18	98	80-120
Thallium	100.0	102.8	103	80-120
Vanadium	500.0	500.0	100	80-120
Zinc	500.0	532.6	107	80-120

Type: BSD Lab ID: QC410506

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	483.4	97	80-120	2	20
Arsenic	100.0	103.6	104	80-120	1	20
Barium	2,000	2,022	101	80-120	2	20
Beryllium	50.00	53.30	107	80-120	0	20
Cadmium	50.00	52.03	104	80-120	2	20
Chromium	200.0	201.0	101	80-120	0	20
Cobalt	500.0	505.2	101	80-120	0	20
Copper	250.0	247.3	99	80-120	1	20
Lead	100.0	93.72	94	80-120	1	20
Molybdenum	400.0	401.6	100	80-120	2	20
Nickel	500.0	510.3	102	80-120	0	20
Selenium	100.0	101.6	102	80-120	1	20
Silver	50.00	49.24	98	80-120	0	20
Thallium	100.0	101.1	101	80-120	2	20
Vanadium	500.0	498.7	100	80-120	0	20
Zinc	500.0	527.3	105	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130536
MSS Lab ID:	198302-001	Sampled:	10/10/07
Matrix:	Filtrate	Received:	10/11/07
Units:	ug/L	Prepared:	10/15/07
Diln Fac:	1.000	Analyzed:	10/15/07

Type: MS Lab ID: QC410507

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	4.032	500.0	493.4	98	80-120
Arsenic	<2.042	100.0	97.28	97	80-127
Barium	180.0	2,000	2,192	101	80-120
Beryllium	0.04621	50.00	55.38	111	80-120
Cadmium	0.5448	50.00	53.09	105	80-120
Chromium	0.9431	200.0	202.2	101	80-120
Cobalt	<0.3034	500.0	501.2	100	80-120
Copper	<0.8535	250.0	260.3	104	80-120
Lead	<0.6892	100.0	94.98	95	76-120
Molybdenum	0.9750	400.0	406.5	101	80-120
Nickel	0.7170	500.0	504.9	101	80-120
Selenium	<1.469	100.0	104.1	104	80-128
Silver	<0.7459	50.00	50.82	102	73-122
Thallium	1.823	100.0	101.3	99	78-120
Vanadium	<1.034	500.0	508.4	102	80-120
Zinc	7.894	500.0	537.1	106	80-123

Type: MSD Lab ID: QC410508

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	487.5	97	80-120	1	20
Arsenic	100.0	93.05	93	80-127	4	20
Barium	2,000	2,143	98	80-120	2	20
Beryllium	50.00	53.51	107	80-120	3	20
Cadmium	50.00	51.54	102	80-120	3	20
Chromium	200.0	196.5	98	80-120	3	20
Cobalt	500.0	485.7	97	80-120	3	20
Copper	250.0	251.4	101	80-120	3	20
Lead	100.0	93.63	94	76-120	1	20
Molybdenum	400.0	397.1	99	80-120	2	20
Nickel	500.0	489.5	98	80-120	3	20
Selenium	100.0	100.7	101	80-128	3	20
Silver	50.00	49.22	98	73-122	3	20
Thallium	100.0	99.93	98	78-120	1	20
Vanadium	500.0	492.9	99	80-120	3	20
Zinc	500.0	521.6	103	80-123	3	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	130568
Lab ID:	QC410640	Prepared:	10/16/07
Matrix:	Filtrate	Analyzed:	10/16/07
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

37.0

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130568
Matrix:	Filtrate	Prepared:	10/16/07
Units:	ug/L	Analyzed:	10/16/07
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC410641	5.000	4.980	100	80-120		
BSD	QC410642	5.000	4.920	98	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130568
Field ID:	ZZZZZZZZZZ	Sampled:	10/10/07
MSS Lab ID:	198285-008	Received:	10/11/07
Matrix:	Filtrate	Prepared:	10/16/07
Units:	ug/L	Analyzed:	10/16/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC410644	<0.04502	5.000	5.260	105	79-125		
MSD	QC410645		5.000	5.130	103	79-125	3	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved California Title 26 Metals

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130568
Field ID:	ZZZZZZZZZZ	Sampled:	10/08/07
MSS Lab ID:	198183-003	Received:	10/08/07
Matrix:	Filtrate	Prepared:	10/16/07
Units:	ug/L	Analyzed:	10/16/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC410647	0.1740	5.000	5.610	109	79-125		
MSD	QC410648		5.000	5.520	107	79-125	2	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Batch#:	130485
Matrix:	Water	Received:	10/12/07
Units:	mg/L		

Field ID	Type	Lab ID	Result	RL	Diln Fac	Sampled	Analyzed
B-9-GW-25	SAMPLE	198317-002	7.8	0.25	5.000	10/11/07 11:15	10/12/07 22:17
B-7-GW-41	SAMPLE	198317-003	ND	0.05	1.000	10/11/07 12:00	10/12/07 18:14
	BLANK	QC410304	ND	0.05	1.000		10/12/07 12:50

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198317	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	ZZZZZZZZZZ	Batch#:	130485
MSS Lab ID:	198294-007	Sampled:	10/11/07 09:33
Matrix:	Water	Received:	10/11/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC410305		1.000	1.013	101	80-120			1.000	10/13/07 00:18
BSD	QC410306		1.000	0.9591	96	80-120	5	20	1.000	10/13/07 00:36
MS	QC410323	<0.2338	500.0	521.5	104	80-120			1,000	10/13/07 00:53
MSD	QC410324		500.0	486.0	97	80-120	7	20	1,000	10/13/07 01:11

RPD= Relative Percent Difference

198317

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

Chain of Custody Record

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 10/12/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier: n/a
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☐ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15 – K
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

	Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	Filtered Sample	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
-1	B-9-SS-0.0	10/11/07		G	SO	1		✓	✓	✓	✓		✓		
-2	B-9-GW-25	10/11/07	11:15	VOA	GW	3		✓							
		↓	↓	VOA	GW	3					✓				
				1L amber	GW	2				✓					
				750ml poly	GW	1	✓		✓						
		↓	↓	500ml poly	GW	1						✓			
-3	B-7-GW-41	10/11/07	12:00	VOA	GW	6		✓			✓				
		↓	↓	1L amber	GW	2				✓					
				750ml poly	GW	1	✓		✓						
		↓	↓	500ml poly	GW	1						✓			
-4	B-14-SS-0.0	10/8/07		G	SO	1		✓	✓	✓	✓		✓		
-5	B-7-SS-0.0	10/11/07		G		1		✓	✓	✓	✓		✓		
KMW 10/12/07 -6	Trip Blank	10/11/07		VOA	AQ	1									

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Robert K. [illegible]	Weiss Associates	10/12/07 13:10	Anne Kat[illegible]	C&T	10/12/07 1310

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 198317 Date Received: 10/12 Number of Coolers: 1
Client: Weiss Associates Project: Cloverdale Project

A. Preliminary Examination Phase
Date Opened: 10/12 By (print): Ken Wong (sign) [signature]

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES NO
   If YES, enter carrier name and airbill number: _____
2. Were custody seals on outside of cooler? ..... YES NO
   How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO NA
4. Were custody papers dry and intact when received? ..... YES NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... YES NO
6. Did you sign the custody papers in the appropriate place? ..... YES NO
7. Was project identifiable from custody papers? ..... YES NO
   If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bottles in ice
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... YES NO
   Type of ice: wet Temperature: 11°C
10. Were Encore sampling devices present in the cooler? ..... YES NO
    If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10/12 By (print): K Wellbrock (sign) [signature]

1. Did all bottles arrive unbroken? ..... YES NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... YES NO
3. Did bottle labels agree with custody papers? ..... * YES NO
4. Were appropriate containers used for the tests indicated? ..... YES NO
5. Were correct preservatives added to samples? ..... * YES NO
6. Was sufficient amount of sample sent for tests indicated? ..... YES NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below ..... YES NO
8. Was the client contacted concerning this sample delivery? ..... YES NO
   If YES, give details below.
   Who was called? _____ By whom? _____ Date: _____

Additional Comments:
B3: COC mentions trip blank - none sent; extra soil sent, added to job on hold
B5: Added HNO3 to Metals filtrate of ~~B9~~-GW-25 ↳ B-7-SS-47 10/9/07 1700

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates 5801 Christie Avenue Emeryville, CA 94608	Project : 379-1827-15-02 Location : Cloverdale Project Level : II

Sample ID	Lab ID
B-16-GW-45'	198519-001
B-8A-GW-70'	198519-002
B-9-GW-30.8'	198519-003
TRIP BLANK	198519-004
B-12-SS-0.0'-NORTH 2.5	198519-005
B-12-SS-0.0'-NORTH 5.0	198519-006
B-12-SS-0.0'-SOUTH 2.5	198519-007
B-12-SS-0.0'-SOUTH 5.0	198519-008
B-12-SS-0.0'-EAST 2.5	198519-009
B-12-SS-0.0'-EAST 5.0	198519-010
B-12-SS-0.0'-WEST 2.5	198519-011
B-12-SS-0.0'-WEST 5.0	198519-012
B-4-GW-2.5'	198519-013
B-16-SS-0.0'	198519-014
B-16-SS-55'	198519-015

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 11/15/2007
Project Manager

Signature: _____ Date: 11/15/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198519**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/18/07**
Samples Received:	**10/18/07**

This hardcopy data package contains sample and QC results for ten soil samples and four water samples, requested for the above referenced project on 10/18/07. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:
High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the MS/MSD for batch 130720; the parent sample was not a project sample. B-8A-GW-70' (lab # 198519-002) had pH greater than 2. No other analytical problems were encountered.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:
High surrogate recovery was observed for trifluorotoluene (FID) in the MSD for batch 130787; the corresponding bromofluorobenzene (FID) surrogate recovery was within limits, and the parent sample was not a project sample. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Water:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Soil:
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Water:
B-8A-GW-70' (lab # 198519-002) had pH greater than 2. No other analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Soil:
Low recovery was observed for chlorobenzene in the MSD of B-16-SS-55' (lab # 198519-015); the BS/BSD were within limits, and the associated RPD was within limits. High surrogate recovery was observed for bromofluorobenzene in B-16-SS-0.0' (lab # 198519-014); no target analytes were detected in the sample. No other analytical problems were encountered.

Pesticides (EPA 8081A):
No analytical problems were encountered.

Polychlorinated Biphenyls (PCBs) (EPA 8082):
No analytical problems were encountered.

Metals (EPA 6010B and EPA 7470A) Water:
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198519**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/18/07**
Samples Received:	**10/18/07**

Metals (EPA 6010B and EPA 7471A) Soil:
Low recoveries were observed for many analytes in the MS/MSD of B-16-SS-0.0' (lab # 198519-014); the BS/BSD were within limits. High RPD was observed for copper; the RPD was acceptable in the BS/BSD. No other analytical problems were encountered.

Ion Chromatography (EPA 300.0) Water:
No analytical problems were encountered.

Ion Chromatography (EPA 300.0) Soil:
No analytical problems were encountered.

Asbestos PLM (EPA 600/R-93-116):
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130720
Units:	ug/L	Sampled:	10/17/07
Diln Fac:	1.000	Received:	10/18/07

Field ID:	B-16-GW-45'	Lab ID:	198519-001
Type:	SAMPLE	Analyzed:	10/20/07

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	112	73-134
Bromofluorobenzene (FID)	106	77-140

Field ID:	B-8A-GW-70'	Lab ID:	198519-002
Type:	SAMPLE	Analyzed:	10/20/07

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	114	73-134
Bromofluorobenzene (FID)	105	77-140

Field ID:	B-9-GW-30.8'	Lab ID:	198519-003
Type:	SAMPLE	Analyzed:	10/20/07

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	111	73-134
Bromofluorobenzene (FID)	101	77-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	130720
Units:	ug/L	Sampled:	10/17/07
Diln Fac:	1.000	Received:	10/18/07

Field ID:	B-4-GW-2.5'	Lab ID:	198519-013
Type:	SAMPLE	Analyzed:	10/20/07

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	109	73-134
Bromofluorobenzene (FID)	102	77-140

Type:	BLANK	Analyzed:	10/19/07
Lab ID:	QC411293		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	73-134
Bromofluorobenzene (FID)	89	77-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC411295	Batch#:	130720
Matrix:	Water	Analyzed:	10/19/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	879.0	88	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	114	73-134
Bromofluorobenzene (FID)	113	77-140

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130720
MSS Lab ID:	198508-001	Sampled:	10/15/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Analyzed:	10/20/07
Diln Fac:	1.000		

Type: MS Lab ID: QC411296

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	39.71	2,000	1,921	94	72-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	147 *	73-134
Bromofluorobenzene (FID)	148 *	77-140

Type: MSD Lab ID: QC411297

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,894	93	72-120	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	142 *	73-134
Bromofluorobenzene (FID)	141 *	77-140

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Diln Fac:	1.000
Units:	mg/Kg	Received:	10/18/07
Basis:	as received		

Field ID:	B-16-SS-0.0'	Batch#:	130723
Type:	SAMPLE	Sampled:	10/16/07
Lab ID:	198519-014	Analyzed:	10/19/07

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	94	71-132
Bromofluorobenzene (FID)	84	69-145

Field ID:	B-16-SS-55'	Batch#:	130787
Type:	SAMPLE	Sampled:	10/17/07
Lab ID:	198519-015	Analyzed:	10/22/07

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	90	71-132
Bromofluorobenzene (FID)	75	69-145

Type:	BLANK	Batch#:	130723
Lab ID:	QC411305	Analyzed:	10/19/07

Analyte	Result	RL
Gasoline C7-C12	ND	0.20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	91	71-132
Bromofluorobenzene (FID)	83	69-145

Type:	BLANK	Batch#:	130787
Lab ID:	QC411551	Analyzed:	10/22/07

Analyte	Result	RL
Gasoline C7-C12	ND	0.20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	94	71-132
Bromofluorobenzene (FID)	90	69-145

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC411307	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130723
Units:	mg/Kg	Analyzed:	10/19/07

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1.000	0.9188	92	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	71-132
Bromofluorobenzene (FID)	91	69-145

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	198507-001	Batch#:	130723
Matrix:	Soil	Sampled:	10/16/07
Units:	mg/Kg	Received:	10/18/07
Basis:	as received	Analyzed:	10/19/07

Type: MS Lab ID: QC411308

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.1014	9.901	7.967	79	43-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	113	71-132
Bromofluorobenzene (FID)	107	69-145

Type: MSD Lab ID: QC411309

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.20	7.676	74	43-120	7	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	109	71-132
Bromofluorobenzene (FID)	100	69-145

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC411552	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130787
Units:	mg/Kg	Analyzed:	10/22/07

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	5.000	4.595	92	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	114	71-132
Bromofluorobenzene (FID)	93	69-145

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	198548-013	Batch#:	130787
Matrix:	Soil	Sampled:	10/18/07
Units:	mg/Kg	Received:	10/19/07
Basis:	as received	Analyzed:	10/22/07

Type: MS Lab ID: QC411553

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.2089	9.709	7.534	75	43-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	125	71-132
Bromofluorobenzene (FID)	97	69-145

Type: MSD Lab ID: QC411554

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	9.804	8.358	83	43-120	9	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	133 *	71-132
Bromofluorobenzene (FID)	102	69-145

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	10/17/07
Units:	ug/L	Received:	10/18/07
Diln Fac:	1.000	Prepared:	10/24/07
Batch#:	130895		

Field ID: B-16-GW-45' Lab ID: 198519-001
Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL	MDL	Analyzed
Diesel C10-C24	390 Y	50		10/25/07
Diesel C10-C24 (SGCU)	ND	50		11/01/07
Motor Oil C24-C36	220 J	300	56	10/25/07
Motor Oil C24-C36 (SGCU)	ND	300	130	11/01/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	94	61-133	10/25/07
Hexacosane (SGCU)	94	61-133	11/01/07

Field ID: B-8A-GW-70' Lab ID: 198519-002
Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL	MDL	Analyzed
Diesel C10-C24	350 Y	50		10/25/07
Diesel C10-C24 (SGCU)	170 Y	50		11/02/07
Motor Oil C24-C36	170 J	300	85	10/25/07
Motor Oil C24-C36 (SGCU)	ND	300	130	11/02/07

Surrogate	%REC	Limits	Analyzed
Hexacosane	99	61-133	10/25/07
Hexacosane (SGCU)	78	61-133	11/02/07

Field ID: B-9-GW-30.8' Lab ID: 198519-003
Type: SAMPLE Analyzed: 10/25/07

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	ND	300	64

Surrogate	%REC	Limits
Hexacosane	114	61-133

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	10/17/07
Units:	ug/L	Received:	10/18/07
Diln Fac:	1.000	Prepared:	10/24/07
Batch#:	130895		

Field ID:	B-4-GW-2.5'	Lab ID:	198519-013
Type:	SAMPLE	Analyzed:	10/25/07

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	81 J	300	64

Surrogate	%REC	Limits
Hexacosane	117	61-133

Type:	BLANK	Analyzed:	10/25/07
Lab ID:	QC412019	Cleanup Method:	EPA 3630C

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Diesel C10-C24 (SGCU)	ND	50	
Motor Oil C24-C36	ND	300	64
Motor Oil C24-C36 (SGCU)	ND	300	64

Surrogate	%REC	Limits
Hexacosane	120	61-133
Hexacosane (SGCU)	100	61-133

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

64.3

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC412020	Batch#:	130895
Matrix:	Water	Prepared:	10/24/07
Units:	ug/L	Analyzed:	10/25/07

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	2,500	2,162	86	58-128

Surrogate	%REC	Limits
Hexacosane (SGCU)	93	61-133

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130895
MSS Lab ID:	198501-001	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Prepared:	10/24/07
Diln Fac:	1.000	Analyzed:	10/25/07

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC412021

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	<15.44	2,500	2,058	82	58-129

Surrogate	%REC	Limits
Hexacosane (SGCU)	110	61-133

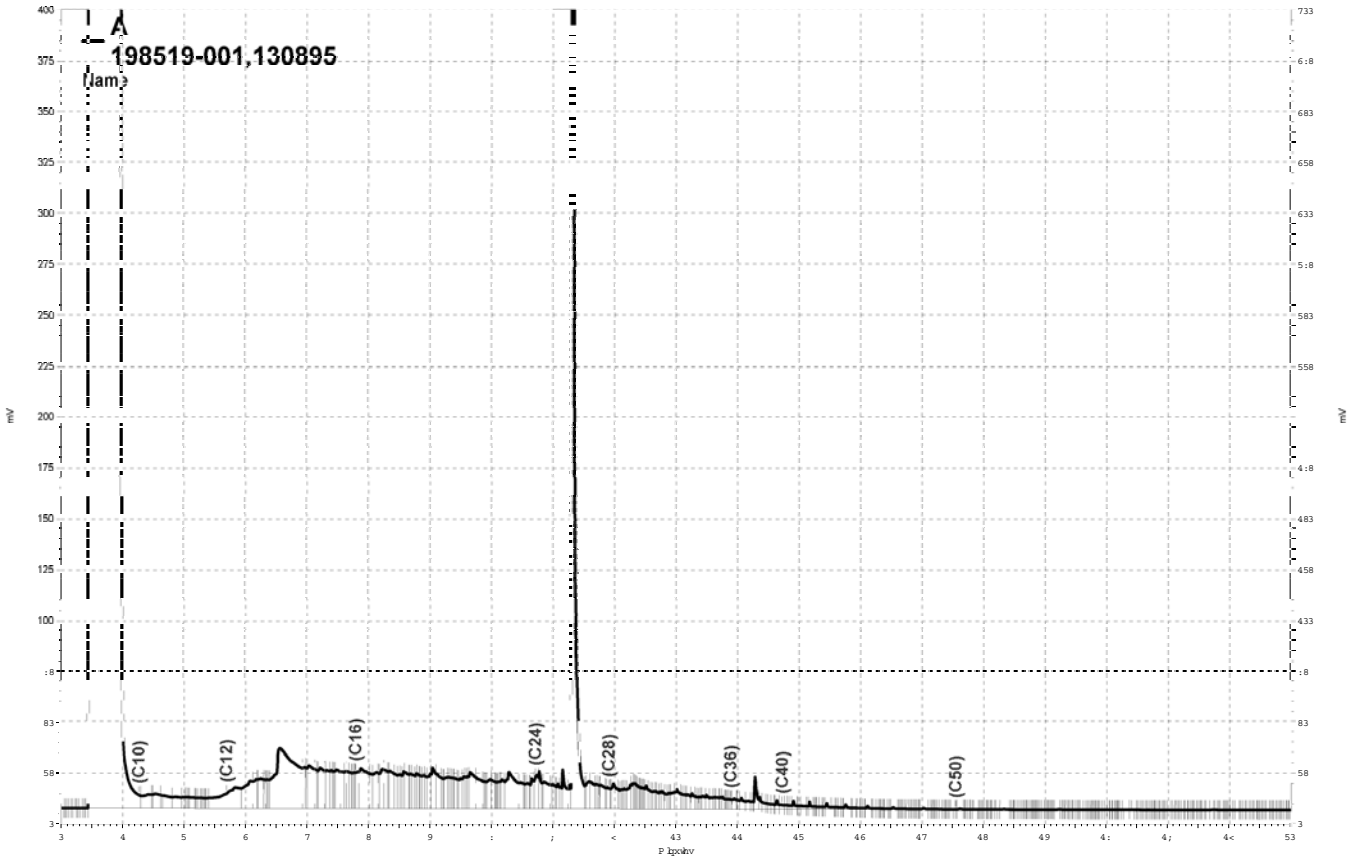
Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC412022

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	2,500	2,045	82	58-129	1	27

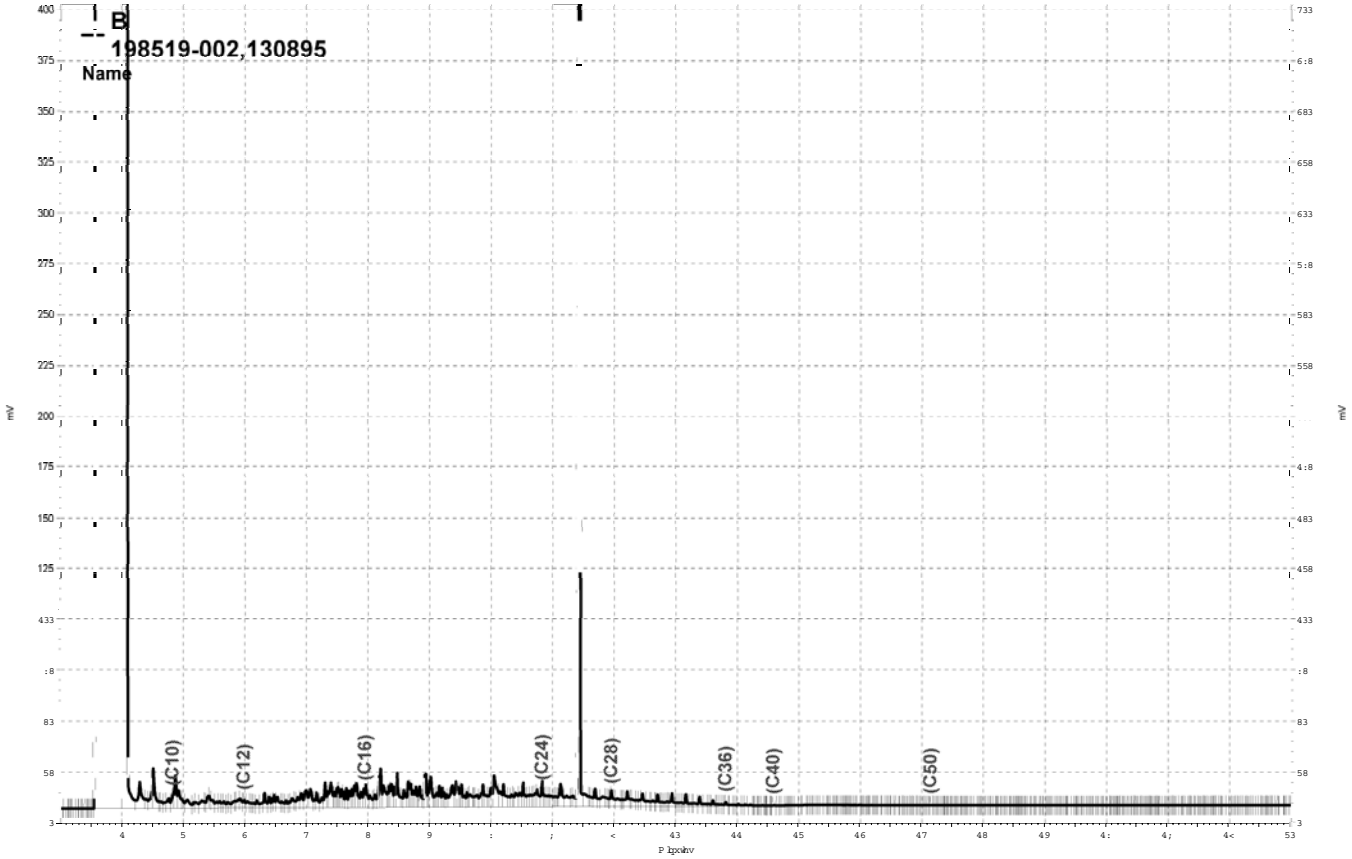
Surrogate	%REC	Limits
Hexacosane (SGCU)	108	61-133

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

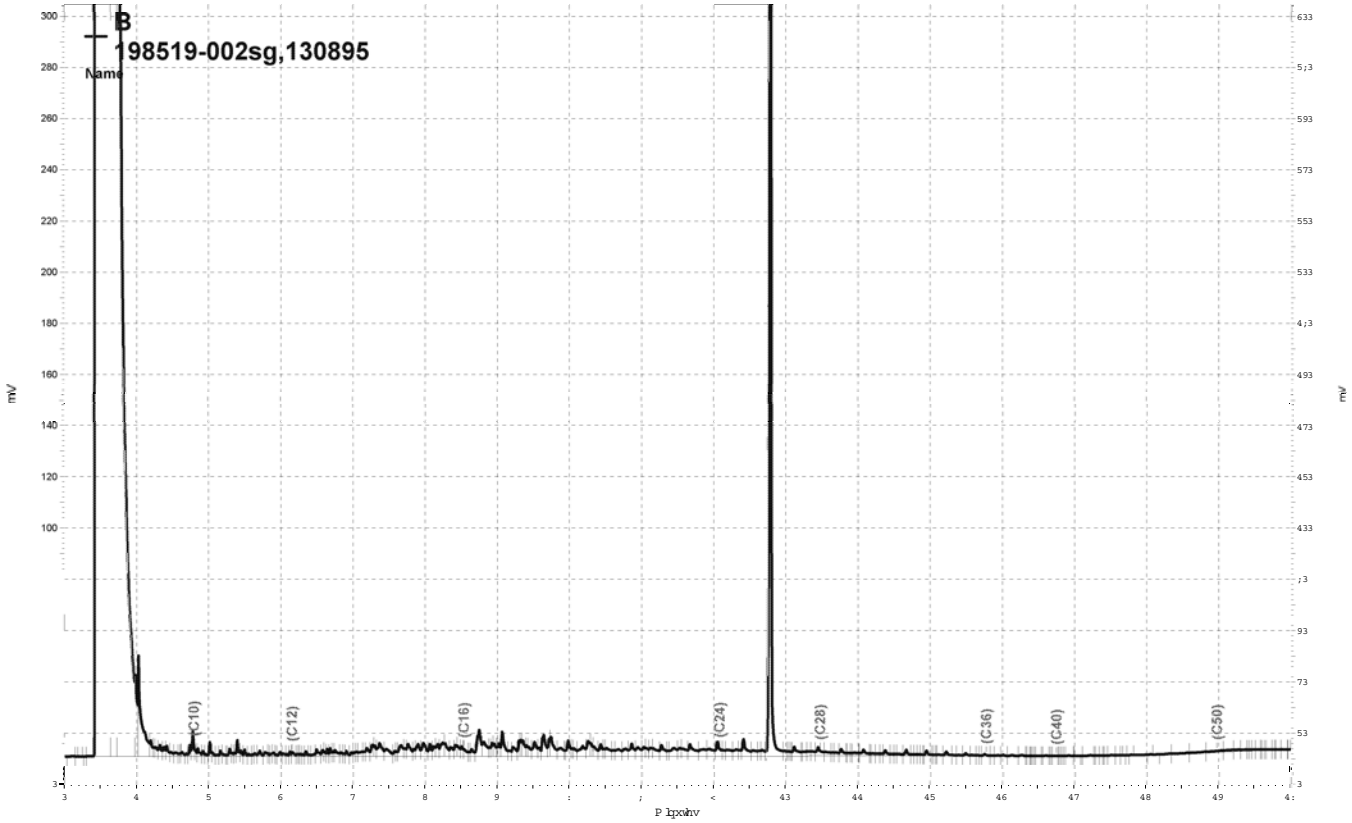
66.2



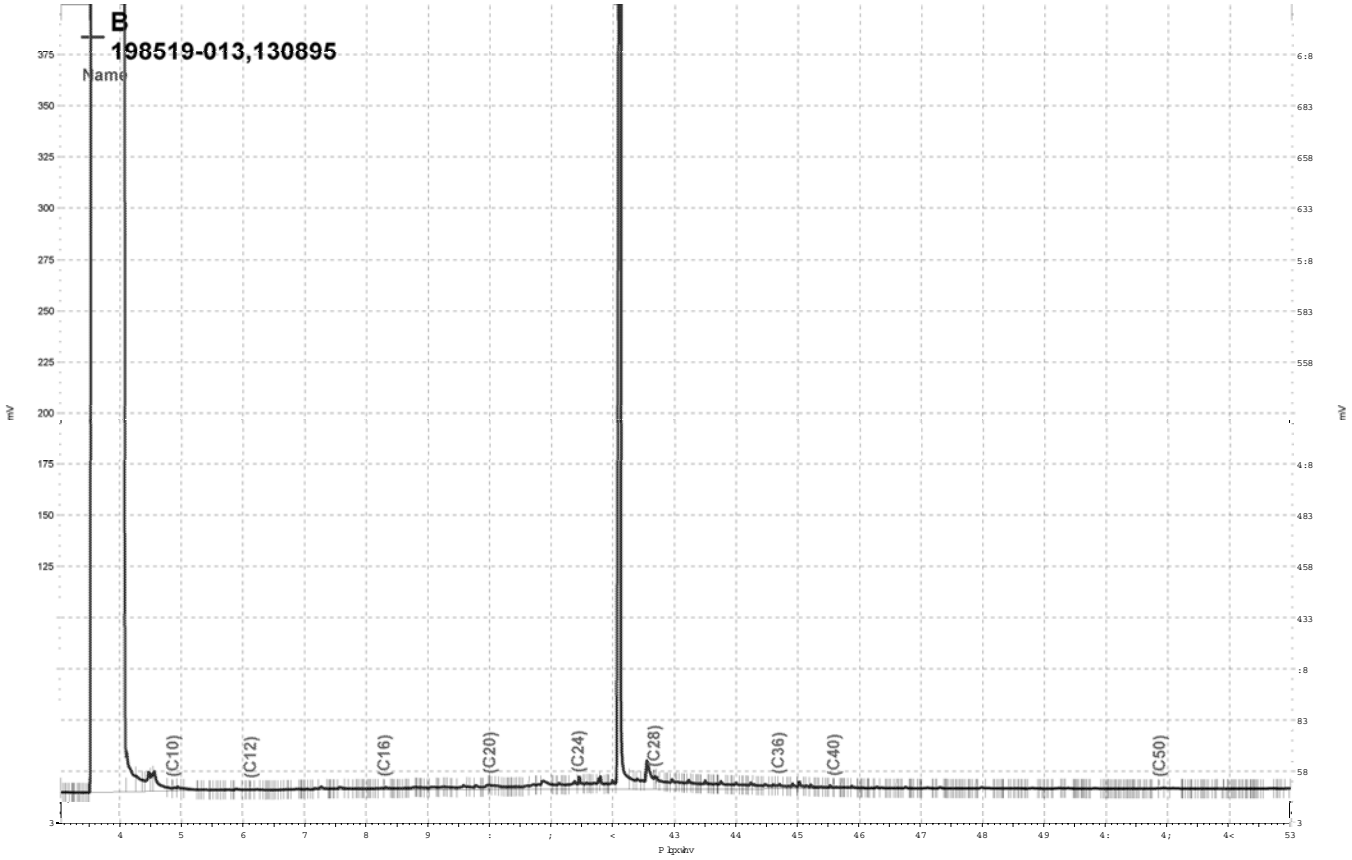
_Olp v jgulyh h}fkurp _Surmnfw J F44D_Gdwd_5<:d37;/D



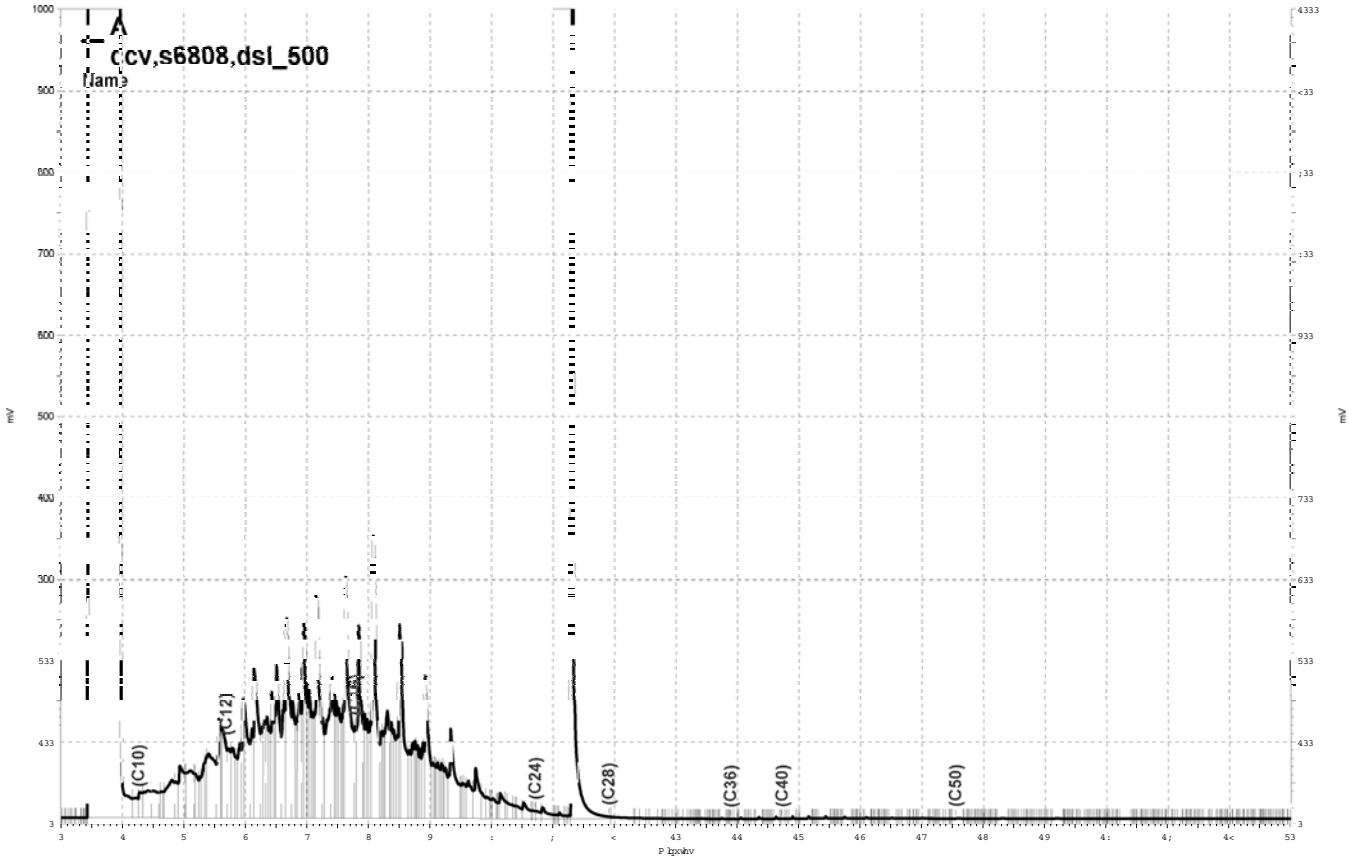
_Olp vjgulyh h}fkurp _Surmfw_J F48E_Gdwd_5<:e37:/E



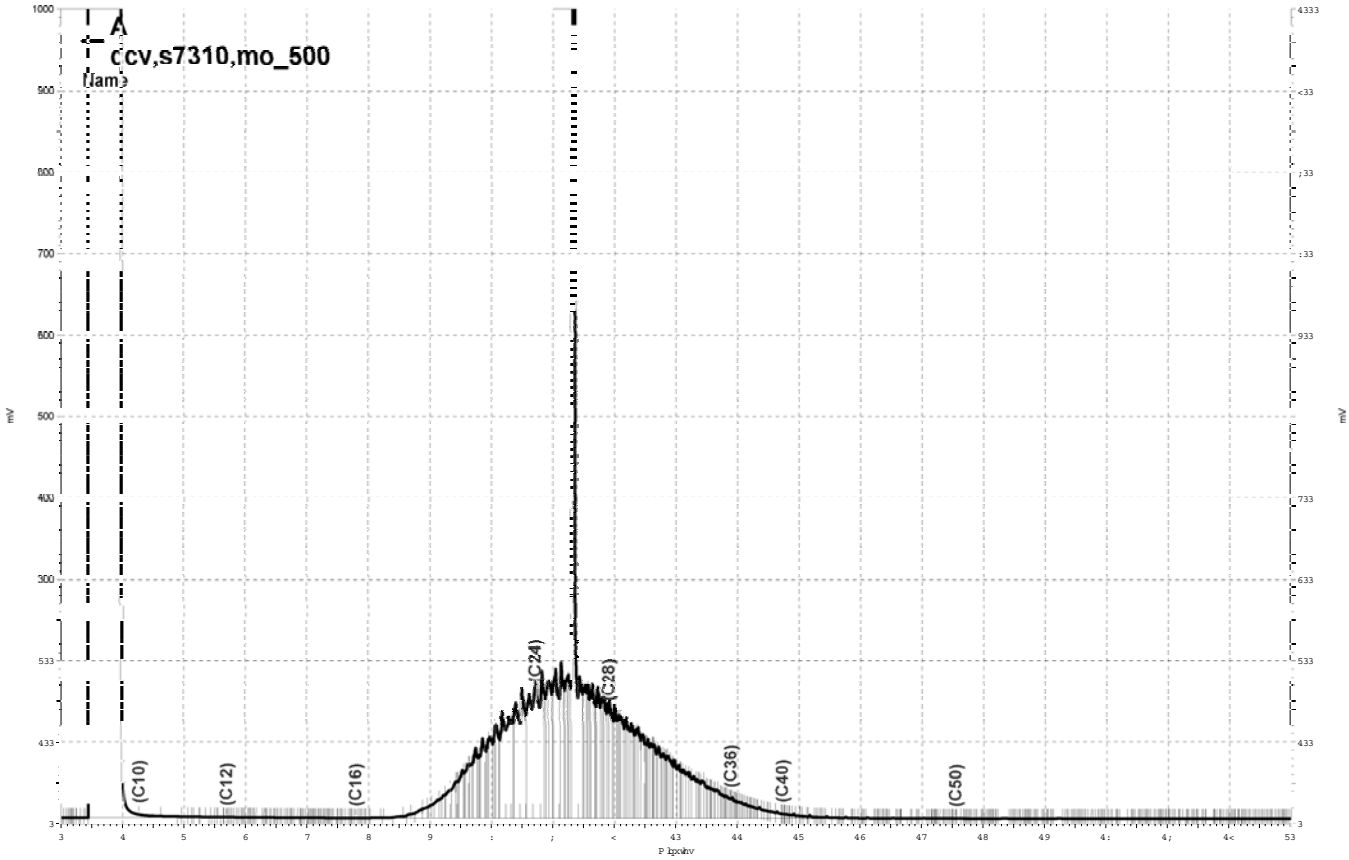
_Olp v_jgulyh_h}fkurp_Surmfw_JF59_Gdwd_639e345/E



_Olp vjgulyh_h}fkurp_Surmfw_JF47E_Gdwd_5<;e34;/E



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5<:d373/D



_Olp v jgulyh h}fkurp _Surmfw J F44D_Gdwd_5<:d374/D

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	130769
Units:	mg/Kg	Received:	10/18/07
Basis:	as received	Prepared:	10/21/07
Diln Fac:	1.000	Analyzed:	10/23/07

Field ID: B-16-SS-0.0' Lab ID: 198519-014
Type: SAMPLE Sampled: 10/16/07

Analyte	Result	RL
Diesel C10-C24	10 Y	1.0
Motor Oil C24-C36	31	5.0

Surrogate	%REC	Limits
Hexacosane	111	46-128

Field ID: B-16-SS-55' Lab ID: 198519-015
Type: SAMPLE Sampled: 10/17/07

Analyte	Result	RL
Diesel C10-C24	6.3 Y	0.99
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
Hexacosane	71	46-128

Type: BLANK Lab ID: QC411469

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
Hexacosane	96	46-128

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC411470	Batch#:	130769
Matrix:	Soil	Prepared:	10/21/07
Units:	mg/Kg	Analyzed:	10/23/07
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.93	46.50	93	55-131

Surrogate	%REC	Limits
Hexacosane	96	46-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	130769
MSS Lab ID:	198476-002	Sampled:	10/17/07
Matrix:	Soil	Received:	10/17/07
Units:	mg/Kg	Prepared:	10/21/07
Basis:	as received	Analyzed:	10/23/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC411471

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	0.1748	49.86	36.85	74	31-150

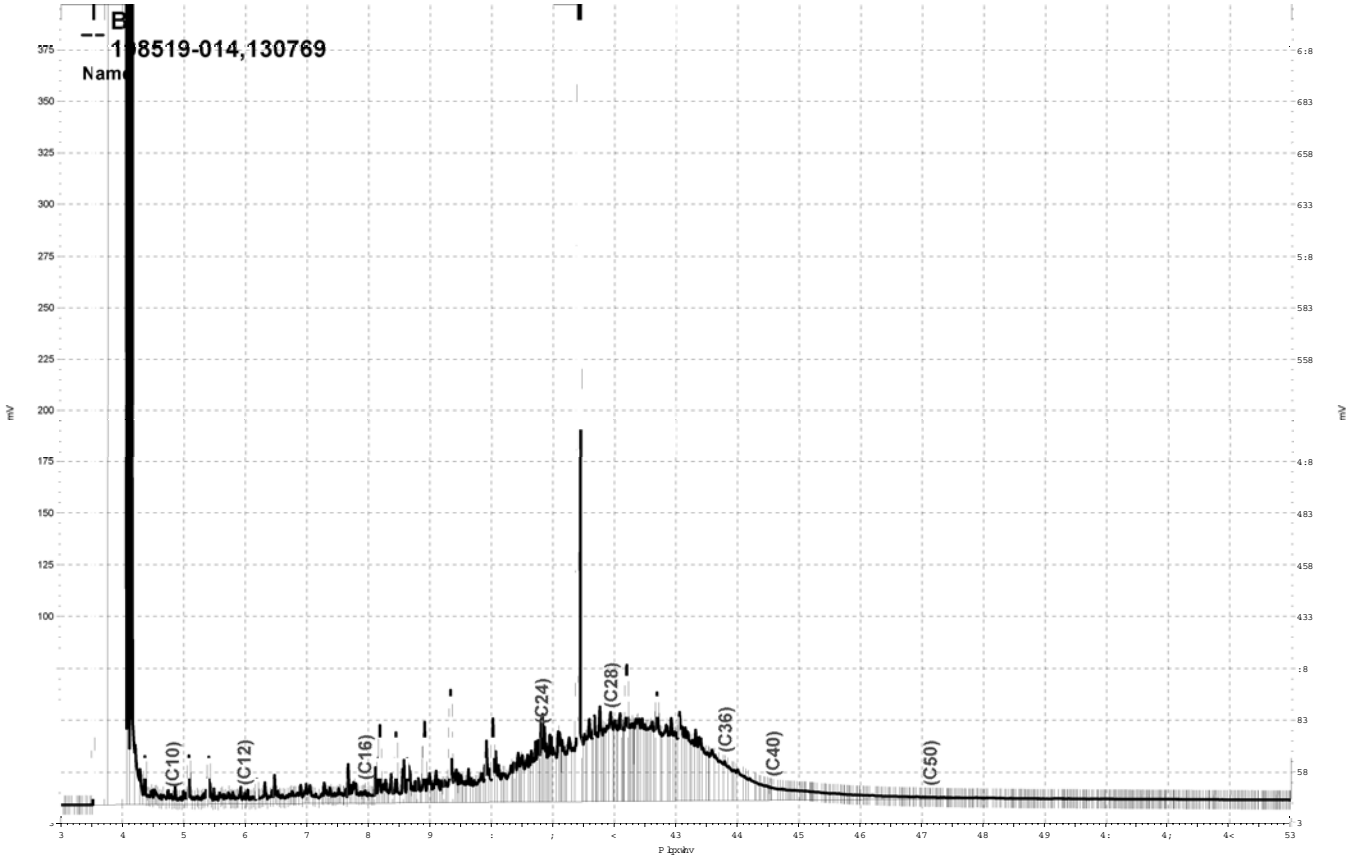
Surrogate	%REC	Limits
Hexacosane	80	46-128

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC411472

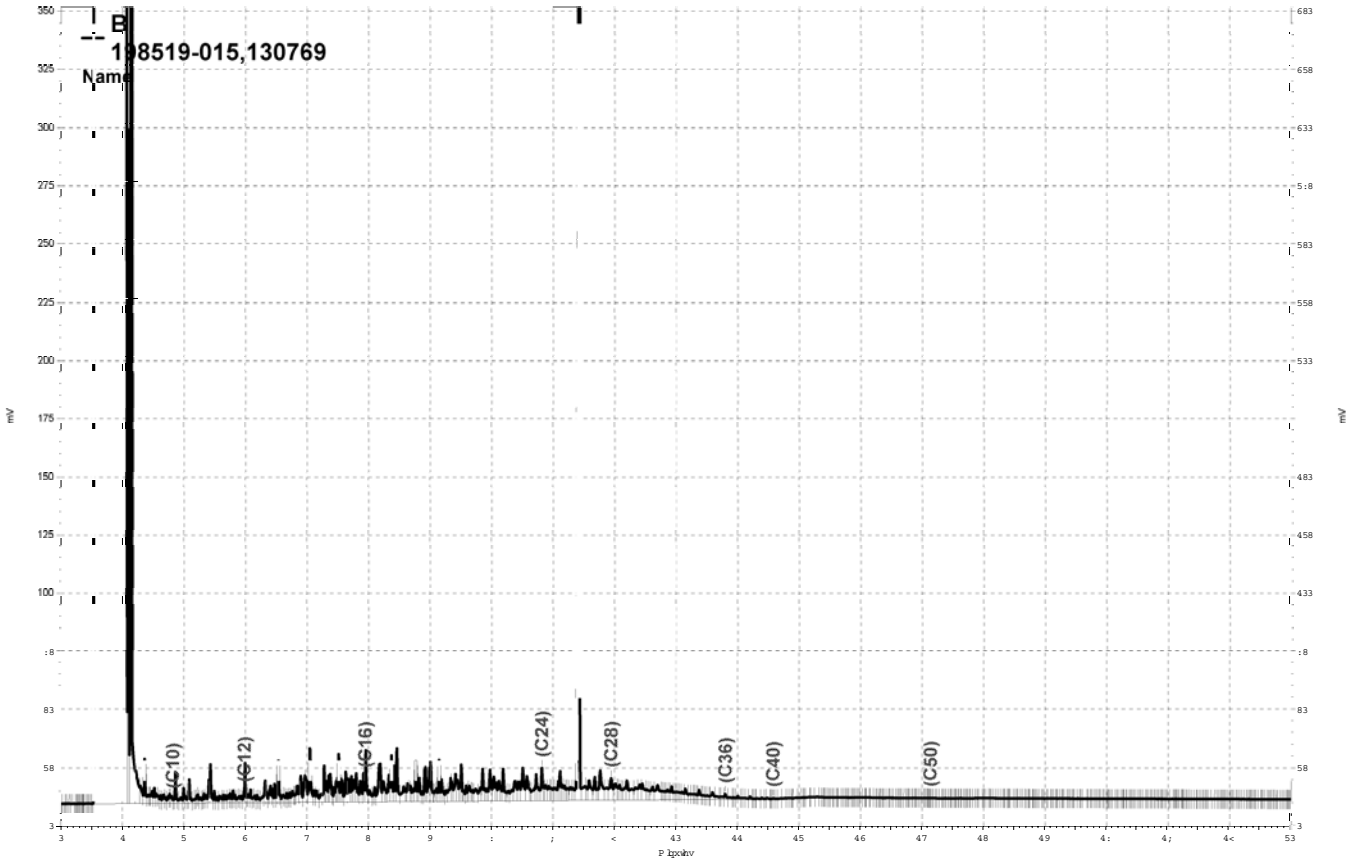
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	49.94	29.74	59	31-150	22	42

Surrogate	%REC	Limits
Hexacosane	64	46-128

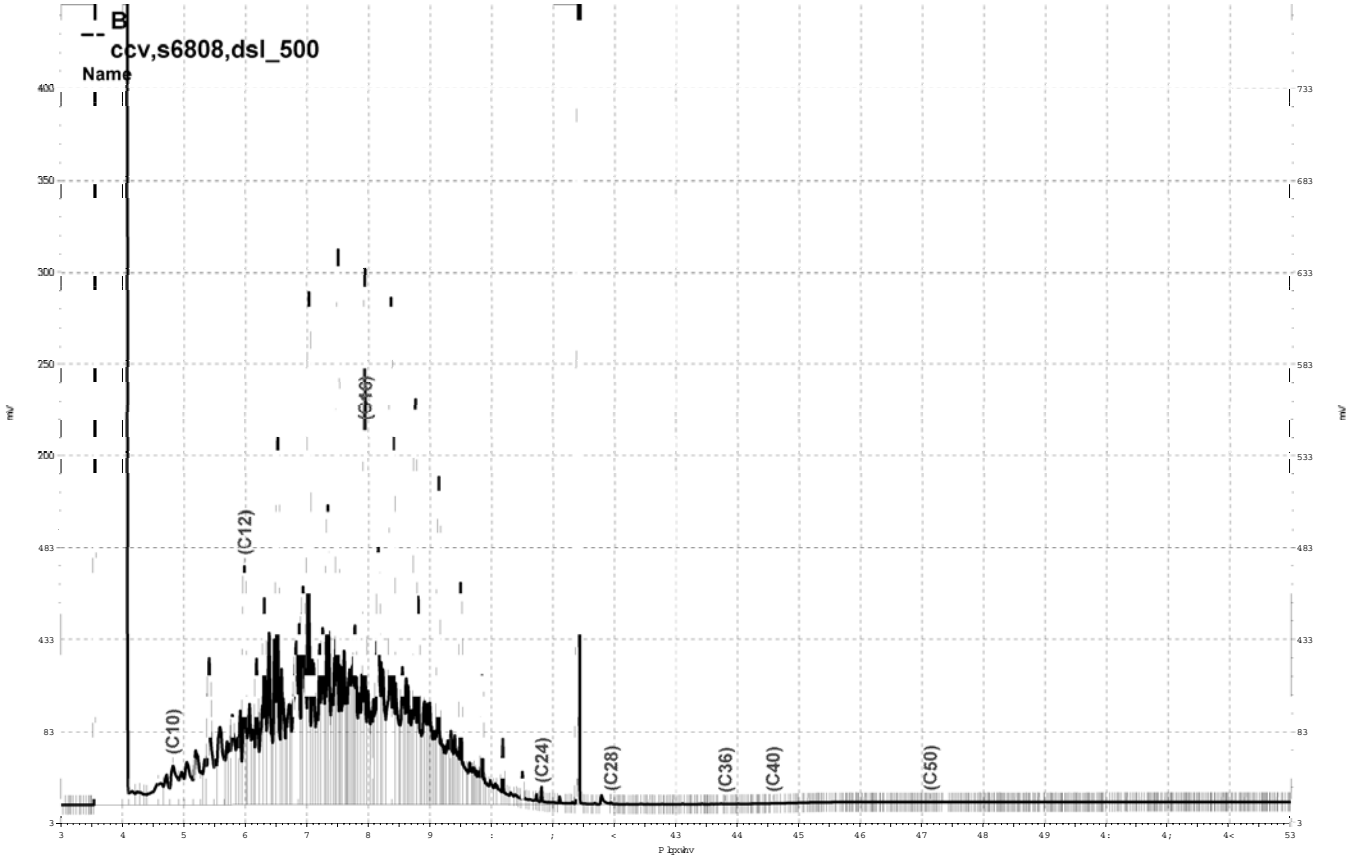
RPD= Relative Percent Difference



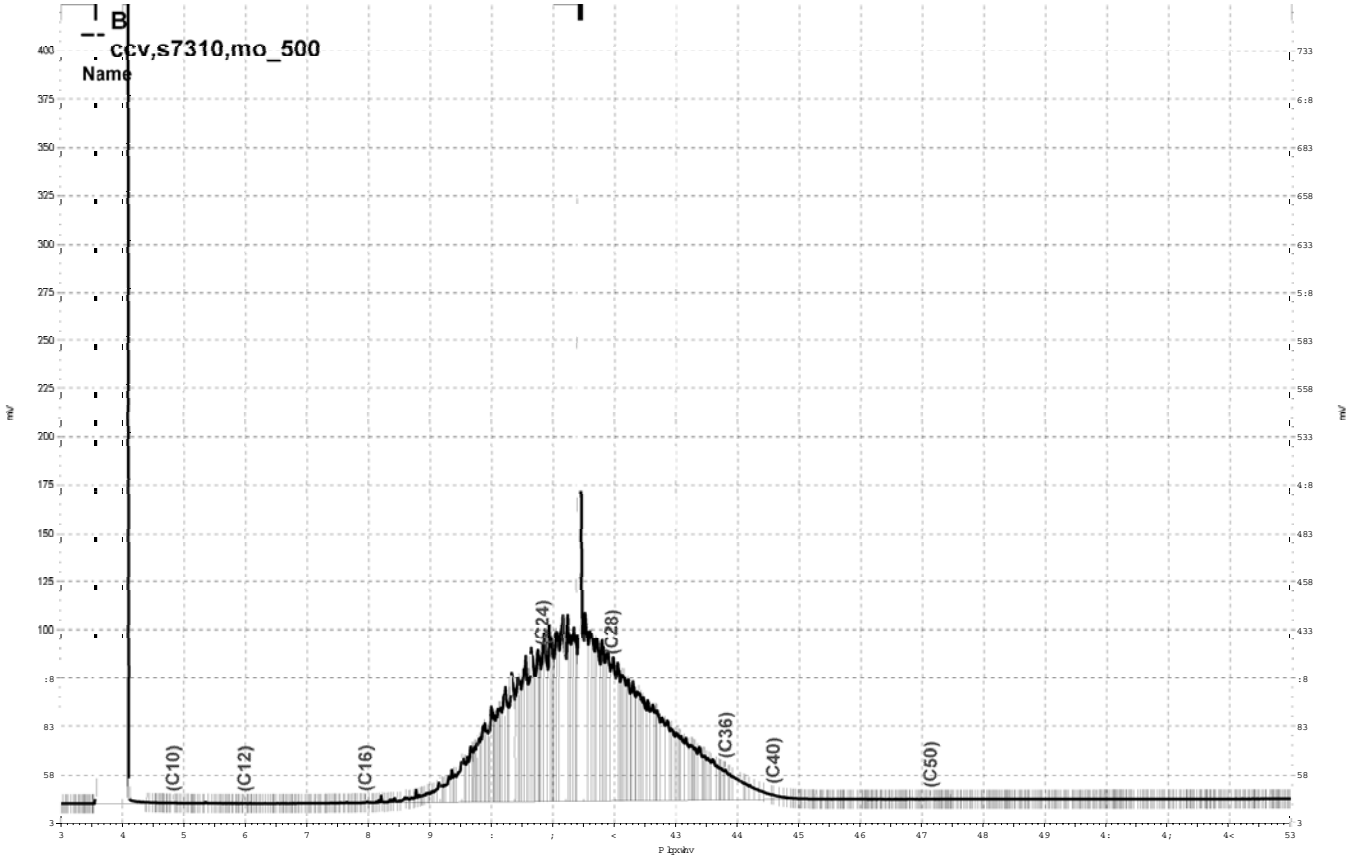
_Olp vjgulyh h}fkurp_Surmfw_JF48E_Gdwd_5<8e37</E



_Olp vjgulyh h}fkurp _Surmfw_J F48E_Gdwd_5<8e37;/E



_Olp vjgulyh h}fkurp _Surmfw_J F48E_Gdwd_5<8e375/E



_Olp vjgulyh h}fkurp_Surmfw_JF48E_Gdwd_5<8e376/E

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-16-GW-45'	Batch#:	130872
Lab ID:	198519-001	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Analyzed:	10/24/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-16-GW-45'	Batch#:	130872
Lab ID:	198519-001	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Analyzed:	10/24/07
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-122
1,2-Dichloroethane-d4	118	74-137
Toluene-d8	95	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
RL= Reporting Limit

56.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-8A-GW-70'	Batch#:	130872
Lab ID:	198519-002	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Analyzed:	10/24/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

57.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-8A-GW-70'	Batch#:	130872
Lab ID:	198519-002	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Analyzed:	10/24/07
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-122
1,2-Dichloroethane-d4	120	74-137
Toluene-d8	96	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected
RL= Reporting Limit

57.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-9-GW-30.8'	Batch#:	130872
Lab ID:	198519-003	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Analyzed:	10/24/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

58.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-9-GW-30.8'	Batch#:	130872
Lab ID:	198519-003	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Analyzed:	10/24/07
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	111	80-122
1,2-Dichloroethane-d4	122	74-137
Toluene-d8	95	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
RL= Reporting Limit

58.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-4-GW-2.5'	Batch#:	130872
Lab ID:	198519-013	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Analyzed:	10/24/07
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

59.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-4-GW-2.5'	Batch#:	130872
Lab ID:	198519-013	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Analyzed:	10/24/07
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-122
1,2-Dichloroethane-d4	124	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
RL= Reporting Limit

59.0

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC411931	Batch#:	130872
Matrix:	Water	Analyzed:	10/24/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC411931	Batch#:	130872
Matrix:	Water	Analyzed:	10/24/07
Units:	ug/L		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-122
1,2-Dichloroethane-d4	115	74-137
Toluene-d8	95	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC411932	Batch#:	130872
Matrix:	Water	Analyzed:	10/24/07
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	20.00	21.83	109	80-133
Benzene	20.00	19.57	98	80-120
Trichloroethene	20.00	21.68	108	80-120
Toluene	20.00	19.47	97	80-122
Chlorobenzene	20.00	19.05	95	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-122
1,2-Dichloroethane-d4	111	74-137
Toluene-d8	97	80-120
Bromofluorobenzene	103	80-120

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	130872
MSS Lab ID:	198439-009	Sampled:	10/16/07
Matrix:	Water	Received:	10/16/07
Units:	ug/L	Analyzed:	10/25/07
Diln Fac:	1.000		

Type: MS Lab ID: QC411992

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	0.4947	25.00	27.35	107	80-141
Benzene	<0.2500	25.00	25.64	103	80-123
Trichloroethene	4.835	25.00	32.11	109	73-129
Toluene	<0.1338	25.00	25.01	100	80-124
Chlorobenzene	<0.1569	25.00	24.31	97	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	114	80-122
1,2-Dichloroethane-d4	123	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	100	80-120

Type: MSD Lab ID: QC411993

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	27.01	106	80-141	1	20
Benzene	25.00	24.91	100	80-123	3	20
Trichloroethene	25.00	31.87	108	73-129	1	20
Toluene	25.00	24.35	97	80-124	3	20
Chlorobenzene	25.00	23.37	93	80-120	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	111	80-122
1,2-Dichloroethane-d4	120	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	102	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC411994	Batch#:	130872
Matrix:	Water	Analyzed:	10/24/07
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC411994	Batch#:	130872
Matrix:	Water	Analyzed:	10/24/07
Units:	ug/L		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-122
1,2-Dichloroethane-d4	121	74-137
Toluene-d8	97	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-16-SS-0.0'	Diln Fac:	0.9615
Lab ID:	198519-014	Batch#:	130704
Matrix:	Soil	Sampled:	10/16/07
Units:	ug/Kg	Received:	10/18/07
Basis:	as received	Analyzed:	10/19/07

Analyte	Result	RL
Freon 12	ND	9.6
Chloromethane	ND	9.6
Vinyl Chloride	ND	9.6
Bromomethane	ND	9.6
Chloroethane	ND	9.6
Trichlorofluoromethane	ND	4.8
Acetone	ND	24
Freon 113	ND	4.8
1,1-Dichloroethene	ND	4.8
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.8
MTBE	ND	4.8
trans-1,2-Dichloroethene	ND	4.8
Vinyl Acetate	ND	48
1,1-Dichloroethane	ND	4.8
2-Butanone	ND	9.6
cis-1,2-Dichloroethene	ND	4.8
2,2-Dichloropropane	ND	4.8
Chloroform	ND	4.8
Bromochloromethane	ND	4.8
1,1,1-Trichloroethane	ND	4.8
1,1-Dichloropropene	ND	4.8
Carbon Tetrachloride	ND	4.8
1,2-Dichloroethane	ND	4.8
Benzene	ND	4.8
Trichloroethene	ND	4.8
1,2-Dichloropropane	ND	4.8
Bromodichloromethane	ND	4.8
Dibromomethane	ND	4.8
4-Methyl-2-Pentanone	ND	9.6
cis-1,3-Dichloropropene	ND	4.8
Toluene	ND	4.8
trans-1,3-Dichloropropene	ND	4.8
1,1,2-Trichloroethane	ND	4.8
2-Hexanone	ND	9.6
1,3-Dichloropropane	ND	4.8
Tetrachloroethene	ND	4.8
Dibromochloromethane	ND	4.8
1,2-Dibromoethane	ND	4.8
Chlorobenzene	ND	4.8
1,1,1,2-Tetrachloroethane	ND	4.8
Ethylbenzene	ND	4.8
m,p-Xylenes	ND	4.8
o-Xylene	ND	4.8
Styrene	ND	4.8
Bromoform	ND	4.8
Isopropylbenzene	ND	4.8
1,1,2,2-Tetrachloroethane	ND	4.8
1,2,3-Trichloropropane	ND	4.8
Propylbenzene	ND	4.8
Bromobenzene	ND	4.8
1,3,5-Trimethylbenzene	ND	4.8
2-Chlorotoluene	ND	4.8

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-16-SS-0.0'	Diln Fac:	0.9615
Lab ID:	198519-014	Batch#:	130704
Matrix:	Soil	Sampled:	10/16/07
Units:	ug/Kg	Received:	10/18/07
Basis:	as received	Analyzed:	10/19/07

Analyte	Result	RL
4-Chlorotoluene	ND	4.8
tert-Butylbenzene	ND	4.8
1,2,4-Trimethylbenzene	ND	4.8
sec-Butylbenzene	ND	4.8
para-Isopropyl Toluene	ND	4.8
1,3-Dichlorobenzene	ND	4.8
1,4-Dichlorobenzene	ND	4.8
n-Butylbenzene	ND	4.8
1,2-Dichlorobenzene	ND	4.8
1,2-Dibromo-3-Chloropropane	ND	4.8
1,2,4-Trichlorobenzene	ND	4.8
Hexachlorobutadiene	ND	4.8
Naphthalene	ND	4.8
1,2,3-Trichlorobenzene	ND	4.8

Surrogate	%REC	Limits
Dibromofluoromethane	109	80-124
1,2-Dichloroethane-d4	112	79-136
Toluene-d8	97	80-120
Bromofluorobenzene	138 *	80-122

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-16-SS-55'	Diln Fac:	0.9259
Lab ID:	198519-015	Batch#:	130704
Matrix:	Soil	Sampled:	10/17/07
Units:	ug/Kg	Received:	10/18/07
Basis:	as received	Analyzed:	10/19/07

Analyte	Result	RL
Freon 12	ND	9.3
Chloromethane	ND	9.3
Vinyl Chloride	ND	9.3
Bromomethane	ND	9.3
Chloroethane	ND	9.3
Trichlorofluoromethane	ND	4.6
Acetone	ND	23
Freon 113	ND	4.6
1,1-Dichloroethene	ND	4.6
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.6
MTBE	ND	4.6
trans-1,2-Dichloroethene	ND	4.6
Vinyl Acetate	ND	46
1,1-Dichloroethane	ND	4.6
2-Butanone	ND	9.3
cis-1,2-Dichloroethene	ND	4.6
2,2-Dichloropropane	ND	4.6
Chloroform	ND	4.6
Bromochloromethane	ND	4.6
1,1,1-Trichloroethane	ND	4.6
1,1-Dichloropropene	ND	4.6
Carbon Tetrachloride	ND	4.6
1,2-Dichloroethane	ND	4.6
Benzene	ND	4.6
Trichloroethene	ND	4.6
1,2-Dichloropropane	ND	4.6
Bromodichloromethane	ND	4.6
Dibromomethane	ND	4.6
4-Methyl-2-Pentanone	ND	9.3
cis-1,3-Dichloropropene	ND	4.6
Toluene	ND	4.6
trans-1,3-Dichloropropene	ND	4.6
1,1,2-Trichloroethane	ND	4.6
2-Hexanone	ND	9.3
1,3-Dichloropropane	ND	4.6
Tetrachloroethene	ND	4.6

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-16-SS-55'	Diln Fac:	0.9259
Lab ID:	198519-015	Batch#:	130704
Matrix:	Soil	Sampled:	10/17/07
Units:	ug/Kg	Received:	10/18/07
Basis:	as received	Analyzed:	10/19/07

Analyte	Result	RL
Dibromochloromethane	ND	4.6
1,2-Dibromoethane	ND	4.6
Chlorobenzene	ND	4.6
1,1,1,2-Tetrachloroethane	ND	4.6
Ethylbenzene	ND	4.6
m,p-Xylenes	ND	4.6
o-Xylene	ND	4.6
Styrene	ND	4.6
Bromoform	ND	4.6
Isopropylbenzene	ND	4.6
1,1,2,2-Tetrachloroethane	ND	4.6
1,2,3-Trichloropropane	ND	4.6
Propylbenzene	ND	4.6
Bromobenzene	ND	4.6
1,3,5-Trimethylbenzene	ND	4.6
2-Chlorotoluene	ND	4.6
4-Chlorotoluene	ND	4.6
tert-Butylbenzene	ND	4.6
1,2,4-Trimethylbenzene	ND	4.6
sec-Butylbenzene	ND	4.6
para-Isopropyl Toluene	ND	4.6
1,3-Dichlorobenzene	ND	4.6
1,4-Dichlorobenzene	ND	4.6
n-Butylbenzene	ND	4.6
1,2-Dichlorobenzene	ND	4.6
1,2-Dibromo-3-Chloropropane	ND	4.6
1,2,4-Trichlorobenzene	ND	4.6
Hexachlorobutadiene	ND	4.6
Naphthalene	ND	4.6
1,2,3-Trichlorobenzene	ND	4.6

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-124
1,2-Dichloroethane-d4	111	79-136
Toluene-d8	101	80-120
Bromofluorobenzene	112	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Matrix:	Soil	Diln Fac:	1.000
Units:	ug/Kg	Batch#:	130704
Basis:	as received	Analyzed:	10/19/07

Type: BS Lab ID: QC411225

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	31.53	126	74-131
Benzene	25.00	29.17	117	77-121
Trichloroethene	25.00	30.20	121	77-121
Toluene	25.00	29.59	118	79-122
Chlorobenzene	25.00	27.98	112	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-124
1,2-Dichloroethane-d4	107	79-136
Toluene-d8	105	80-120
Bromofluorobenzene	105	80-122

Type: BSD Lab ID: QC411226

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	31.05	124	74-131	2	20
Benzene	25.00	28.05	112	77-121	4	20
Trichloroethene	25.00	28.74	115	77-121	5	20
Toluene	25.00	27.57	110	79-122	7	20
Chlorobenzene	25.00	27.38	110	80-120	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-124
1,2-Dichloroethane-d4	103	79-136
Toluene-d8	102	80-120
Bromofluorobenzene	110	80-122

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC411227	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130704
Units:	ug/Kg	Analyzed:	10/19/07

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	25
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC411227	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130704
Units:	ug/Kg	Analyzed:	10/19/07

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-124
1,2-Dichloroethane-d4	106	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	106	80-122

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 5030B
Project#:	379-1827-15-02	Analysis:	EPA 8260B
Field ID:	B-16-SS-55'	Diln Fac:	0.9259
MSS Lab ID:	198519-015	Batch#:	130704
Matrix:	Soil	Sampled:	10/17/07
Units:	ug/Kg	Received:	10/18/07
Basis:	as received	Analyzed:	10/19/07

Type: MS Lab ID: QC411269

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.3012	46.30	45.27	98	61-145
Benzene	<0.6599	46.30	33.60	73	57-123
Trichloroethene	<0.7375	46.30	35.61	77	52-141
Toluene	<0.6347	46.30	30.67	66	53-126
Chlorobenzene	<0.6032	46.30	23.91	52	49-121

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-124
1,2-Dichloroethane-d4	108	79-136
Toluene-d8	99	80-120
Bromofluorobenzene	110	80-122

Type: MSD Lab ID: QC411270

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	46.30	45.69	99	61-145	1	26
Benzene	46.30	31.93	69	57-123	5	25
Trichloroethene	46.30	34.22	74	52-141	4	26
Toluene	46.30	28.16	61	53-126	9	27
Chlorobenzene	46.30	19.57	42 *	49-121	20	27

Surrogate	%REC	Limits
Dibromofluoromethane	109	80-124
1,2-Dichloroethane-d4	108	79-136
Toluene-d8	104	80-120
Bromofluorobenzene	113	80-122

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-SS-0.0'-NORTH 2.5	Batch#:	130832
Lab ID:	198519-005	Sampled:	10/17/07
Matrix:	Soil	Received:	10/18/07
Units:	ug/Kg	Prepared:	10/23/07
Basis:	as received	Analyzed:	10/23/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	3.6	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	78	54-120
Decachlorobiphenyl	93	49-142

ND= Not Detected
RL= Reporting Limit

46.0

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-SS-0.0'-NORTH 5.0	Batch#:	130832
Lab ID:	198519-006	Sampled:	10/17/07
Matrix:	Soil	Received:	10/18/07
Units:	ug/Kg	Prepared:	10/23/07
Basis:	as received	Analyzed:	10/23/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	4.4 #	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	59

Surrogate	%REC	Limits
TCMX	91	54-120
Decachlorobiphenyl	93	49-142

#= CCV drift outside limits; average CCV drift within limits per method requirements
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-SS-0.0'-SOUTH 2.5	Batch#:	130832
Lab ID:	198519-007	Sampled:	10/17/07
Matrix:	Soil	Received:	10/18/07
Units:	ug/Kg	Prepared:	10/23/07
Basis:	as received	Analyzed:	10/23/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	59

Surrogate	%REC	Limits
TCMX	84	54-120
Decachlorobiphenyl	89	49-142

ND= Not Detected
RL= Reporting Limit

48.0

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-SS-0.0'-SOUTH 5.0	Batch#:	130832
Lab ID:	198519-008	Sampled:	10/17/07
Matrix:	Soil	Received:	10/18/07
Units:	ug/Kg	Prepared:	10/23/07
Basis:	as received	Analyzed:	10/25/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	3.5 #	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	85	54-120
Decachlorobiphenyl	70	49-142

#= CCV drift outside limits; average CCV drift within limits per method requirements
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-SS-0.0'-EAST 2.5	Batch#:	130832
Lab ID:	198519-009	Sampled:	10/17/07
Matrix:	Soil	Received:	10/18/07
Units:	ug/Kg	Prepared:	10/23/07
Basis:	as received	Analyzed:	10/23/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	5.4 #	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	80	54-120
Decachlorobiphenyl	81	49-142

#= CCV drift outside limits; average CCV drift within limits per method requirements
ND= Not Detected
RL= Reporting Limit

50.0

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-SS-0.0'-EAST 5.0	Batch#:	130832
Lab ID:	198519-010	Sampled:	10/17/07
Matrix:	Soil	Received:	10/18/07
Units:	ug/Kg	Prepared:	10/23/07
Basis:	as received	Analyzed:	10/23/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	5.9	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	77	54-120
Decachlorobiphenyl	77	49-142

ND= Not Detected
RL= Reporting Limit

51.0

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-SS-0.0'-WEST 2.5	Batch#:	130832
Lab ID:	198519-011	Sampled:	10/17/07
Matrix:	Soil	Received:	10/18/07
Units:	ug/Kg	Prepared:	10/23/07
Basis:	as received	Analyzed:	10/23/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	85	54-120
Decachlorobiphenyl	84	49-142

ND= Not Detected
RL= Reporting Limit

52.0

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Field ID:	B-12-SS-0.0'-WEST 5.0	Batch#:	130832
Lab ID:	198519-012	Sampled:	10/17/07
Matrix:	Soil	Received:	10/18/07
Units:	ug/Kg	Prepared:	10/23/07
Basis:	as received	Analyzed:	10/23/07
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	59

Surrogate	%REC	Limits
TCMX	95	54-120
Decachlorobiphenyl	92	49-142

ND= Not Detected
RL= Reporting Limit

53.0

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC411744	Batch#:	130832
Matrix:	Soil	Prepared:	10/23/07
Units:	ug/Kg	Analyzed:	10/25/07
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	88	54-120
Decachlorobiphenyl	97	49-142

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC411745	Batch#:	130832
Matrix:	Soil	Prepared:	10/23/07
Units:	ug/Kg	Analyzed:	10/25/07
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	13.32	8.811	66	44-120
Heptachlor	13.32	8.290	62	44-120
Aldrin	13.32	8.736	66	47-120
Dieldrin	26.64	18.30 #	69	50-120
Endrin	26.64	17.43 #	65	27-128
4,4'-DDT	26.64	15.60	59	42-128

Surrogate	%REC	Limits
TCMX	60	54-120
Decachlorobiphenyl	56	49-142

#= CCV drift outside limits; average CCV drift within limits per method requirements

55.0

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Matrix:	Soil	Batch#:	130832
Units:	ug/Kg	Sampled:	10/17/07
Basis:	as received	Received:	10/18/07
Diln Fac:	1.000	Prepared:	10/23/07

Field ID:	B-12-SS-0.0'-NORTH 2.5	Analyzed:	10/24/07
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	198519-005		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	98	66-140
Decachlorobiphenyl	85	51-152

Field ID:	B-12-SS-0.0'-NORTH 5.0	Analyzed:	10/24/07
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	198519-006		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	124	66-140
Decachlorobiphenyl	123	51-152

Field ID:	B-12-SS-0.0'-SOUTH 2.5	Analyzed:	10/24/07
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	198519-007		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	108	66-140
Decachlorobiphenyl	113	51-152

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Matrix:	Soil	Batch#:	130832
Units:	ug/Kg	Sampled:	10/17/07
Basis:	as received	Received:	10/18/07
Diln Fac:	1.000	Prepared:	10/23/07

Field ID:	B-12-SS-0.0'-SOUTH 5.0	Analyzed:	10/24/07
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	198519-008		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	110	66-140
Decachlorobiphenyl	118	51-152

Field ID:	B-12-SS-0.0'-EAST 2.5	Analyzed:	10/24/07
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	198519-009		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	19	12

Surrogate	%REC	Limits
TCMX	109	66-140
Decachlorobiphenyl	111	51-152

Field ID:	B-12-SS-0.0'-EAST 5.0	Analyzed:	10/24/07
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	198519-010		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	98	66-140
Decachlorobiphenyl	82	51-152

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Matrix:	Soil	Batch#:	130832
Units:	ug/Kg	Sampled:	10/17/07
Basis:	as received	Received:	10/18/07
Diln Fac:	1.000	Prepared:	10/23/07

Field ID:	B-12-SS-0.0'-WEST 2.5	Analyzed:	10/24/07
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	198519-011		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	103	66-140
Decachlorobiphenyl	101	51-152

Field ID:	B-12-SS-0.0'-WEST 5.0	Analyzed:	10/24/07
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	198519-012		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	110	66-140
Decachlorobiphenyl	89	51-152

Type:	BLANK	Analyzed:	10/23/07
Lab ID:	QC411744	Cleanup Method:	EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	103	66-140
Decachlorobiphenyl	121	51-152

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC411751	Batch#:	130832
Matrix:	Soil	Prepared:	10/23/07
Units:	ug/Kg	Analyzed:	10/23/07
Basis:	as received		

Cleanup Method: EPA 3665A

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	164.9	149.4	91	69-142
Aroclor-1260	164.9	156.6	95	69-155

Surrogate	%REC	Limits
TCMX	104	66-140
Decachlorobiphenyl	109	51-152

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3550B
Project#:	379-1827-15-02	Analysis:	EPA 8082
Field ID:	ZZZZZZZZZZ	Batch#:	130832
MSS Lab ID:	198257-002	Sampled:	10/10/07
Matrix:	Soil	Received:	10/10/07
Units:	ug/Kg	Prepared:	10/23/07
Basis:	as received	Analyzed:	10/23/07
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3665A
Lab ID: QC411752

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1016	<2.671	165.1	158.3	96	62-139
Aroclor-1260	<2.710	165.1	152.2	92	54-143

Surrogate	%REC	Limits
TCMX	99	66-140
Decachlorobiphenyl	104	51-152

Type: MSD Cleanup Method: EPA 3665A
Lab ID: QC411753

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	166.2	145.1	87	62-139	9	33
Aroclor-1260	166.2	131.4	79	54-143	15	34

Surrogate	%REC	Limits
TCMX	82	66-140
Decachlorobiphenyl	82	51-152

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198519	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-16-GW-45'	Diln Fac:	1.000
Lab ID:	198519-001	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Prepared:	10/22/07

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	17	10	130788	10/23/07	EPA 3010A	EPA 6010B
Arsenic	ND	6.1	130788	10/23/07	EPA 3010A	EPA 6010B
Barium	67	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130788	10/23/07	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Chromium	370	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Copper	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Lead	3.3	3.0	130788	10/23/07	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130780	10/22/07	METHOD	EPA 7470A
Molybdenum	54	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Selenium	ND	10	130788	10/23/07	EPA 3010A	EPA 6010B
Silver	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Thallium	ND	10	130788	10/23/07	EPA 3010A	EPA 6010B
Vanadium	23	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Zinc	ND	20	130788	10/23/07	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198519	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-8A-GW-70'	Diln Fac:	1.000
Lab ID:	198519-002	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Prepared:	10/22/07

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	30	10	130788	10/23/07	EPA 3010A	EPA 6010B
Arsenic	ND	6.1	130788	10/23/07	EPA 3010A	EPA 6010B
Barium	620	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130788	10/23/07	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Chromium	150	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Copper	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Lead	ND	3.0	130788	10/23/07	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130780	10/22/07	METHOD	EPA 7470A
Molybdenum	65	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Selenium	31	10	130788	10/23/07	EPA 3010A	EPA 6010B
Silver	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Thallium	ND	10	130788	10/23/07	EPA 3010A	EPA 6010B
Vanadium	35	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Zinc	ND	20	130788	10/23/07	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198519	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-9-GW-30.8'	Diln Fac:	1.000
Lab ID:	198519-003	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Prepared:	10/22/07

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	ND	10	130788	10/23/07	EPA 3010A	EPA 6010B
Arsenic	ND	6.1	130788	10/23/07	EPA 3010A	EPA 6010B
Barium	110	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130788	10/23/07	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Chromium	11	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Copper	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Lead	ND	3.0	130788	10/23/07	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130780	10/22/07	METHOD	EPA 7470A
Molybdenum	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Nickel	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Selenium	ND	10	130788	10/23/07	EPA 3010A	EPA 6010B
Silver	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Thallium	ND	10	130788	10/23/07	EPA 3010A	EPA 6010B
Vanadium	6.6	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Zinc	ND	20	130788	10/23/07	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198519	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-4-GW-2.5'	Diln Fac:	1.000
Lab ID:	198519-013	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Prepared:	10/22/07

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	ND	10	130788	10/23/07	EPA 3010A	EPA 6010B
Arsenic	ND	6.1	130788	10/23/07	EPA 3010A	EPA 6010B
Barium	200	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Beryllium	ND	2.0	130788	10/23/07	EPA 3010A	EPA 6010B
Cadmium	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Chromium	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Cobalt	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Copper	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Lead	ND	3.0	130788	10/23/07	EPA 3010A	EPA 6010B
Mercury	ND	0.20	130780	10/22/07	METHOD	EPA 7470A
Molybdenum	12	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Nickel	7.5	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Selenium	ND	10	130788	10/23/07	EPA 3010A	EPA 6010B
Silver	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Thallium	ND	10	130788	10/23/07	EPA 3010A	EPA 6010B
Vanadium	ND	5.0	130788	10/23/07	EPA 3010A	EPA 6010B
Zinc	ND	20	130788	10/23/07	EPA 3010A	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	130780
Lab ID:	QC411516	Prepared:	10/22/07
Matrix:	Filtrate	Analyzed:	10/22/07
Units:	ug/L		

Result	RL
ND	0.20

ND= Not Detected
RL= Reporting Limit

29.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130780
Matrix:	Filtrate	Prepared:	10/22/07
Units:	ug/L	Analyzed:	10/22/07
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC411517	5.000	5.900	118	80-120		
BSD	QC411518	5.000	5.400	108	80-120	9	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7470A
Analyte:	Mercury	Batch#:	130780
Field ID:	ZZZZZZZZZZ	Sampled:	10/17/07
MSS Lab ID:	198482-006	Received:	10/17/07
Matrix:	Filtrate	Prepared:	10/22/07
Units:	ug/L	Analyzed:	10/22/07
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC411520	0.07900	5.000	5.650	111	79-125		
MSD	QC411521		5.000	5.770	114	79-125	2	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC411555	Batch#:	130788
Matrix:	Water	Prepared:	10/22/07
Units:	ug/L	Analyzed:	10/23/07

Analyte	Result	RL
Antimony	ND	10
Arsenic	ND	6.1
Barium	ND	5.0
Beryllium	ND	2.0
Cadmium	ND	5.0
Chromium	ND	5.0
Cobalt	ND	5.0
Copper	ND	5.0
Lead	ND	3.0
Molybdenum	ND	5.0
Nickel	ND	5.0
Selenium	ND	10
Silver	ND	5.0
Thallium	ND	10
Vanadium	ND	5.0
Zinc	ND	20

ND= Not Detected
RL= Reporting Limit

30.0

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Water	Batch#:	130788
Units:	ug/L	Prepared:	10/22/07
Diln Fac:	1.000	Analyzed:	10/23/07

Type: BS Lab ID: QC411556

Analyte	Spiked	Result	%REC	Limits
Antimony	500.0	506.6	101	80-120
Arsenic	100.0	110.2	110	80-120
Barium	2,000	2,139	107	80-120
Beryllium	50.00	56.26	113	80-120
Cadmium	50.00	55.29	111	80-120
Chromium	200.0	211.4	106	80-120
Cobalt	500.0	516.9	103	80-120
Copper	250.0	254.5	102	80-120
Lead	100.0	103.5	104	80-120
Molybdenum	400.0	410.2	103	80-120
Nickel	500.0	533.3	107	80-120
Selenium	100.0	105.1	105	80-120
Silver	50.00	51.77	104	80-120
Thallium	100.0	107.3	107	80-120
Vanadium	500.0	523.3	105	80-120
Zinc	500.0	556.8	111	80-120

Type: BSD Lab ID: QC411557

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	495.2	99	80-120	2	20
Arsenic	100.0	109.0	109	80-120	1	20
Barium	2,000	2,089	104	80-120	2	20
Beryllium	50.00	55.05	110	80-120	2	20
Cadmium	50.00	53.21	106	80-120	4	20
Chromium	200.0	207.5	104	80-120	2	20
Cobalt	500.0	505.2	101	80-120	2	20
Copper	250.0	251.4	101	80-120	1	20
Lead	100.0	98.80	99	80-120	5	20
Molybdenum	400.0	414.8	104	80-120	1	20
Nickel	500.0	522.3	104	80-120	2	20
Selenium	100.0	104.4	104	80-120	1	20
Silver	50.00	50.84	102	80-120	2	20
Thallium	100.0	104.9	105	80-120	2	20
Vanadium	500.0	513.7	103	80-120	2	20
Zinc	500.0	543.7	109	80-120	2	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3010A
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	130788
MSS Lab ID:	198501-001	Sampled:	10/17/07
Matrix:	Water	Received:	10/18/07
Units:	ug/L	Prepared:	10/22/07
Diln Fac:	1.000	Analyzed:	10/23/07

Type: MS Lab ID: QC411558

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	2.491	500.0	515.3	103	80-120
Arsenic	<2.042	100.0	99.40	99	80-127
Barium	31.16	2,000	2,063	102	80-120
Beryllium	0.1092	50.00	53.83	107	80-120
Cadmium	0.3999	50.00	51.89	103	80-120
Chromium	0.7970	200.0	201.4	100	80-120
Cobalt	0.5399	500.0	480.7	96	80-120
Copper	1.429	250.0	253.2	101	80-120
Lead	2.621	100.0	94.95	92	76-120
Molybdenum	12.89	400.0	407.3	99	80-120
Nickel	2.602	500.0	486.7	97	80-120
Selenium	<1.469	100.0	108.2	108	80-128
Silver	0.8259	50.00	49.94	98	73-122
Thallium	<1.616	100.0	97.52	98	78-120
Vanadium	2.392	500.0	508.2	101	80-120
Zinc	<0.8377	500.0	520.1	104	80-123

Type: MSD Lab ID: QC411559

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	500.0	525.3	105	80-120	2	20
Arsenic	100.0	99.30	99	80-127	0	20
Barium	2,000	2,087	103	80-120	1	20
Beryllium	50.00	54.67	109	80-120	2	20
Cadmium	50.00	53.06	105	80-120	2	20
Chromium	200.0	204.7	102	80-120	2	20
Cobalt	500.0	489.9	98	80-120	2	20
Copper	250.0	256.1	102	80-120	1	20
Lead	100.0	97.34	95	76-120	2	20
Molybdenum	400.0	416.7	101	80-120	2	20
Nickel	500.0	497.9	99	80-120	2	20
Selenium	100.0	108.5	109	80-128	0	20
Silver	50.00	51.38	101	73-122	3	20
Thallium	100.0	101.0	101	78-120	3	20
Vanadium	500.0	515.9	103	80-120	2	20
Zinc	500.0	526.5	105	80-123	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198519	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-16-SS-0.0'	Diln Fac:	1.000
Lab ID:	198519-014	Sampled:	10/16/07
Matrix:	Soil	Received:	10/18/07
Units:	mg/Kg	Analyzed:	10/22/07
Basis:	as received		

Analyte	Result	RL	Batch#	Prepared	Prep	Analysis
Antimony	5.9	0.50	130744	10/19/07	EPA 3050B	EPA 6010B
Arsenic	6.0	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Barium	120	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Beryllium	0.48	0.10	130744	10/19/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Chromium	24	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Cobalt	8.5	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Copper	27	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Lead	8.4	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Mercury	0.023	0.020	130798	10/22/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Nickel	33	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Selenium	1.2	0.50	130744	10/19/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130744	10/19/07	EPA 3050B	EPA 6010B
Vanadium	27	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Zinc	61	1.0	130744	10/19/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 26 Metals

Lab #:	198519	Project#:	379-1827-15-02
Client:	Weiss Associates	Location:	Cloverdale Project
Field ID:	B-16-SS-55'	Diln Fac:	1.000
Lab ID:	198519-015	Sampled:	10/17/07
Matrix:	Soil	Received:	10/18/07
Units:	mg/Kg	Analyzed:	10/22/07
Basis:	as received		

Analyte	Result	RL	Batch#	Prepared	Prep	Analysis
Antimony	6.3	0.50	130744	10/19/07	EPA 3050B	EPA 6010B
Arsenic	5.3	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Barium	230	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Beryllium	0.40	0.10	130744	10/19/07	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Chromium	28	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Cobalt	11	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Copper	47	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Lead	9.7	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Mercury	0.18	0.020	130798	10/22/07	METHOD	EPA 7471A
Molybdenum	ND	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Nickel	38	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Selenium	2.8	0.50	130744	10/19/07	EPA 3050B	EPA 6010B
Silver	ND	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Thallium	ND	0.50	130744	10/19/07	EPA 3050B	EPA 6010B
Vanadium	40	0.25	130744	10/19/07	EPA 3050B	EPA 6010B
Zinc	74	1.0	130744	10/19/07	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC411382	Batch#:	130744
Matrix:	Soil	Prepared:	10/19/07
Units:	mg/Kg	Analyzed:	10/22/07
Basis:	as received		

Analyte	Result	RL
Antimony	ND	0.50
Arsenic	ND	0.25
Barium	ND	0.25
Beryllium	ND	0.10
Cadmium	ND	0.25
Chromium	ND	0.25
Cobalt	ND	0.25
Copper	ND	0.25
Lead	ND	0.25
Molybdenum	ND	0.25
Nickel	ND	0.25
Selenium	ND	0.50
Silver	ND	0.25
Thallium	ND	0.50
Vanadium	ND	0.25
Zinc	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	130744
Units:	mg/Kg	Prepared:	10/19/07
Basis:	as received	Analyzed:	10/22/07
Diln Fac:	1.000		

Type: BS Lab ID: QC411383

Analyte	Spiked	Result	%REC	Limits
Antimony	100.0	90.61	91	80-120
Arsenic	50.00	51.35	103	80-120
Barium	100.0	94.72	95	80-120
Beryllium	2.500	2.342	94	80-120
Cadmium	10.00	9.926	99	80-120
Chromium	100.0	93.02	93	80-120
Cobalt	25.00	22.56	90	80-120
Copper	12.50	11.14	89	80-120
Lead	100.0	93.81	94	80-120
Molybdenum	20.00	19.21	96	80-120
Nickel	25.00	23.09	92	80-120
Selenium	50.00	47.24	94	80-120
Silver	10.00	8.805	88	80-120
Thallium	50.00	44.02	88	80-120
Vanadium	25.00	23.44	94	80-120
Zinc	25.00	23.55	94	80-120

Type: BSD Lab ID: QC411384

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	100.0	91.16	91	80-120	1	20
Arsenic	50.00	51.21	102	80-120	0	20
Barium	100.0	94.24	94	80-120	1	20
Beryllium	2.500	2.317	93	80-120	1	20
Cadmium	10.00	9.923	99	80-120	0	20
Chromium	100.0	92.04	92	80-120	1	20
Cobalt	25.00	22.55	90	80-120	0	20
Copper	12.50	11.08	89	80-120	1	20
Lead	100.0	93.64	94	80-120	0	20
Molybdenum	20.00	19.12	96	80-120	0	20
Nickel	25.00	23.03	92	80-120	0	20
Selenium	50.00	47.08	94	80-120	0	20
Silver	10.00	8.720	87	80-120	1	20
Thallium	50.00	44.06	88	80-120	0	20
Vanadium	25.00	23.14	93	80-120	1	20
Zinc	25.00	23.60	94	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3050B
Project#:	379-1827-15-02	Analysis:	EPA 6010B
Field ID:	B-16-SS-0.0'	Batch#:	130744
MSS Lab ID:	198519-014	Sampled:	10/16/07
Matrix:	Soil	Received:	10/18/07
Units:	mg/Kg	Prepared:	10/19/07
Basis:	as received	Analyzed:	10/22/07
Diln Fac:	1.000		

Type: MS Lab ID: QC411385

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	5.895	90.09	32.77	30	1-122
Arsenic	6.028	45.05	39.90	75	72-120
Barium	120.9	90.09	151.0	33 *	49-139
Beryllium	0.4788	2.252	1.937	65 *	80-120
Cadmium	<0.002477	9.009	6.205	69 *	74-120
Chromium	23.54	90.09	77.19	60 *	65-120
Cobalt	8.521	22.52	21.49	58 *	60-120
Copper	26.60	11.26	27.28	6 *	47-146
Lead	8.355	90.09	66.66	65	53-123
Molybdenum	<0.02084	18.02	11.85	66	66-120
Nickel	32.96	22.52	37.12	18 *	43-142
Selenium	1.172	45.05	32.73	70 *	71-120
Silver	<0.01699	9.009	6.267	70	66-120
Thallium	0.2793	45.05	26.97	59 *	62-120
Vanadium	27.42	22.52	34.95	33 *	52-139
Zinc	61.06	22.52	59.50	-7 *	42-147

Type: MSD Lab ID: QC411386

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	98.04	33.89	29	1-122	5	30
Arsenic	49.02	44.20	78	72-120	3	20
Barium	98.04	186.5	67	49-139	17	23
Beryllium	2.451	2.189	70 *	80-120	5	20
Cadmium	9.804	6.938	71 *	74-120	3	20
Chromium	98.04	89.34	67	65-120	8	20
Cobalt	24.51	24.67	66	60-120	8	24
Copper	12.25	38.43	97	47-146	31 *	21
Lead	98.04	75.21	68	53-123	4	28
Molybdenum	19.61	13.04	67	66-120	1	20
Nickel	24.51	47.42	59	43-142	21	26
Selenium	49.02	36.65	72	71-120	3	20
Silver	9.804	6.926	71	66-120	2	20
Thallium	49.02	29.14	59 *	62-120	1	20
Vanadium	24.51	43.09	64	52-139	17	20
Zinc	24.51	78.23	70	42-147	25	27

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC411603	Batch#:	130798
Matrix:	Soil	Prepared:	10/22/07
Units:	mg/Kg	Analyzed:	10/22/07

Result	RL
ND	0.020

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Matrix:	Soil	Batch#:	130798
Units:	mg/Kg	Prepared:	10/22/07
Basis:	as received	Analyzed:	10/22/07

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC411604	0.5000	0.5460	109	80-120		
BSD	QC411605	0.5000	0.5360	107	80-120	2	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 26 Metals

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	130798
MSS Lab ID:	198414-001	Sampled:	10/15/07
Matrix:	Soil	Received:	10/16/07
Units:	mg/Kg	Prepared:	10/22/07
Basis:	as received	Analyzed:	10/22/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC411607	0.06024	0.5000	0.6240	113	70-143		
MSD	QC411608		0.5000	0.5900	106	70-143	6	22

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Batch#:	130697
Matrix:	Water	Received:	10/18/07
Units:	mg/L		

Field ID	Type	Lab ID	Result	RL	Diln Fac	Sampled	Analyzed
B-16-GW-45'	SAMPLE	198519-001	ND	0.05	1.000	10/17/07 09:00	10/18/07 18:43
B-8A-GW-70'	SAMPLE	198519-002	0.12	0.05	1.000	10/17/07 09:00	10/18/07 18:08
B-9-GW-30.8'	SAMPLE	198519-003	7.4	0.10	2.000	10/17/07 18:30	10/18/07 23:41
B-4-GW-2.5'	SAMPLE	198519-013	3.3	0.05	1.000	10/17/07 18:00	10/18/07 19:53
	BLANK	QC411198	ND	0.05	1.000		10/18/07 17:28

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	METHOD
Project#:	379-1827-15-02	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	B-16-GW-45'	Batch#:	130697
MSS Lab ID:	198519-001	Sampled:	10/17/07 09:00
Matrix:	Water	Received:	10/18/07

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC411199		1.000	1.062	106	80-120			1.000	10/18/07 20:28
BSD	QC411200		1.000	1.024	102	80-120	4	20	1.000	10/18/07 20:46
MS	QC411207	0.04546	5.000	5.322	106	80-120			10.00	10/18/07 21:21
MSD	QC411208		5.000	5.209	103	80-120	2	20	10.00	10/18/07 21:38

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Field ID:	B-16-SS-55'	Batch#:	130830
Matrix:	Soil	Sampled:	10/17/07 10:15
Units:	mg/Kg	Received:	10/18/07
Basis:	as received		

Type	Lab ID	Result	RL	Analyzed
SAMPLE	198519-015	ND	0.5	10/23/07 12:14
BLANK	QC411736	ND	0.5	10/23/07 11:18

ND= Not Detected
RL= Reporting Limit

35.0

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	198519	Location:	Cloverdale Project
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1827-15-02		
Analyte:	Nitrogen, Nitrate	Basis:	as received
Field ID:	B-16-SS-55'	Batch#:	130830
MSS Lab ID:	198519-015	Sampled:	10/17/07 10:15
Matrix:	Soil	Received:	10/18/07
Units:	mg/Kg		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC411737		10.00	9.862	99	80-120			1.000	10/23/07 11:36
BSD	QC411738		10.00	9.643	96	80-120	2	20	1.000	10/23/07 11:53
MS	QC411739	0.1188	5.100	4.793	92	50-120			1.020	10/23/07 12:39
MSD	QC411740		5.100	4.860	93	50-120	1	30	1.020	10/23/07 12:56

RPD= Relative Percent Difference

198519

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

Chain of Custody Record

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 10/17/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier: —
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☐ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15
1 of 3 COCs
Job No. 379-1827-15-02
SDG No.

	Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	Filtered Sample	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
-1	B-16-GW-45	10/17/07	9:00	VOA	GW	6		✓			✓				
				1L amber		2				✓					
				750ml poly		1	✓		✓						
				750ml poly		1						✓			
-2	B-8a-GW-70		15:00	VOA		6		✓			✓				Sample is very silty
				1L amber		2				✓					
				750ml poly		1	✓		✓						(partial bottle)
				750ml poly		1						✓			
-3	B-9-GW-30.8		18:30	VOA		6		✓			✓				
				1L amber		2				✓					
				750 ml poly		1	✓		✓						
				750 ml poly		1						✓			
-4	Trip Blank			VOA	AQ	1									

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Weiss Associates	10/17/07 2130	[signature]	C&T	10/18/07 1322
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

*. refrigerator in locked Storage unit

rutact on ice cold Re

198519

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

Chain of Custody Record

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 10/17/07	1827-15
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier:	2 of 3 COCs
5801 Christie Avenue, Suite 600	Analysis Turnaround Time			Job No. 379-1827-15-02
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days			
(510) - 450 - 6000 Phone	TAT if different from above: 5 days			
(510) - 547 - 5043 FAX	☐ 2 weeks			SDG No.
Project Name: Cloverdale Project	☐ 1 week			
Site: Cloverdale, Ca	☐ 2 days			
C&T-WO-07-002	☐ 1 day			

	Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	Archived Samples	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
-5	B-12-55-0.0' - North 2.5	10/17/07	15:00	G	SO	1								✓	
-6	- North 5.0	↓	↓	↓	↓	↓								✓	
-7	- South 2.5													✓	
-8	- South 5.0													✓	
-9	- East 2.5													✓	
-10	- East 5.0													✓	
-11	- West 2.5													✓	
-12	- West 5.0	↓	↓	↓	↓	↓								✓	
-13	B-4-GW-2.5'	10/17/07	18:00	VOA	GW	6		✓			✓				
		↓	↓	1L amber	↓	2				✓					
				750ml poly		1	✓		✓						
	↓	↓	↓	750ml poly	↓	1						✓			
KHW 10/18/07 -14	Trip Blank 10/17/07			VOA	AQ	1									

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Robert R. [illegible]	Weiss Associates	10/17/07 2130	[illegible]	C&T	10/18/07 1322
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

* refrigerator in locked storage room

intact on ice cold Rm

198519

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

Chain of Custody Record

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 10/17/07
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier:
5801 Christie Avenue, Suite 600	Analysis Turnaround Time		
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days		
(510) - 450 - 6000 Phone	TAT if different from above: 5 days		
(510) - 547 - 5043 FAX	☐ 2 weeks		
Project Name: Cloverdale Project	☐ 1 week		
Site: Cloverdale, Ca	☐ 2 days		
C&T-WO-07-002	☐ 1 day		

1827-15
3 of 3 COCs
Job No. 379-1827-15-02
SDG No.

	Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	Archive Sample	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
-14	B-16-SS-0.0-	10/16/07	10:00	G	SO	1		✓	✓	✓	✓		✓		
-15	B-16-SS-55-	10/17/07	10:15	G	SO	1		✓	✓	✓	✓	✓			

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☒ *Disposal By Lab* ☐ *Archive For _____ Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Robert Ricci	Weiss Associates	10/17/07 2130	[illegible]	C&T	10/18/07 1322
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

* refrigerate in locked storage unit

intact on ice cold RL

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 198519 Date Received: 10/18/07 Number of Coolers: 2
Client: Weiss Project: Cloverdale

A. Preliminary Examination Phase
Date Opened: 10/18 By (print): KWellbrock (sign) KWellbrock

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)
   If YES, enter carrier name and airbill number: _____
2. Were custody seals on outside of cooler? ..... YES (NO)
   How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO N/A
4. Were custody papers dry and intact when received? ..... (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... YES NO *
6. Did you sign the custody papers in the appropriate place? ..... (YES) NO
7. Was project identifiable from custody papers? ..... (YES) NO
   If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bags
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... YES NO
   Type of ice: wet & blue Temperature: no temp blank - cold on ice
10. Were Encore sampling devices present in the cooler? ..... YES (NO)
    If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10/18 By (print): KWellbrock (sign) KWellbrock

1. Did all bottles arrive unbroken? ..... (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... (YES) NO
3. Did bottle labels agree with custody papers? ..... (YES) NO
4. Were appropriate containers used for the tests indicated? ..... (YES) NO
5. Were correct preservatives added to samples? ..... (YES) NO
6. Was sufficient amount of sample sent for tests indicated? ..... (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below ..... YES NO *
8. Was the client contacted concerning this sample delivery? ..... YES NO
   If YES, give details below.
   Who was called? _____ By whom? _____ Date: _____

Additional Comments:
B5: Sent only 1 Trip Blank, not 2 as written on COC
B7: 3/6 B-8-GW-70 w/ bubbles ; Trip Blank w/ Bubble

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Weiss Associates 5801 Christie Avenue Emeryville, CA 94608	Project : 379-1827-15-02 Location : Cloverdale Project Level : II

Sample ID	Lab ID
B-8-GW-+1.25'	198756-001

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 11/12/2007
Project Manager

Signature: _____ Date: 11/15/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**198756**
Client:	**Weiss Associates**
Project:	**379-1827-15-02**
Location:	**Cloverdale Project**
Request Date:	**10/26/07**
Samples Received:	**10/10/07**

This hardcopy data package contains sample and QC results for one water sample, requested for the above referenced project on 10/26/07. The sample was received on ice and intact.

TPH-Extractables by GC (EPA 8015B):

198756-001 was prepared outside of hold time per client request; affected data was qualified with "b". No other analytical problems were encountered.

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	198756	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Field ID:	B-8-GW-+1.25'	Sampled:	10/09/07
Matrix:	Water	Received:	10/10/07
Units:	ug/L	Prepared:	10/27/07
Diln Fac:	1.000	Analyzed:	10/28/07
Batch#:	131027		

Type: SAMPLE Cleanup Method: EPA 3630C
Lab ID: 198756-001

Analyte	Result	RL	MDL
Diesel C10-C24	ND b	50	
Motor Oil C24-C36	ND b	300	85

Surrogate	%REC	Limits
Hexacosane	91 b	61-133

Type: BLANK Cleanup Method: EPA 3630C
Lab ID: QC412574

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	
Motor Oil C24-C36	ND	300	85

Surrogate	%REC	Limits
Hexacosane	100	61-133

b= See narrative
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	198756	Location:	Cloverdale Project
Client:	Weiss Associates	Prep:	EPA 3520C
Project#:	379-1827-15-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	131027
Units:	ug/L	Prepared:	10/27/07
Diln Fac:	1.000	Analyzed:	10/28/07

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC412575

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,192	88	58-128

Surrogate	%REC	Limits
Hexacosane	92	61-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC412576

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,289	92	58-128	4	29

Surrogate	%REC	Limits
Hexacosane	93	61-133

RPD= Relative Percent Difference

Lisa Brooker 198756

From: "Joyce E. Adams" <jea@weiss.com>
To: <anne@ctberk.com>; <lisa@ctberk.com>
Sent: Friday, October 26, 2007 5:21 PM
Subject: Rush sample analysis for Cloverdale project

Please do a silica gel cleanup and TPH-D and TPH-MO by EPA Method 8015 modified.

The sample 198234-003.

Joyce

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

198234

Chain of Custody Record

	Project Manager: J. Adams	Site Contact: R. Davis	Date: 10/9/07	1827-15-J
Weiss Associates	Tel/Fax: 510-450-6162	Lab Contact: Anne Kathain	Carrier: UPS - 9X3169	1 of 1 COCs
5801 Christie Avenue, Suite 600	Analysis Turnaround Time			Job No. 379-1827-15-02
Emeryville, CA 94608	Calendar (C) or Work Days (W) 5 days			
(510) - 450 - 6000 Phone	TAT if different from above: 5 days			
(510) - 547 - 5043 FAX	☐ 2 weeks			SDG No.
Project Name: Cloverdale Project	☐ 1 week			
Site: Cloverdale, Ca	☐ 2 days			
C&T-WO-07-002	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Container Type	Matrix	# of Cont.	VOCs EPA 8260B	Cam 17 Metals EPA 6010b/ 7000 series	TPH-D/MO EPA 8015M	TPH-G EPA 8015M	Nitrate Method 300	Asbestos PCM	Pesticides/PCBs EPA 8081/8082	Sample Specific Notes:
B-8-SS-0.0'	10/8/07	15:30		SO	1	✓	✓	✓	✓		✓		
B-8-SS-68'	10/9/07	13:15		SO	1	✓	✓	✓	✓	✓			
B-8-GW-+1.25'	10/9/07	07:40	VOA	GW	3	✓							
			VOA		3				✓				
			1L poly		2			✓					
			750 ml poly		1	✓	✓						
			500 ml poly		1					✓			
Trip Blank	10/9/07		VOA	AQ									

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For _____ Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Weiss Associates	10/9/07, 15:00	[signature]	C&T	10-10-07 1050
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 198234 Date Received: 10-10-07 Number of Coolers: 1
Client: Weiss Project: Cloverdale

A. Preliminary Examination Phase
Date Opened: 10-10-07 By (print): Faith Nichols (sign) [signature]

1. Did cooler come with a shipping slip (airbill, etc.)? ..... (YES) NO
   If YES, enter carrier name and airbill number: UPS 12 832 32E 01 4339 6827
2. Were custody seals on outside of cooler? ..... YES (NO)
   How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO N/A
4. Were custody papers dry and intact when received? ..... (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO
6. Did you sign the custody papers in the appropriate place? ..... (YES) NO
7. Was project identifiable from custody papers? ..... (YES) NO
   If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bubble wrap, Voa foam
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... (YES) NO
   Type of ice: Wet Temperature: No temp blank, All cold
10. Were Encore sampling devices present in the cooler? ..... YES (NO)
    If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10-10-07 By (print): Faith Nichols (sign) [signature]

1. Did all bottles arrive unbroken? ..... (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... (YES) NO
3. Did bottle labels agree with custody papers? ..... (YES) NO
4. Were appropriate containers used for the tests indicated? ..... (YES) NO
5. Were correct preservatives added to samples? ..... (YES) NO
6. Was sufficient amount of sample sent for tests indicated? ..... (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below ..... (YES) NO
8. Was the client contacted concerning this sample delivery? ..... YES NO
   If YES, give details below.
   Who was called? _____ By whom? _____ Date: _____

Additional Comments:
Trip Blank listed on COC but not in cooler

Curtis & Tompkins, Ltd.

Dissolved Chloride

Lab #:	203418	Location:	35 Acres Site, Cloverdale
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1824-15-3		
Analyte:	Chloride	Batch#:	138346
Units:	mg/L	Received:	05/20/08

Field ID	Type	Lab ID	Matrix	Result	RL	Diln Fac	Sampled	Analyzed
0508-01	SAMPLE	203418-001	Filtrate	21	1.0	5.000	05/19/08 13:45	05/21/08 05:39
0508-02	SAMPLE	203418-002	Filtrate	41	2.0	10.00	05/19/08 10:50	05/20/08 15:59
0508-03	SAMPLE	203418-003	Filtrate	110	2.0	10.00	05/19/08 12:45	05/21/08 08:20
0508-04	SAMPLE	203418-004	Filtrate	12	0.20	1.000	05/20/08 10:40	05/20/08 19:47
0508-05	SAMPLE	203418-005	Filtrate	17	0.20	1.000	05/20/08 08:50	05/20/08 19:12
0508-06	SAMPLE	203418-006	Filtrate	11	0.20	1.000	05/20/08 11:15	05/20/08 20:39
0508-07	SAMPLE	203418-007	Filtrate	15	0.20	1.000	05/19/08 15:35	05/20/08 22:24
0508-08	SAMPLE	203418-008	Filtrate	71	1.0	5.000	05/19/08 14:40	05/20/08 16:38
0508-09	SAMPLE	203418-009	Filtrate	26	1.0	5.000	05/19/08 11:45	05/21/08 08:37
0508-12	SAMPLE	203418-010	Filtrate	17	0.20	1.000	05/20/08 09:00	05/20/08 19:30
	BLANK	QC442698	Water	ND	0.20	1.000		05/20/08 11:21

ND= Not Detected
RL= Reporting Limit

56.0

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Chloride

Lab #:	203418	Location:	35 Acres Site, Cloverdale
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1824-15-3		
Analyte:	Chloride	Batch#:	138346
Field ID:	0508-01	Sampled:	05/19/08 13:45
MSS Lab ID:	203418-001	Received:	05/20/08
Units:	mg/L		

Type	Lab ID	Matrix	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC442699	Water		4.000	3.738	93	80-120			1.000	05/20/08 11:38
BSD	QC442700	Water		4.000	3.743	94	80-120	0	20	1.000	05/20/08 11:55
MS	QC442701	Filtrate	20.83	10.00	29.84	90	80-120			5.000	05/21/08 07:06
MSD	QC442702	Filtrate		10.00	29.95	91	80-120	0	20	5.000	05/21/08 07:23

RPD= Relative Percent Difference

57.0

Curtis & Tompkins, Ltd.

Dissolved Fluoride

Lab #:	203418	Location:	35 Acres Site, Cloverdale
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1824-15-3		
Analyte:	Fluoride	Batch#:	138573
Units:	mg/L	Received:	05/20/08
Diln Fac:	1.000		

Field ID	Type	Lab ID	Matrix	Result	RL	Sampled	Analyzed
0508-01	SAMPLE	203418-001	Filtrate	ND	0.10	05/19/08 13:45	05/27/08 22:29
0508-02	SAMPLE	203418-002	Filtrate	0.38	0.10	05/19/08 10:50	05/27/08 22:47
0508-03	SAMPLE	203418-003	Filtrate	0.23	0.10	05/19/08 12:45	05/28/08 00:31
0508-04	SAMPLE	203418-004	Filtrate	0.37	0.10	05/20/08 10:40	05/28/08 01:06
0508-05	SAMPLE	203418-005	Filtrate	1.5	0.10	05/20/08 08:50	05/28/08 01:23
0508-06	SAMPLE	203418-006	Filtrate	ND	0.10	05/20/08 11:15	05/28/08 01:41
0508-07	SAMPLE	203418-007	Filtrate	ND	0.10	05/19/08 15:35	05/28/08 01:58
0508-08	SAMPLE	203418-008	Filtrate	0.25	0.10	05/19/08 14:40	05/28/08 02:16
0508-09	SAMPLE	203418-009	Filtrate	0.28	0.10	05/19/08 11:45	05/28/08 02:33
0508-12	SAMPLE	203418-010	Filtrate	1.5	0.10	05/20/08 09:00	05/28/08 02:50
	BLANK	QC443601	Water	ND	0.10		05/27/08 19:53

ND= Not Detected
RL= Reporting Limit

58.0

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Fluoride

Lab #:	203418	Location:	35 Acres Site, Cloverdale
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1824-15-3		
Analyte:	Fluoride	Batch#:	138573
Field ID:	0508-04	Sampled:	05/20/08 10:40
MSS Lab ID:	203418-004	Received:	05/20/08
Units:	mg/L		

Type	Lab ID	Matrix	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC443602	Water		2.000	2.028	101	80-120			1.000	05/27/08 20:10
BSD	QC443603	Water		2.000	2.034	102	80-120	0	20	1.000	05/27/08 20:28
MS	QC443604	Filtrate	0.3650	1.020	1.339	96	69-120			1.020	05/27/08 20:45
MSD	QC443605	Filtrate		1.020	1.395	101	69-120	4	20	1.020	05/27/08 21:02

RPD= Relative Percent Difference

59.0

Curtis & Tompkins, Ltd.

Dissolved Nitrate Nitrogen

Lab #:	203418	Location:	35 Acres Site, Cloverdale
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1824-15-3		
Analyte:	Nitrogen, Nitrate	Batch#:	138346
Units:	mg/L	Received:	05/20/08

Field ID	Type	Lab ID	Matrix	Result	RL	Diln Fac	Sampled	Analyzed
0508-01	SAMPLE	203418-001	Filtrate	0.67	0.05	1.000	05/19/08 13:45	05/20/08 15:42
0508-02	SAMPLE	203418-002	Filtrate	1.5	0.05	1.000	05/19/08 10:50	05/20/08 20:05
0508-03	SAMPLE	203418-003	Filtrate	0.79	0.05	1.000	05/19/08 12:45	05/20/08 21:14
0508-04	SAMPLE	203418-004	Filtrate	ND	0.05	1.000	05/20/08 10:40	05/20/08 19:47
0508-05	SAMPLE	203418-005	Filtrate	ND	0.05	1.000	05/20/08 08:50	05/20/08 19:12
0508-06	SAMPLE	203418-006	Filtrate	2.1	0.05	1.000	05/20/08 11:15	05/20/08 20:39
0508-07	SAMPLE	203418-007	Filtrate	6.6	0.10	2.000	05/19/08 15:35	05/21/08 07:45
0508-08	SAMPLE	203418-008	Filtrate	0.33	0.05	1.000	05/19/08 14:40	05/20/08 21:49
0508-09	SAMPLE	203418-009	Filtrate	ND	0.05	1.000	05/19/08 11:45	05/20/08 20:57
0508-12	SAMPLE	203418-010	Filtrate	ND	0.05	1.000	05/20/08 09:00	05/20/08 19:30
	BLANK	QC442698	Water	ND	0.05	1.000		05/20/08 11:21

ND= Not Detected
RL= Reporting Limit

60.0

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Nitrate Nitrogen

Lab #:	203418	Location:	35 Acres Site, Cloverdale
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1824-15-3		
Analyte:	Nitrogen, Nitrate	Batch#:	138346
Field ID:	0508-01	Sampled:	05/19/08 13:45
MSS Lab ID:	203418-001	Received:	05/20/08
Units:	mg/L		

Type	Lab ID	Matrix	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC442699	Water		1.000	0.9346	93	80-120			1.000	05/20/08 11:38
BSD	QC442700	Water		1.000	0.9375	94	80-120	0	20	1.000	05/20/08 11:55
MS	QC442701	Filtrate	0.6703	2.500	2.994	93	80-120			5.000	05/21/08 07:06
MSD	QC442702	Filtrate		2.500	3.101	97	80-120	3	20	5.000	05/21/08 07:23

RPD= Relative Percent Difference

61.0

Curtis & Tompkins, Ltd.

Dissolved Sulfate

Lab #:	203418	Location:	35 Acres Site, Cloverdale
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1824-15-3		
Analyte:	Sulfate	Batch#:	138346
Units:	mg/L	Received:	05/20/08

Field ID	Type	Lab ID	Matrix	Result	RL	Diln Fac	Sampled	Analyzed
0508-01	SAMPLE	203418-001	Filtrate	43	0.50	1.000	05/19/08 13:45	05/20/08 15:42
0508-02	SAMPLE	203418-002	Filtrate	130	5.0	10.00	05/19/08 10:50	05/20/08 15:59
0508-03	SAMPLE	203418-003	Filtrate	110	2.5	5.000	05/19/08 12:45	05/20/08 16:17
0508-04	SAMPLE	203418-004	Filtrate	20	0.50	1.000	05/20/08 10:40	05/20/08 19:47
0508-05	SAMPLE	203418-005	Filtrate	6.2	0.50	1.000	05/20/08 08:50	05/20/08 19:12
0508-06	SAMPLE	203418-006	Filtrate	14	0.50	1.000	05/20/08 11:15	05/20/08 20:39
0508-07	SAMPLE	203418-007	Filtrate	20	0.50	1.000	05/19/08 15:35	05/20/08 22:24
0508-08	SAMPLE	203418-008	Filtrate	48	0.50	1.000	05/19/08 14:40	05/20/08 21:49
0508-09	SAMPLE	203418-009	Filtrate	23	0.50	1.000	05/19/08 11:45	05/20/08 20:57
0508-12	SAMPLE	203418-010	Filtrate	6.1	0.50	1.000	05/20/08 09:00	05/20/08 19:30
	BLANK	QC442698	Water	ND	0.50	1.000		05/20/08 11:21

ND= Not Detected
RL= Reporting Limit

62.0

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Sulfate

Lab #:	203418	Location:	35 Acres Site, Cloverdale
Client:	Weiss Associates	Analysis:	EPA 300.0
Project#:	379-1824-15-3		
Analyte:	Sulfate	Batch#:	138346
Field ID:	0508-01	Sampled:	05/19/08 13:45
MSS Lab ID:	203418-001	Received:	05/20/08
Units:	mg/L		

Type	Lab ID	Matrix	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC442699	Water		10.00	9.461	95	80-120			1.000	05/20/08 11:38
BSD	QC442700	Water		10.00	9.400	94	80-120	1	20	1.000	05/20/08 11:55
MS	QC442701	Filtrate	43.00	25.00	66.88	96	80-120			5.000	05/21/08 07:06
MSD	QC442702	Filtrate		25.00	67.50	98	80-120	1	20	5.000	05/21/08 07:23

RPD= Relative Percent Difference

63.0

203418

Weiss Associates
Environmental Science, Engineering and Management Services
5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043
AguaTierra Associates Incorporated, DBA

Project Manager: Joyce Adams, 510-450-6162

379--1824-15-3
1824-051908

INSTRUCTIONS FOR LAB PERSONNEL:
GeoTracker EDF required? ☐ Yes ☒ No
Include laboratory QA/QC data with report.
Specify analytic/prep method and detection limit in report.
Notify us of any anomalous peaks in GC or other scans.
Call immediately with any questions or problems.

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMD Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

Sample ID	Sample Date	Sample Time	# of Con-tainers	Sample/ Container Type[1] (T)	Volume S	Preser-vative? (2)	Refrig? 3	Turn 4	Analyze for	Analytical Method	Special Instructions
0508-01	5/19/08	1345	1	W/P	500 ml	HNO3	Y	N	CAM 17 metals/6020	6020	filtered in the field; 0.45 um
									Major Cations	Major cations	Sodium, Magnesium, Calcium
											Potassium
									Total Manganese	6010	
0508-01	↓	↓	1	W/A	1L	N	Y	N	TPHd/mo	8015M	Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup
0508-01	↓	↓	1	W/P	1L	N	Y	N	Nitrate	300	**Nitrate 48 hours hold time**
									Sulfate	300	Anion 28 days hold time
									Chloride/Fluoride	300	
									Total Dissolved Solids	160.1	
									Alkalinity	310.2	Carbonate, bicarbonate
0508-01	↓	↓	3	W/V	40 ml	N	Y	N	Carbon Dioxide	RSK-175	

1 [signature] 5/20/08 1200 ☒ — Released by (Signature), Date, Time
1 (Affiliation) Weiss
2 [signature] 5/20/08 1200 ☐ — Received by (Signature), Date, Time
2 (Affiliation) C&T
3 ☐ — Released by (Signature), Date, Time
3 (Affiliation)
4 ☐ — Received by (Signature), Date, Time
4 (Affiliation)
5 ☐ — Released by (Signature), Date, Time
5 (Affiliation)
6 ☐ — Received by (Signature), Date, Time
6 (Affiliation)

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
2 = Preservative (Y/N)
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

Other instructions: X RECEIVED ON ICE

Page 1 of 11

Received ☐ On Ice
☐ Cold ☐ Ambient ☐ Intact

J:\PerryJohnson\1824WaterResources\Protocols\379-1846_040708_protocol

7 1

203418

Weiss Associates

Environmental Science, Engineering and Management Services

5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043

AguaTierra Associates Incorporated, DBA

Project Manager: Joyce Adams, 510-450-6162 379--1824-15-3 1824-051908	**INSTRUCTIONS FOR LAB PERSONNEL:** GeoTracker EDF required? ☐ Yes ☒ No Include laboratory QA/QC data with report. Specify analytic/prep method and detection limit in report. Notify us of any anomalous peaks in GC or other scans. Call immediately with any questions or problems.

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMP Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

Sample ID	Sample Date	Sample Time	# of Con-tainers	Sample/ Container Type[1] (T)	Volume S	Preser-vative? (2)	Refrig? 3	Turn 4	Analyze for	Analytical Method	Special Instructions
5 0408-02	5/19/08	1050	3	W/V	40 ml	HCL	Y	N	VOCs/8260B	8260B	full List 0.5 ppb detection limits
5 0408-02			1	W/P	500 ml	HNO3	Y	N	CAM 17 metals/6020 Major Cations Total Manganese	6020 Major cations 6010	filtered in the field; 0.45 um Sodium, Magnesium, Calcium Potassium
5 0408-02			1	W/A	1L	N	Y	N	TPHd/mo	8015M	Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup
5 0408-02			1	W/P	1L	N	Y	N	Nitrate Sulfate Chloride/Fluoride Total Dissolved Solids Alkalinity	300 300 300 160.1 310.2	**Nitrate 48 hours hold time** Anion 28 days hold time TDS Carbonate, bicarbonate
5 0408-02			3	W/V	40 ml	N	Y	N	Carbon Dioxide	RSK-175	

2

1 Released by (Signature), Date, Time 5/20/08 1200 ☒ 3 Released by (Signature), Date, Time ☐ 5 Released by (Signature), Date, Time ☐

1 (Affiliation) Weiss 3 (Affiliation) 5 (Affiliation)

2 Received by (Signature), Date, Time 5/20/08 1200 ☐ 4 Received by (Signature), Date, Time ☐ 6 Received by (Signature), Date, Time ☐

2 (Affiliation) C&T 4 (Affiliation) 6 (Affiliation)

1 = Sample Type Codes: W = Water, S = Soil, Specify Other Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other

2 = Preservative (Y/N) 3 = Refrigerated (Y/N) 4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

Other instructions:

*RECEIVED ONICE

Page 2 of 11

203418

Weiss Associates
Environmental Science, Engineering and Management Services
5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043
AguaTierra Associates Incorporated, DBA

Project Manager: Joyce Adams, 510-450-6162 379--1824-15-3 1824-051908	**INSTRUCTIONS FOR LAB PERSONNEL:** GeoTracker EDF required? ☐ Yes ☒ No Include laboratory QA/QC data with report. Specify analytic/prep method and detection limit in report. Notify us of any anomalous peaks in GC or other scans. Call immediately with any questions or problems.

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMD Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

Sample ID	Sample Date	Sample Time	# of Con-tainers	Sample/ Container Type[1] (T)	Volume S	Preser-vative? (2)	Refrig? 3	Turn 4	Analyze for	Analytical Method	Special Instructions
0508-03	5/19/08	1245	1	W/P	500 ml	HNO3	Y	N	CAM 17 metals/6020 Major Cations Total Manganese	6020 Major cations 6010	filtered in the field; 0.45 um Sodium, Magnesium, Calcium Potassium
0508-03			1	W/A	1L	N	Y	N	TPHd/mo	8015M	Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup
0508-03			1	W/P	1L	N	Y	N	Nitrate Sulfate Chloride/Fluoride Total Dissolved Solids Alkalinity	300 300 300 160.1 310.2	**Nitrate 48 hours hold time** Anion 28 days hold time TDS Carbonate, bicarbonate
0508-03			3	W/V	40 ml	N	Y	N	Carbon Dioxide	RSK-175	

3

1 Released by (Signature), Date, Time	5/20/08 1200	☒	3 Released by (Signature), Date, Time	☐	5 Released by (Signature), Date, Time ☐
1 (Affiliation) Weiss			3 (Affiliation)		5 (Affiliation)
2 Received by (Signature), Date, Time	5/20/08 1200	☐	4 Received by (Signature), Date, Time	☐	6 Received by (Signature), Date, Time ☐
2 (Affiliation) C&T			4 (Affiliation)		6 (Affiliation)

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
2 = Preservative (Y/N)
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

Other instructions: * RECEIVED ON ICE

Page 3 of 11

J:\PerryJohnson\1824WaterResources\Protocols\379-1846_040708_protocol

203418

Weiss Associates
Environmental Science, Engineering and Management Services
5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043
AguaTierra Associates Incorporated, DBA

Project Manager: Joyce Adams, 510-450-6162 379--1824-15-3 1824-051908	**INSTRUCTIONS FOR LAB PERSONNEL:** GeoTracker EDF required? ☐ Yes ☒ No Include laboratory QA/QC data with report. Specify analytic/prep method and detection limit in report. Notify us of any anomalous peaks in GC or other scans. Call immediately with any questions or problems.

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMD Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

Sample ID	Sample Date	Sample Time	# of Con-tainers	Sample/ Container Type[1] (T)	Volume S	Preser-vative? (2)	Refrig? 3	Turn 4	Analyze for	Analytical Method	Special Instructions
0508-04	5/20/08	1040	1	W/P	500 ml	HNO3	Y	N	CAM 17 metals/6020 Major Cations Total Manganese	6020 Major cations 6010	filtered in the field; 0.45 um Sodium, Magnesium, Calcium Potassium
0508-04	↓	↓	1	W/A	1L	N	Y	N	TPHd/mo	8015M	Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup
0508-04	↓	↓	1	W/P	1L	N	Y	N	Nitrate Sulfate Chloride/Fluoride Total Dissolved Solids Alkalinity	300 300 300 160.1 310.2	**Nitrate 48 hours hold time** Anion 28 days hold time TDS Carbonate, bicarbonate
0508-04	↓	↓	3	W/V	40 ml	N	Y	N	Carbon Dioxide	RSK-175	

4

1 Released by (Signature), Date, Time: 5/20/08 1200 ☒	3 Released by (Signature), Date, Time ☐	5 Released by (Signature), Date, Time ☐	
1 (Affiliation) Weiss	3 (Affiliation)	5 (Affiliation)	
2 Received by (Signature), Date, Time: 5/20/08 1200 ☐	4 Received by (Signature), Date, Time ☐	6 Received by (Signature), Date, Time ☐	
2 (Affiliation) C&T	4 (Affiliation)	6 (Affiliation)	

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
2 = Preservative (Y/N)
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

Other instructions:

Page 4 of 11

* RECEIVED ON ICE

203418

Weiss Associates
Environmental Science, Engineering and Management Services
5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043
AguaTierra Associates Incorporated, DBA

Project Manager: Joyce Adams, 510-450-6162 379--1824-15-3 1824-051908	**INSTRUCTIONS FOR LAB PERSONNEL:** GeoTracker EDF required? ☐ Yes ☒ No Include laboratory QA/QC data with report. Specify analytic/prep method and detection limit in report. Notify us of any anomalous peaks in GC or other scans. Call immediately with any questions or problems.

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMO Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

Sample ID	Sample Date	Sample Time	# of Con-tainers	Sample/ Container Type[1] (T)	Volume S	Preser-vative? (2)	Refrig? 3	Turn 4	Analyze for	Analytical Method	Special Instructions
0508-05	5/20/08	0950	1	W/P	500 ml	HNO3	Y	N	CAM 17 metals/6020 Major Cations Total Manganese	6020 Major cations 6010	filtered in the field; 0.45 um Sodium, Magnesium, Calcium Potassium
0508-05			1	W/A	1L	N	Y	N	TPHd/mo	8015M	Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup
0508-05			1	W/P	1L	N	Y	N	Nitrate Sulfate Chloride/Fluoride Total Dissolved Solids Alkalinity	300 300 300 160.1 310.2	**Nitrate 48 hours hold time** Anion 28 days hold time TDS Carbonate, bicarbonate
0508-05			3	W/V	40 ml	N	Y	N	Carbon Dioxide	RSK-175	

5

1 Released by (Signature), Date, Time: 5/20/08 1200 ☒	3 Released by (Signature), Date, Time ☐	5 Released by (Signature), Date, Time ☐	
1 (Affiliation): Weiss	3 (Affiliation)	5 (Affiliation)	
2 Received by (Signature), Date, Time: 5/20/08 1200 ☐	4 Received by (Signature), Date, Time ☐	6 Received by (Signature), Date, Time ☐	
2 (Affiliation): C&T	4 (Affiliation)	6 (Affiliation)	

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
2 = Preservative (Y/N)
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

Other instructions:

R RECEIVED ON ICE

J:\PerryJohnson\1824WaterResources\Protocols\379-1846_040708_protocol

203418

Weiss Associates

Environmental Science, Engineering and Management Services

5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043

AguaTierra Associates Incorporated, DBA

Project Manager: Joyce Adams, 510-450-6162 379--1824-15-3 1824-051908	**INSTRUCTIONS FOR LAB PERSONNEL:** GeoTracker EDF required? ☐ Yes ☒ No Include laboratory QA/QC data with report. Specify analytic/prep method and detection limit in report. Notify us of any anomalous peaks in GC or other scans. Call immediately with any questions or problems.

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMD Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

Sample ID	Sample Date	Sample Time	# of Con-tainers	Sample/ Container Type[1] (T)	Volume S	Preser-vative? (2)	Refrig? 3	Turn 4	Analyze for	Analytical Method	Special Instructions
0508-06	5/20/08	1115	3	W/V	40 ml	HCL	Y	N	VOCs/8260B	8260B	full List 0.5 ppb detection limits
0508-06			1	W/P	500 ml	HNO3	Y	N	CAM 17 metals/6020 Major Cations Total Manganese	6020 Major cations 6010	filtered in the field; 0.45 um Sodium, Magnesium, Calcium Potassium
0508-06			1	W/A	1L	N	Y	N	TPHd/mo	8015M	Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup
0508-06			1	W/P	1L	N	Y	N	Nitrate Sulfate Chloride/Fluoride Total Dissolved Solids Alkalinity	300 300 300 160.1 310.2	**Nitrate 48 hours hold time** Anion 28 days hold time TDS Carbonate, bicarbonate
0508-06			3	W/V	40 ml	N	Y	N	Carbon Dioxide	RSK-175	

6

1 Released by (Signature), Date, Time: 5/20/08 1200 ☒	3 Released by (Signature), Date, Time ☐	5 Released by (Signature), Date, Time ☐	
1 (Affiliation) WEIS	3 (Affiliation)	5 (Affiliation)	
2 Received by (Signature), Date, Time: 5/20/08 1200 ☐	4 Received by (Signature), Date, Time ☐	6 Received by (Signature), Date, Time ☐	
2 (Affiliation) C&T	4 (Affiliation)	6 (Affiliation)	

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
2 = Preservative (Y/N)
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

Other instructions:

RECEIVED ON ICE

J:\PerryJohnson\1824WaterResources\Protocols\379-1846_040708_protocol

203418

Weiss Associates
Environmental Science, Engineering and Management Services
5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043
AguaTierra Associates Incorporated, DBA

Project Manager: Joyce Adams, 510-450-6162 379--1824-15-3 1824-051908	**INSTRUCTIONS FOR LAB PERSONNEL:** GeoTracker EDF required? ☐ Yes ☒ No Include laboratory QA/QC data with report. Specify analytic/prep method and detection limit in report. Notify us of any anomalous peaks in GC or other scans. Call immediately with any questions or problems.

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMO Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

Sample ID	Sample Date	Sample Time	# of Con-tainers	Sample/ Container Type[1] (T)	Volume S	Preser-vative? (2)	Refrig? 3	Turn 4	Analyze for	Analytical Method	Special Instructions
0508-07	5/19/08	1535	1	W/P	500 ml	HNO3	Y	N	CAM 17 metals/6020 Major Cations Total Manganese	6020 Major cations 6010	filtered in the field; 0.45 um Sodium, Magnesium, Calcium Potassium
0508-07	↓	↓	1	W/A	1L	N	Y	N	TPHd/mo	8015M	Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup
0508-07	↓	↓	1	W/P	1L	N	Y	N	Nitrate Sulfate Chloride/Fluoride Total Dissolved Solids Alkalinity	300 300 300 160.1 310.2	**Nitrate 48 hours hold time** Anion 28 days hold time TDS Carbonate, bicarbonate
0508-07	↓	↓	3	W/V	40 ml	N	Y	N	Carbon Dioxide	RSK-175	

1 Released by (Signature), Date, Time: 5/20/08 1200 ☒	3 Released by (Signature), Date, Time ☐	5 Released by (Signature), Date, Time ☐	
1 (Affiliation) Weiss	3 (Affiliation)	5 (Affiliation)	
2 Received by (Signature), Date, Time: 5/20/08 1200 ☐	4 Received by (Signature), Date, Time ☐	6 Received by (Signature), Date, Time ☐	
2 (Affiliation) C&T	4 (Affiliation)	6 (Affiliation)	

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
2 = Preservative(Y/N)
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

Other instructions:

* RECEIVED ON ICE

J:\PerryJohnson\1824WaterResources\Protocols\379-1846_040708_protocol

203418

Weiss Associates
Environmental Science, Engineering and Management Services
5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043
AguaTierra Associates Incorporated, DBA

Project Manager: Joyce Adams, 510-450-6162

379--1824-15-3
1824-051908

INSTRUCTIONS FOR LAB PERSONNEL:
GeoTracker EDF required? ☐ Yes ☒ No
Include laboratory QA/QC data with report.
Specify analytic/prep method and detection limit in report.
Notify us of any anomalous peaks in GC or other scans.
Call immediately with any questions or problems.

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMO Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

Sample ID	Sample Date	Sample Time	# of Con-tainers	Sample/ Container Type[1] (T)	Volume S	Preser-vative? (2)	Refrig? 3	Turn 4	Analyze for	Analytical Method	Special Instructions
0508-08	5/19/08	1440	3	W/V	40 ml	HCL	Y	N	VOCs/8260B	8260B	full List 0.5 ppb detection limits
0508-08	↓	↓	1	W/P	500 ml	HNO3	Y	N	CAM 17 metals/6020 Major Cations Total Manganese	6020 Major cations 6010	filtered in the field; 0.45 um Sodium, Magnesium, Calcium Potassium
0508-08	↓	↓	1	W/A	1L	N	Y	N	TPHd/mo	8015M	Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup
0508-08	↓	↓	1	W/P	1L	N	Y	N	Nitrate Sulfate Chloride/Fluoride Total Dissolved Solids Alkalinity	300 300 300 160.1 310.2	**Nitrate 48 hours hold time** Anion 28 days hold time TDS Carbonate, bicarbonate
0508-08	↓	↓	3	W/V	40 ml	N	Y	N	Carbon Dioxide	RSK-175	

8

1 Received by (Signature), Date, Time	5/20/08 1200	☒	3 Released by (Signature), Date, Time	☐	5 Released by (Signature), Date, Time ☐
1 (Affiliation) Weiss			3 (Affiliation)		5 (Affiliation)
2 Received by (Signature), Date, Time	5/20/08 1200	☐	4 Received by (Signature), Date, Time	☐	6 Received by (Signature), Date, Time ☐
2 (Affiliation) C&T			4 (Affiliation)		6 (Affiliation)

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
2 = Preservative (Y/N)
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
3 = Refrigerated (Y/N) 4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

Other instructions:

*RECEIVED ON ICE

203418

Weiss Associates
Environmental Science, Engineering and Management Services
5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043
AguaTierra Associates Incorporated, DBA

Project Manager: Joyce Adams, 510-450-6162 379--1824-15-3 1824-051908	**INSTRUCTIONS FOR LAB PERSONNEL:** GeoTracker EDF required? ☐ Yes ☒ No Include laboratory QA/QC data with report. Specify analytic/prep method and detection limit in report. Notify us of any anomalous peaks in GC or other scans. Call immediately with any questions or problems.

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMD Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

Sample ID	Sample Date	Sample Time	# of Con-tainers	Sample/ Container Type[1] (T)	Volume S	Preser-vative? (2)	Refrig? 3	Turn 4	Analyze for	Analytical Method	Special Instructions
0508-12	5/20/08	0900	1	W/P	500 ml	HNO3	Y	N	CAM 17 metals/6020 Major Cations Total Manganese	6020 Major cations 6010	filtered in the field; 0.45 um Sodium, Magnesium, Calcium Potassium
0508-12	↓	↓	1	W/A	1L	N	Y	N	TPHd/mo	8015M	Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup
10 0508-12	↓	↓	1	W/P	1L	N	Y	N	Nitrate Sulfate Chloride/Fluoride Total Dissolved Solids Alkalinity	300 300 300 160.1 310.2	**Nitrate 48 hours hold time** Anion 28 days hold time TDS Carbonate, bicarbonate
0508-12	↓	↓	3	W/V	40 ml	N	Y	N	Carbon Dioxide	RSK-175	
11 Travel Blank	5/18/08	1500	1	W/V	40 ml	HCL	Y	N	VOCs	EPA 8260B	

1 [signature] 5/20/08 1200 ☒ Released by (Signature), Date, Time	3 ☐ Released by (Signature), Date, Time	5 ☐ Released by (Signature), Date, Time	
1 (Affiliation) WESS	3 (Affiliation)	5 (Affiliation)	
2 [signature] 5/20/08 1200 ☐ Received by (Signature), Date, Time	4 ☐ Received by (Signature), Date, Time	6 ☐ Received by (Signature), Date, Time	
2 (Affiliation) C&T	4 (Affiliation)	6 (Affiliation)	

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
2 = Preservative (Y/N)
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

Other instructions:

Page 10 of 11

* RECEIVED ON ICE

203418

Weiss Associates
Environmental Science, Engineering and Management Services
5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043
AguaTierra Associates Incorporated, DBA

Project Manager: Joyce Adams, 510-450-6162

379--1824-15-3
1824-051908

INSTRUCTIONS FOR LAB PERSONNEL:
GeoTracker EDF required? ☐ Yes ☒ No
Include laboratory QA/QC data with report.
Specify analytic/prep method and detection limit in report.
Notify us of any anomalous peaks in GC or other scans.
Call immediately with any questions or problems.

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMD Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

Sample ID	Sample Date	Sample Time	# of Con-tainers	Sample/ Container Type[1] (T)	Volume S	Preser-vative? (2)	Refrig? 3	Turn 4	Analyze for	Analytical Method	Special Instructions
12 ~~0808-13~~	5/20/08	1125	3	W/V	40 ml	HCL	Y	N	VOCs/8260B	8260B	full List 0.5 ppb detection limits

1 Released by (Signature), Date, Time: 5/20/08 1200 ☒ 3 Released by (Signature), Date, Time ☐ 5 Released by (Signature), Date, Time ☐
1 (Affiliation) Weiss 3 (Affiliation) 5 (Affiliation)
2 Received by (Signature), Date, Time: 5/20/08 1200 ☐ 4 Received by (Signature), Date, Time ☐ 6 Received by (Signature), Date, Time ☐
2 (Affiliation) C&T 4 (Affiliation) 6 (Affiliation)

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
2 = Preservative (Y/N)
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
3 = Refrigerated (Y/N) 4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

Other instructions:

A RECEIVED ON ICE

Page 11 of 11

J:\PerryJohnson\1824WaterResources\Protocols\379-1846_040708_protocol

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 203418 Date Received 5-20-08 Number of coolers 3
Client Weiss Project 35 Acre Site, Cloverdale

Date Opened 5-20-08 By (print) F Nichols (sign) [signature]
Date Logged in 5-20-08 By (print) F Nichols (sign) [signature]

1. Did cooler come with a shipping slip (airbill, etc)?..... YES (NO)
   Shipping info _____

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
   How many _____ Name _____ Date _____
2B. Were custody seals intact upon arrival? ..... YES NO (N/A)
3. Were custody papers dry and intact when received?..... (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)?..... (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form)..... (YES) NO
6. Indicate the packing in cooler: (if other, describe) _____

   ☐ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None

   ☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels
7. If required, was sufficient ice used? Samples should be < or = 6°C ..... (YES) NO N/A

   Type of ice used: ☒ Wet ☐ Blue ☐ None Temp(°C) _____

   ☒ Samples Received on ice & cold without a temperature blank

   ☐ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? ..... YES (NO)
   If YES, what time were they transferred to freezer? _____
9. Did all bottles arrive unbroken/unopened?..... (YES) NO
10. Are samples in the appropriate containers for indicated tests? ..... (YES) NO
11. Are sample labels present, in good condition and complete? ..... (YES) NO
12. Do the sample labels agree with custody papers? ..... (YES) NO
13. Was sufficient amount of sample sent for tests requested? ..... (YES) NO
14. Are the samples appropriately preserved? ..... (YES) NO N/A
15. Are bubbles > 6mm absent in VOA samples?..... (YES) NO N/A
16. Was the client contacted concerning this sample delivery?..... YES NO
   If YES, Who was called? _____ By _____ Date: _____

COMMENTS

_____

Appendix L

NHPA Section 106 and Tribal Consultation Correspondence

ESA

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Pacific Regional Office
2800 Cottage Way
Sacramento, California 95825

FEB 27 2009

Mr. Milford Wayne Donaldson, F.A.I.A.
State Historic Preservation Officer
Office of Historic Preservation
Department of Parks and Recreation
P.O. Box 942896
Sacramento, CA 94296-0001

Dear Mr. Donaldson:

The Bureau of Indian Affairs (BIA), Pacific Regional Office, wishes to initiate Section 106 consultation with the State Historic Preservation Office (SHPO) concerning the fee-to-trust conveyance of approximately 79 acres of land for the Cloverdale Rancheria of Pomo Indians (Tribe), Sonoma County, California. The implementation of this proposed action, pursuant to 25 CFR 151 (Land Acquisitions), is contingent in part on the BIA meeting its obligations under Section 106 of the National Historic Preservation Act (NHPA) as amended.

The Area of Potential Effects (APE) for this undertaking includes six parcels of land totaling approximately 79 acres (see enclosed Figure 1-3, Draft EIS). The APE is located in an unsectioned portion of the Rincon de Musalacon Mexican landgrant within Township 11 North, Range 10 West, MDBM. The project area is bounded on the west by Asti Road and adjacent Highway 101, and it is bounded on the east by the Russian River. In addition to taking the land into trust, the Tribe is proposing to develop the property. The proposed action (Alternative A) would include a casino, hotel, convention center, entertainment center, Tribal government building, ancillary support buildings, and both surface and garage parking totaling 3,400± spaces. Site plans illustrating the Proposed Action and Alternatives B-D have been enclosed. It is estimated that the square footage for the facilities in Alternative A would total approximately 595,600ft^2.

The APE was surveyed by Environmental Science Associates (ESA) in 2008 (report enclosed). This study resulted in the identification of six historic structures that meet the 50-year minimum age threshold for consideration of National Register eligibility. The structures include three single-family residences, two shed outbuildings, and one cattle chute/corral. No prehistoric or historic archaeological sites were encountered during the pedestrian survey, although the records search indicated that two prehistoric sites have been recorded within ½-mile of the APE.

ESA completed significance evaluations for all six structures located within the APE. As detailed in the report, none of the resources were found to be associated with events or persons important in history, nor do they embody distinctive characteristics of a type, period, or method of construction. The recordation and research conducted to-date has exhausted the research potential of these structures. As such, ESA recommended that none of the six resources are eligible for listing in the National Register. The BIA agrees with ESA's findings and evaluations, and therefore has determined that **No Historic Properties will be Affected** by this proposed federal action. Your concurrence in this determination shall suffice as evidence that the BIA has met its Section 106 compliance obligations in this matter, pursuant to 36 CFR 800.4(d)(1).

If you should require further clarification or additional information concerning this federal action, please contact Jennifer Thomas, Assistant Regional Archeologist, at (916) 978-6165, or John Rydzik, Chief, Division of Environmental, Cultural Resources Management, and Safety at (916) 978-6051.

Sincerely,

Regional Director

Enclosures

cc: Superintendent, Central California Agency (without enclosures)
Chairperson, Cloverdale Rancheria (without enclosures)
Regional Environmental Protection Specialist (without enclosures)

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov
www.ohp.parks.ca.gov

March 16, 2009

In Reply Refer To: BIA090304A

Dale Morris
Regional Director
United States Department of the Interior
Bureau of Indian Affairs
Pacific Regional Office
2800 Cottage Way
Sacramento, California 95825

Re: Proposed Fee-To-Trust Conveyance of 79 Acres of Land for the Cloverdale Rancheria of Pomo Indians, Sonoma County, California.

Dear Mr. Morris:

Pursuant to 36 CFR Part 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act, the Bureau of Indian Affairs (BIA), Pacific Regional Office, is seeking my comments on its determination of effects that the proposed undertaking will have on historic properties. The undertaking consists of the conveyance of a parcel of 79 acres, located just southeast of the City of Cloverdale between Highway 101 and the Russian River, into trust status for the Cloverdale Rancheria of Pomo Indians (Tribe). The BIA has determined that the 79 acre parcel to be conveyed is the project Area of Potential Effects (APE).

In addition to your letter requesting consultation, you have submitted the following report as evidence of your efforts to identify historic properties in the APE:

Cloverdale Rancheria Fee To Trust Project, Sonoma County, California Cultural Resources Survey Report (Heidi Koenig and Kathy Anderson, Environmental Science Associates: November 2008).

Based on their identification efforts, the BIA has determined that there are no archaeological sites and six historic-era buildings or structures that exceed 50 years of age within the APE. After reviewing your letter of February 27, 2009, and supporting documentation, I have the following comments:

1) I concur that the Area of Potential Effects (APE) has been properly determined and documented pursuant to 36 CFR Part 800.4 (a) (1) and that the Efforts to Identify Historic Properties within the APE represent a reasonable and good faith effort by the BIA pursuant to 36 CFR Part 800.4.

2) I concur that the following built-environment buildings and structures are not eligible for the National Register of Historic Places: Lile Lane Shed #1, Lile Lane Shed #2, Lile Lane Cattle Chute/Corral, 209 Lile Lane (1948 single-family, single-story residence), 347 Lile Lane (1920 heavily modified, two-story vernacular style residence), and 505 Lile Lane (1956 single-story, single-family residence).

3) I further concur that a finding of No Historic Properties Affected for this undertaking is appropriate as per 36 CFR Part 800.4(d)(1).

Be advised that under certain circumstances, such as unanticipated discovery or a change in project description, the BIA may have additional future responsibilities for this undertaking under 36 CFR Part 800. Thank you for seeking my comments and for considering historic properties in planning your project. If you require further information, please contact William Soule, Associate State Archeologist, at phone 916-654-4614 or email wsoule@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

ESA

1425 N. McDowell Boulevard
Suite 105
Petaluma, CA 94954
707.795.0900 phone
707.795.0902 fax

www.esassoc.com

FAX TRANSMITTAL FORM

Account-Job No.: D207737
Date: April 17, 2008

To: Native American Heritage Commission

Fax No.: (916) 657-5390
Phone No.: (916) 653-4082

Total Number of Pages: 2
(including cover page)

From: Heidi Koenig

Re: Cloverdale Rancheria fee-to-trust

Fax No.: (707) 795-0902
Phone No.: (707) 795-0920
E-mail: hkoenig@esassoc.com

COMMENTS

Please review the sacred lands files for any Native American cultural resources that may be within or adjacent to the project area depicted on the accompanying Cloverdale 7.5 topographic quadrangle. The proposed project is in Cloverdale, Sonoma County and consists of the placement of 4 parcels of land totaling 32.1± acres into federal trust for the Cloverdale Rancheria of Pomo Indians. Five varying development alternatives and a No Action Alternative have been proposed. Four alternatives include the construction of a casino and associated facilities. One alternative consists of a commercial retail center. We also request a list of Native American individuals/organizations that may have knowledge of cultural resources in the project area. ESA intends to conduct a survey of the project area for cultural resources. Please call if you have any questions.

Thank you for your assistance.

Heidi Koenig
Cultural Resources Group

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390

April 17, 2008

Heidi Koenig
Cultural Resource Group
ESA Petaluma
1425 N. McDowell Boulevard, Suite 105
Petaluma, CA 94954

Sent by Fax: 707-795-0902
Number of Pages: 2

Re: Proposed Account Job No. D207737, Cloverdale Rancheria Fee-To-Trust; Sonoma County

Dear Ms. Koenig:

A record search of the sacred lands file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4040.

Sincerely,

Katy Sanchez

Katy Sanchez
Program Analyst

Native American Contacts
Sonoma County
April 22, 2008

Cloverdale Rancheria of Pomo Indians
Patricia Hermosillo, Chairperson
555 South Cloverdale Blvd., Suite A Pomo
Cloverdale , CA 95425
clvrdler61@aol.com
(707) 894-5775
909-894-5727

Kathleen Smith
1778 Sunnyvale Avenue Pomo
Walnut Creek , CA 94596 Coast Miwok
(925) 938-6323

Dawn S. Getchell
P.O. Box 53 Coast Miwok
Jenner , CA 95450 Pomo
(707) 865-2248

Cloverdale Rancheria of Pomo Indians
Mario Hermosillo Jr., Tribal Environmental Planner
555 South Cloverdale Blvd., Suite A Pomo
Cloverdale , CA 95425
mhermosillo@cloverdalerancheria.com
(707) 894-5775
707-894-5727

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Account-Job No.: D207737, Cloverdale Rancheria fee-to-trust; Sonoma County.

ESA

1425 N. McDowell Boulevard
Suite 105
Petaluma, CA 94954
707.795.0900 phone
707.795.0902 fax

www.esassoc.com

April 28, 2008

Kathleen Smith
1778 Sunnyvale Avenue
Walnut Creek, California 94596

Re: Cultural resource study near Cloverdale, Sonoma County – Cloverdale Rancheria Fee-to-Trust Project (ESA Project #D207737)

Dear Ms. Smith:

Environmental Science Associates (ESA) is conducting cultural resources study for an environmental assessment for the Cloverdale Rancheria Fee-to-Trust Project. The project area is located near Cloverdale, Sonoma County. The Cloverdale Rancheria of Pomo Indians has purchased several parcels (approximately 80 acres) on land adjacent to the Cloverdale Rancheria. The project is located on the Cloverdale USGS 7.5' Quad (see attached map).

In an effort to address any potential impact to archaeological or ethnographic resources, we are seeking comments from Native American representatives; your name was supplied to us by the Native American Heritage Commission as a contact for this area. We are in contact with the chairperson and other tribe members of the Cloverdale Rancheria. We would appreciate your comments identifying any concerns or issues pertinent to this project.

Thank you for your cooperation on this matter. If you have any questions, please contact me at 707.795-0920.

Sincerely,

Heidi Koenig
Cultural Resources Group

ESA

1425 N. McDowell Boulevard
Suite 105
Petaluma, CA 94954
707.795.0900 phone
707.795.0902 fax

www.esassoc.com

April 28, 2008

Dawn S. Getchell
P.O. Box 53
Jenner, California 95450

Re: Cultural resource study near Cloverdale, Sonoma County – Cloverdale Rancheria Fee-to-Trust Project (ESA Project #D207737)

Dear Ms. Smith:

Environmental Science Associates (ESA) is conducting cultural resources study for an environmental assessment for the Cloverdale Rancheria Fee-to-Trust Project. The project area is located near Cloverdale, Sonoma County. The Cloverdale Rancheria of Pomo Indians has purchased several parcels (approximately 80 acres) on land adjacent to the Cloverdale Rancheria. The project is located on the Cloverdale USGS 7.5' Quad (see attached map).

In an effort to address any potential impact to archaeological or ethnographic resources, we are seeking comments from Native American representatives; your name was supplied to us by the Native American Heritage Commission as a contact for this area. We are in contact with the chairperson and other tribe members of the Cloverdale Rancheria. We would appreciate your comments identifying any concerns or issues pertinent to this project.

Thank you for your cooperation on this matter. If you have any questions, please contact me at 707.795-0920.

Sincerely,

Heidi Koenig
Cultural Resources Group

Appendix M

Farmland Conversion Impact Rating Form and Site Assessment Criteria

ESA

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
Petaluma Field Office
1301 Redwood Way, Suite 170
Petaluma, CA 94954

March 25, 2009

RE: Cloverdale Rancheria Fee-to-Trust, Farmland Conversion Impact Rating

ESA
Jennifer Wade
8950 Cal Center Drive
Sacramento, CA 95826

Dear Ms. Wade,

Enclosed is the completed Farmland Conversion Impact Rating (Form AD1006) for the sites you identified in Sonoma County. We have retained the maps you sent us for reference in the event you require further assistance.

If you have any questions regarding the ratings please feel free to contact us.

Sincerely,

Jennifer L Gabor

Jennifer Gabor

Enclosures

cc: Charlette Epifanio, District Conservationist

The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

An Equal Opportunity Provider and Employer

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 3/16/09
Name Of Project Cloverdale Rancheria Fee-to-Trust Project	Federal Agency Involved Bureau of Indian Affairs
Proposed Land Use Destination Resort Casino	County And State Sonoma County, California
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 3/19/09

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes ☑	No ☐	Acres Irrigated 78,265 / Average Farm Size 155 ac
Major Crop(s) wine grape, milk, livestock, poultry	Farmable Land In Govt. Jurisdiction Acres: 530,895 %		Amount Of Farmland As Defined in FPPA Acres: %
Name Of Land Evaluation System Used CA Storie Index	Name Of Local Site Assessment System n/a		Date Land Evaluation Returned By NRCS 3/25/09

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	57.6			
B. Total Acres To Be Converted Indirectly	12.2			
C. Total Acres In Site	69.8	0.0	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	28.4	0.0	0.0	
B. Total Acres Statewide And Local Important Farmland	37.1			
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	93.8			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	27			0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160	0	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	27			0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	27	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☒

Reason For Selection:

(See Instructions on reverse side)

Form AD-1006 (10-83)

This form was electronically produced by National Production Services Staff

Land Classification

Cloverdale Rancheria Fee-to-Trust Project

Field Office: PETALUMA SERVICE CENTER
Agency: Natural Resources Conservation Service
State and County: CA, SONOMA

March 2009

Legend

- Tract Boundaries
- Urban
- Grazing Land
- Farmland of Local Importance
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Water Area
- Other Land
- road_sonoma

250 0 250 500 750 1,000 Feet

N

Source: Department of Conservation FMMP-2006

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 – Federal agencies involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form.

Step 2 – Originator will send copies A, B and C together with maps indicating locations of site(s), to the Natural Resources Conservation Service (NRCS) local field office and retain copy D for their files. (Note: NRCS has a field office in most counties in the U.S. The field office is usually located in the county seat. A list of field office locations are available from the NRCS State Conservationist in each state).

Step 3 – NRCS will, within 45 calendar days after receipt of form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland.

Step '4 – In cases where farmland covered by the FPPA will be converted by the proposed project, NRCS field offices will complete Parts II, IV and V of the form.

Step 5 – NRCS will return copy A and B of the form to the Federal agency involved in the project. (Copy C will be retained for NRCS records).

Step 6 – The Federal agency involved in the proposed project will complete Parts VI and VII of the form.

Step 7 – The Federal agency involved in the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA and the agency's internal policies.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

Part I: In completing the "County And State" questions list all the local governments that are responsible for local land controls where site(s) are to be evaluated.

Part III: In completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them.

2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities) that will cause a direct conversion.

Part VI: Do not complete Part VI if a local site assessment is used.

Assign the maximum points for each site assessment criterion as shown in § 658.5 (b) of CFR. In cases of corridor-type projects such as transportation, powerline and flood control, criteria #5 and #6 will not apply and will, be weighed zero, however, criterion #8 will be weighed a maximum of 25 points, and criterion #11 a maximum of 25 points.

Individual Federal agencies at the national level, may assign relative weights among the 12 site assessment criteria other than those shown in the FPPA rule. In all cases where other weights are assigned relative adjustments must be made to maintain the maximum total weight points at 160.

In rating alternative sites, Federal agencies shall consider each of the criteria and assign points within the limits established in the FPPA rule. Sites most suitable for protection under these criteria will receive the highest total scores, and sites least suitable, the lowest scores.

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, adjust the site assessment points to a base of 160. Example: if the Site Assessment maximum is 200 points, and alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \times 160 = 144 \text{ points for Site "A."}$$

Site Assessment Scoring for the Twelve Factors Used in FPPA

The Site Assessment criteria used in the Farmland Protection Policy Act (FPPA) rule are designed to assess important factors other than the agricultural value of the land when determining which alternative sites should receive the highest level of protection from conversion to non agricultural uses.

Twelve factors are used for Site Assessment and ten factors for corridor-type sites. Each factor is listed in an outline form, without detailed definitions or guidelines to follow in the rating process. The purpose of this document is to expand the definitions of use of each of the twelve Site Assessment factors so that all persons can have a clear understanding as to what each factor is intended to evaluate and how points are assigned for given conditions.

In each of the 12 factors a number rating system is used to determine which sites deserve the most protection from conversion to non-farm uses. The higher the number value given to a proposed site, the more protection it will receive. The maximum scores are 10, 15 and 20 points, depending upon the relative importance of each particular question. If a question significantly relates to why a parcel of land should not be converted, the question has a maximum possible protection value of 20, whereas a question which does not have such a significant impact upon whether a site would be converted, would have fewer maximum points possible, for example 10.

The following guidelines should be used in rating the twelve Site Assessment criteria:

1. **How much land is in non-urban use within a radius of 1.0 mile from where the project is intended?**

More than 90 percent:	15 points
90-20 percent:	14 to 1 points
Less than 20 percent:	0 points

This factor is designed to evaluate the extent to which the area within one mile of the proposed site is non-urban area. For purposes of this rule, "non-urban" should include:

- Agricultural land (crop-fruit trees, nuts, oilseed)
- Range land
- Forest land
- Golf Courses
- Non paved parks and recreational areas
- Mining sites
- Farm Storage
- Lakes, ponds and other water bodies
- Rural roads, and through roads without houses or buildings
- Open space
- Wetlands
- Fish production
- Pasture or hayland

Urban uses include:

- Houses (other than farm houses)
- Apartment buildings
- Commercial buildings
- Industrial buildings
- Paved recreational areas (i.e. tennis courts)
- Streets in areas with 30 structures per 40 acres
- Gas stations

- Equipment, supply stores
- Off-farm storage
- Processing plants
- Shopping malls
- Utilities/Services
- Medical buildings

In rating this factor, an area one-mile from the outer edge of the proposed site should be outlined on a current photo; the areas that are urban should be outlined. For rural houses and other buildings with unknown sizes, use 1 and 1/3 acres per structure. For roads with houses on only one side, use one half of road for urban and one half for non-urban.

The purpose of this rating process is to insure that the most valuable and viable farmlands are protected from development projects sponsored by the Federal Government. With this goal in mind, factor S1 suggests that the more agricultural lands surrounding the parcel boundary in question, the more protection from development this site should receive. Accordingly, a site with a large quantity of non-urban land surrounding it will receive a greater
number of points for protection from development. Thus, where more than 90 percent of the area around the proposed site (do not include the proposed site in this assessment) is non-urban, assign 15 points. Where 20 percent or less is
non-urban, assign 0 points. Where the area lies between 20 and 90 percent non-urban, assign appropriate points from 14 to 1, as noted below.

Percent Non-Urban Land within 1 mile	**Points**
90 percent or greater	15
85 to 89 percent	14
80 to 84 percent	13
75 to 79 percent	12
70 to 74 percent	11
65 to 69 percent	10
60 to 64 percent	9
55 to 59 percent	8
50 to 54 percent	7
45 to 49 percent	6
40 to 44 percent	5
35 to 39 percent	4
30 to 24 percent	3
25 to 29 percent	2
21 to 24 percent	1
20 percent or less	0

2. How much of the perimeter of the site borders on land in non-urban use?

More than 90 percent:	I0 points
90 to 20 percent:	9 to 1 point(s)
Less than 20 percent:	0 points

This factor is designed to evaluate the extent to which the land adjacent to the proposed site is non-urban use. Where factor #1 evaluates the general location of the proposed site, this factor evaluates the immediate perimeter of the site. The definition of urban and non-urban uses in factor #1 should be used for this factor.

In rating the second factor, measure the perimeter of the site that is in non-urban and urban use. Where more than 90 percent of the perimeter is in non-urban use, score this factor 10 points. Where less than 20 percent, assign 0 points. If a road is next to the perimeter, class the area according to the

use on the other side of the road for that area. Use 1 and 1/3 acre per structure if not otherwise known. Where 20 to 90 percent of the perimeter is non-urban, assign points as noted below:

Percentage of Perimeter Bordering Land	Points
90 percent or greater	10
82 to 89 percent	9
74 to 81 percent	8
65 to 73 percent	7
58 to 65 percent	6
50 to 57 percent	5
42 to 49 percent	4
34 to 41 percent	3
27 to 33 percent	2
21 to 26 percent	1
20 percent or Less	0

3. **How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last ten years?**

More than 90 percent:	20 points
90 to 20 percent:	19 to 1 point(s)
Less than 20 percent:	0 points

This factor is designed to evaluate the extent to which the proposed conversion site has been used or managed for agricultural purposes in the past 10 years.

Land is being farmed when it is used or managed for food or fiber, to include timber products, fruit, nuts, grapes, grain, forage, oil seed, fish and meat, poultry and dairy products.

Land that has been left to grow up to native vegetation without management or harvest will be considered as abandoned and therefore not farmed. The proposed conversion site should be evaluated and rated according to the percent, of the site farmed.

If more than 90 percent of the site has been farmed 5 of the last 10 years score the site as follows:

Percentage of Site Farmed	Points
90 percent or greater	20
86 to 89 percent	19
82 to 85 percent	18
78 to 81 percent	17
74 to 77 percent	16
70 to 73 percent	15
66 to 69 percent	14
62 to 65 percent	13
58 to 61 percent	12
54 to 57 percent	11
50 to 53 percent	10
46 to 49 percent	9
42 to 45 percent	8
38 to 41 percent	7
35 to 37 percent	6
32 to 34 percent	5
29 to 31 percent	4
26 to 28 percent	3

23 to 25 percent	2
20 to 22 percent percent or Less	1
Less than 20 percent	0

4. Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

Site is protected:	20 points
Site is not protected:	0 points

This factor is designed to evaluate the extent to which state and local government and private programs have made efforts to protect this site from conversion.

State and local policies and programs to protect farmland include:

State Policies and Programs to Protect Farmland

1. Tax Relief:

   A. Differential Assessment: Agricultural lands are taxed on their agricultural use value, rather than at market value. As a result, farmers pay fewer taxes on their land, which helps keep them in business, and therefore helps to insure that the farmland will not be converted to nonagricultural uses.

      1. Preferential Assessment for Property Tax: Landowners with parcels of land used for agriculture are given the privilege of differential assessment.

      2. Deferred Taxation for Property Tax: Landowners are deterred from converting their land to nonfarm uses, because if they do so, they must pay back taxes at market value.

      3. Restrictive Agreement for Property Tax: Landowners who want to receive Differential Assessment must agree to keep their land in - eligible use.

   B. Income Tax Credits

   Circuit Breaker Tax Credits: Authorize an eligible owner of farmland to apply some or all of the property taxes on his or her farmland and farm structures as a tax credit against the owner's state income tax.

   C. Estate and Inheritance Tax Benefits

   Farm Use Valuation for Death Tax: Exemption of state tax liability to eligible farm estates.

2. "Right to farm" laws:

   Prohibits local governments from enacting laws which will place restrictions upon normally accepted farming practices, for example, the generation of noise, odor or dust.

3. Agricultural Districting:

   Wherein farmers voluntarily organize districts of agricultural land to be legally recognized geographic areas. These farmers receive benefits, such as protection from annexation, in exchange for keeping land within the district for a given number of years.

4. Land Use Controls: Agricultural Zoning.

Types of Agricultural Zoning Ordinances include:

A. Exclusive: In which the agricultural zone is restricted to only farm-related dwellings, with, for example, a minimum of 40 acres per dwelling unit.

B. Non-Exclusive: In which non-farm dwellings are allowed, but the density remains low, such as 20 acres per dwelling unit.

Additional Zoning techniques include:

A. Slidinq Scale: This method looks at zoning according to the total size of the parcel owned. For example, the number of dwelling units per a given number of acres may change from county to county according to the existing land acreage to dwelling unit ratio of surrounding parcels of land within the specific area.

B. Point System or Numerical Approach: Approaches land use permits on a case by case basis.

LESA: The LESA system (Land Evaluation-Site Assessment) is used as a tool to help assess options for land use on an evaluation of productivity weighed against commitment to urban development.

C. Conditional Use: Based upon the evaluation on a case by case basis by the Board of Zoning Adjustment. Also may include the method of using special land use permits.

5. Development Rights:

A. Purchase of Development Rights (PDR): Where development rights are purchased by Government action.

Buffer Zoning Districts: Buffer Zoning Districts are an example of land purchased by Government action. This land is included in zoning ordinances in order to preserve and protect agricultural lands from non-farm land uses encroaching upon them.

B. Transfer of Development Rights (TDR): Development rights are transferable for use in other locations designated as receiving areas. TDR is considered a locally based action (not state), because it requires a voluntary decision on the part of the individual landowners.

6. Governor's Executive Order: Policy made by the Governor, stating the importance of agriculture, and the preservation of agricultural lands. The Governor orders the state agencies to avoid the unnecessary conversion of important farmland to nonagricultural uses.

7. Voluntary State Programs:

A. California's Program of Restrictive Agreements and Differential Assessments: The California Land Conservation Act of 1965, commonly known as the Williamson Act, allows cities, counties and individual landowners to form agricultural preserves and enter into contracts for 10 or more years to insure that these parcels of land remain strictly for agricultural use. Since 1972 the Act has extended eligibility to recreational and open space lands such as scenic highway corridors, salt ponds and wildlife preserves. These contractually restricted lands may be taxed differentially for their real value. One hundred-acre districts constitute the minimum land size eligible.

Suggestion: An improved version of the Act would state that if the land is converted after the contract expires, the landowner must pay the difference in the taxes between market value for the land and the agricultural tax value which he or she had been

paying under the Act. This measure would help to insure that farmland would not be converted after the 10 year period ends.

B. Maryland Agricultural Land Preservation Program: Agricultural landowners within agricultural districts have the opportunity to sell their development rights to the Maryland Land Preservation Foundation under the agreement that these landowners will not subdivide or develop their land for an initial period of five years. After five years the landowner may terminate the agreement with one year notice.

   As is stated above under the California Williamson Act, the landowner should pay the back taxes on the property if he or she decides to convert the land after the contract expires, in order to discourage such conversions.

C. Wisconsin Income Tax Incentive Program: The Wisconsin Farmland Preservation Program of December 1977 encourages local jurisdictions in Wisconsin to adopt agricultural preservation plans or exclusive agricultural district zoning ordinances in exchange for credit against state income tax and exemption from special utility assessment. Eligible candidates include local governments and landowners with at least 35 acres of land per dwelling unit in agricultural use and gross farm profits of at least $6.000 per year, or $18,000 over three years.

8. Mandatory State Programs:

A. The Environmental Control Act in the state of Vermont was adopted in 1970 by the Vermont State Legislature. The Act established an environmental board with 9 members (appointed by the Governor) to implement a planning process and a permit system to screen most subdivisions and development proposals according to specific criteria stated in the law. The planning process consists of an interim and a final Land Capability and Development Plan, the latter of which acts as a policy plan to control development. The policies are written in order to:

   - prevent air and water pollution;
   - protect scenic or natural beauty, historic sites and rare and irreplaceable natural areas; and
   - consider the impacts of growth and reduction of development on areas of primary agricultural soils.

B. The California State Coastal Commission: In 1976 the Coastal Act was passed to establish a permanent Coastal Commission with permit and planning authority The purpose of the Coastal Commission was and is to protect the sensitive coastal zone environment and its resources, while accommodating the social and economic needs of the state. The Commission has the power to regulate development in the coastal zones by issuing permits on a case by case basis until local agencies can develop their own coastal plans, which must be certified by the Coastal Commission.

C. Hawaii's Program of State Zoning: In 1961, the Hawaii State Legislature established Act 187, the Land Use Law, to protect the farmland and the welfare of the local people of Hawaii by planning to avoid "unnecessary urbanization". The Law made all state lands into four districts: agricultural, conservation, rural and urban. The Governor appointed members to a State Land Use Commission, whose duties were to uphold the Law and form the boundaries of the four districts. In addition to state zoning, the Land Use Law introduced a program of Differential Assessment, wherein agricultural landowners paid taxes on their land for its agricultural use value, rather than its market value.

D. The Oregon Land Use Act of 1973: This act established the Land Conservation and Development Commission (LCDC) to provide statewide planning goals and guidelines.

Under this Act, Oregon cities and counties are each required to draw up a comprehensive plan, consistent with statewide planning goals. Agricultural land preservation is high on the list of state goals to be followed locally.

If the proposed site is subject to or has used one or more of the above farmland protection programs or policies, score the site 20 points. If none of the above policies or programs apply to this site, score 0 points.

5. How close is the site to an urban built-up area?

The site is 2 miles or more from an urban built-up area	15 points
The site is more than 1 mile but less than 2 miles from an urban built-up area	10 points
The site is less than 1 mile from, but is not adjacent to an urban built-up area	5 points
The site is adjacent to an urban built-up area	0 points

This factor is designed to evaluate the extent to which the proposed site is located next to an existing urban area. The urban built-up area must be 2500 population. The measurement from the built-up area should be made from the point at which the density is 30 structures per 40 acres and with no open or non-urban land existing between the major built-up areas and this point. Suburbs adjacent to cities or urban built-up areas should be considered as part of that urban area.

For greater accuracy, use the following chart to determine how much protection the site should receive according to its distance from an urban area. See chart below:

Distance From Perimeter of Site to Urban Area	Points
More than 10,560 feet	15
9,860 to 10,559 feet	14
9,160 to 9,859 feet	13
8,460 to 9,159 feet	12
7,760 to 8,459 feet	11
7,060 to 7,759 feet	10
6,360 to 7,059 feet	9
5,660 to 6,359 feet	8
4,960 to 5,659 feet	7
4,260 to 4,959 feet	6
3,560 to 4,259 feet	5
2,860 to 3,559 feet	4
2,160 to 2,859 feet	3
1,460 to 2,159 feet	2
760 to 1,459 feet	1
Less than 760 feet (adjacent)	0

6. How close is the site to water lines, sewer lines and/or other local facilities and services whose capacities and design would promote nonagricultural use?

None of the services exist nearer than 3 miles from the site	15 points
Some of the services exist more than one but less than 3 miles from the site	10 points
All of the services exist within 1/2 mile of the site	0 points

This question determines how much infrastructure (water, sewer, etc.) is in place which could facilitate nonagricultural development. The fewer facilities in place, the more difficult it is to develop an area. Thus, if a proposed site is further away from these services (more than 3 miles distance away), the site should be awarded the highest number of points (15). As the distance of the parcel of land to services decreases, the number of points awarded declines as well. So, when the site is equal to or further than 1 mile but less than 3 miles away from services, it should be given 10 points. Accordingly, if this distance is 1/2 mile to less than 1 mile, award 5 points; and if the distance from land to services is less than 1/2 mile, award 0 points.

Distance to public facilities should be measured from the perimeter of the parcel in question to the nearest site(s) where necessary facilities are located. If there is more than one distance (i.e. from site to water and from site to sewer), use the average distance (add all distances and then divide by the number of different distances to get the average).

Facilities which could promote nonagricultural use include:

- Water lines
- Sewer lines
- Power lines
- Gas lines
- Circulation (roads)
- Fire and police protection
- Schools

7. **Is the farm unit(s) containing the site (before the project) as large as the average-size farming unit in the county? (Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage of Farm Units in Operation with $1,000 or more in sales.)**

As large or larger:	10 points
Below average: Deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more is below average	9 to 0 points

This factor is designed to determine how much protection the site should receive, according to its size in relation to the average size of farming units within the county. The larger the parcel of land, the more agricultural use value the land possesses, and vice versa. Thus, if the farm unit is as large or larger than the county average, it receives the maximum number of points (10). The smaller the parcel of land compared to the county average, the fewer number of points given. Please see below:

Parcel Size in Relation to Average County Size	Points
Same size or larger than average (l00 percent)	10
95 percent of average	9
90 percent of average	8
85 percent of average	7
80 percent of average	6
75 percent of average	5
70 percent of average	4
65 percent of average	3
60 percent of average	2
55 percent of average	1
50 percent or below county average	0

State and local Natural Resources Conservation Service offices will have the average farm size information, provided by the latest available Census of Agriculture data

8. If this site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

Acreage equal to more than 25 percent of acres directly converted by the project	10 points
Acreage equal to between 25 and 5 percent of the acres directly converted by the project	9 to 1 point(s)
Acreage equal to less than 5 percent of the acres directly converted by the project	0 points

This factor tackles the question of how the proposed development will affect the rest of the land on the farm The site which deserves the most protection from conversion will receive the greatest number of points, and vice versa. For example, if the project is small, such as an extension on a house, the rest of the agricultural land would remain farmable, and thus a lower number of points is given to the site. Whereas if a large-scale highway is planned, a greater portion of the land (not including the site) will become non-farmable, since access to the farmland will be blocked; and thus, the site should receive the highest number of points (10) as protection from conversion

Conversion uses of the Site Which Would Make the Rest of the Land Non-Farmable by Interfering with Land Patterns

Conversions which make the rest of the property nonfarmable include any development which blocks accessibility to the rest of the site Examples are highways, railroads, dams or development along the front of a site restricting access to the rest of the property.

The point scoring is as follows:

Amount of Land Not Including the Site Which Will Become Non-Farmable	Points
25 percent or greater	10
23 - 24 percent	9
21 - 22 percent	8
19 - 20 percent	7
17 - 18 percent	6
15 - 16 percent	5
13 - 14 percent	4
11 - 12 percent	3
9 - 11 percent	2
6 - 8 percent	1
5 percent or less	0

9. Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?

All required services are available	5 points
Some required services are available	4 to 1 point(s)
No required services are available	0 points

This factor is used to assess whether there are adequate support facilities, activities and industry to keep the farming business in business. The more support facilities available to the agricultural

landowner, the more feasible it is for him or her to stay in production. In addition, agricultural support facilities are compatible with farmland. This fact is important, because some land uses are not compatible; for example, development next to farmland cam be dangerous to the welfare of the agricultural land, as a result of pressure from the neighbors who often do not appreciate the noise, smells and dust intrinsic to farmland. Thus, when all required agricultural support services are available, the maximum number of points (5) are awarded. When some services are available, 4 to 1 point(s) are awarded; and consequently, when no services are available, no points are given. See below:

Percent of Services Available	Points
100 percent	5
75 to 99 percent	4
50 to 74 percent	3
25 to 49 percent	2
1 to 24 percent	1
No services	0

10. Does the site have substantial and well-maintained on farm investments such as barns, other storage buildings, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

High amount of on-farm investment	20 points
Moderate amount of non-farm investment	19 to 1 point(s)
No on-farm investments	0 points

This factor assesses the quantity of agricultural facilities in place on the proposed site. If a significant agricultural infrastructure exists, the site should continue to be used for farming, and thus the parcel will receive the highest amount of points towards protection from conversion or development. If there is little on farm investment, the site will receive comparatively less protection. See-below:

Amount of On-farm Investment	Points
As much or more than necessary to maintain production (100 percent)	20
95 to 99 percent	19
90 to 94 percent	18
85 to 89 percent	17
80 to 84 percent	16
75 to 79 percent	15
70 to 74 percent	14
65 to 69 percent	13
60 to 64 percent	12
55 to 59 percent	11
50 to 54 percent	10
45 to 49 percent	9
40 to 44 percent	8
35 to 39 percent	7
30 to 34 percent	6
25 to 29 percent	5
20 to 24 percent	4
15 to 19 percent	3
10 to 14 percent	2
5 to 9 percent	1
0 to 4 percent	0

11. Would the project at this site, by converting farmland to nonagricultural use, reduce the support for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

Substantial reduction in demand for support services if the site is converted	10 points
Some reduction in demand for support services if the site is converted	9 to 1 point(s)
No significant reduction in demand for support services if the site is converted	0 points

This factor determines whether there are other agriculturally related activities, businesses or jobs dependent upon the working of the pre-converted site in order for the others to remain in production. The more people and farming activities relying upon this land, the more protection it should receive from conversion. Thus, if a substantial reduction in demand for support services were to occur as a result of conversions, the proposed site would receive a high score of 10; some reduction in demand would receive 9 to 1 point(s), and no significant reduction in demand would receive no points.

Specific points are outlined as follows:

Amount of Reduction in Support Services if Site is Converted to Nonagricultural Use	**Points**
Substantial reduction (100 percent)	10
90 to 99 percent	9
80 to 89 percent	8
70 to 79 percent	7
60 to 69 percent	6
50 to 59 percent	5
40 to 49 percent	4
30 to 39 percent	3
20 to 29 percent	2
10 to 19 percent	1
No significant reduction (0 to 9 percent)	0

12. Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of the surrounding farmland to nonagricultural use?

Proposed project is incompatible with existing agricultural use of surrounding farmland	10 points
Proposed project is tolerable of existing agricultural use of surrounding farmland	9 to 1 point(s)
Proposed project is fully compatible with existing agricultural use of surrounding farmland	0 points

Factor 12 determines whether conversion of the proposed agricultural site will eventually cause the conversion of neighboring farmland as a result of incompatibility of use of the first with the latter. The more incompatible the proposed conversion is with agriculture, the more protection this site receives from conversion. Therefor-, if the proposed conversion is incompatible with agriculture, the site receives 10 points. If the project is tolerable with agriculture, it receives 9 to 1 points; and if the proposed conversion is compatible with agriculture, it receives 0 points.

Appendix N
Fire District Letter of Intent

ESA

Cloverdale Rancheria
555 S. Cloverdale Blvd., Suite A ~ Cloverdale, CA 95425
(707) 894-5775 ~ Fax (707) 894-5727

April 23, 2009

Mr. Brian Elliott
Fire Chief
Cloverdale Fire Protection District
116 Broad Street
Cloverdale, CA 95424

RE: Letter of Intent for Fire Service to the Cloverdale Rancheria

This Letter of Intent is by and between the Cloverdale Rancheria of Pomo Indians of California (the "Tribe"), 555 S. Cloverdale Blvd. Cloverdale, CA 95425 and Cloverdale Fire Protection District (the "Cloverdale Fire"), 116 Broad Street, Cloverdale, CA 95425.

The Cloverdale Rancheria of Pomo Indians of California is a federally-recognized Indian Tribe desiring to reestablish its land base and develop a gaming enterprise thereon. The Cloverdale Fire Protection District is an independent fire district pursuant to California Health and Safety Code Section 13800. Cloverdale Fire and the Tribe intend to enter into a Memorandum of Understanding ("MOU") to provide fire and emergency services to the gaming enterprise that the Tribe will own and operate on Indian lands located outside the City of Cloverdale's political boundaries.

Cloverdale Fire will provide fire protection services to Cloverdale Rancheria's gaming facility in exchange for consideration paid by Cloverdale Rancheria to the Cloverdale Fire Protection District as agreed upon and set forth in the MOU. The Tribe's consideration for these services will likewise be set forth in the MOU between the Cloverdale Fire Protection District and the Cloverdale Rancheria of Pomo Indians.

The purpose of this Letter of Intent is to set forth the intentions of the Tribe and Cloverdale Fire to negotiate in good faith an agreement for fire and emergency services. The Tribe and Cloverdale Fire recognize that the transaction discussed in this Letter of Intent will require further information exchange, documentation and approvals. Nevertheless, the parties execute this Letter as evidence of their intentions to proceed in mutual good faith to complete the work required and negotiate the terms of an MOU that is consistent with this Letter of Intent.

CLOVERDALE RANCHERIA TRIBAL COUNCIL

Patricia Hermosillo	*Silver Galleto*	*Christina Hermosillo*	*Elaine Willits*	*Sandy Roope*
Chairperson	*Vice-Chairperson*	*Secretary*	*Treasurer*	*Tribal Representative*

Cloverdale Rancheria

In the absence of a duly executed MOU, Cloverdale Fire shall have no duty or obligation to provide any services to the Tribe for its proposed gaming facility and the Tribe shall have no duty to provide compensation to Cloverdale Fire.

The parties agree to use their best efforts to enter into a MOU or other agreements used by Cloverdale Fire with other governments or business within the service area by May 1, 2010.

This Letter of Intent may be executed in several counterparts. If the foregoing is acceptable to you, kindly execute a copy of this Letter in the place set forth below and return it.

ACCEPTED AND AGREED TO:

Cloverdale Rancheria of Pomo Indians

By: Patricia Hermosillo Date: 4/23/09
Patricia Hermosillo, Chairperson

Cloverdale Fire Protection District

By: Brian Elliot Date: 7/29/09
Brian Elliot, Fire Chief

CLOVERDALE RANCHERIA TRIBAL COUNCIL

Patricia Hermosillo	*Silver Galleto*	*Christina Hermosillo*	*Elaine Willis*	*Sandy Roope*
Chairperson	*Vice-Chairperson*	*Secretary*	*Treasurer*	*Tribal Representative*

Appendix O
Wetland Delineation

ESA

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 01 2009

Regulatory Division

SUBJECT: File Number SPN-2009-00191-N

Mr. Jamie Galos
2600 Capitol Avenue
Suite 200
Sacramento, California 95816

Dear Mr. Galos:

This letter is written in response to your submittal of March 13, 2009 requesting confirmation of the extent of Corps of Engineers jurisdiction at the Cloverdale Rancheria, located near the northeast intersection of Asti Road and Santana Drive, in the Town of Cloverdale, Sonoma County, California (APN 116-310-039, -040, -035, -020, -044, and -005).

Enclosed is a map, dated November 30, 2009, showing the extent and location of Corps of Engineers jurisdiction. We have based this jurisdictional delineation on the current conditions on the site as verified during a site visit performed by our staff on August 26, 2009. A change in those conditions may also change the extent of our jurisdiction. This jurisdictional delineation will expire in five years from the date of this letter. However, if there has been a change in circumstances that affects the extent of Corps jurisdiction, a revision may be completed before that date.

All proposed discharges of dredged or fill material into waters of the United States must be authorized by the Corps of Engineers pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. Section 1344). Waters of the United States generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), and wetlands.

Your proposed activity appears to be within our jurisdiction and a permit may/is within our jurisdiction and a permit will be required for your project. Application for Corps authorization should be made to this office using the application form in the enclosed pamphlet. To avoid delays it is essential that you enter the file number at the top of this letter into Item No. 1 of the application. The application must include plans showing the location, extent and character of the proposed activity, prepared in accordance with the requirements contained in this pamphlet. You should note, in planning your project, that upon receipt of a properly completed application and plans, it may be necessary to advertise the proposed work by issuing a Public Notice for a period of 30 days.

Since an Individual Permit will probably be required to authorize your project, it will be necessary for you to demonstrate to the Corps that your proposed fill is necessary because there are no practicable alternatives as outlined in the U.S. Environmental Protection Agency's Section 404(b)(1) Guidelines. A copy of the Guidelines is enclosed to aid you in preparation of this alternative analysis. You are advised to refrain from starting your proposed activity until we complete our review of your application and issue you the required authorization. Commencement of work before you receive our notification will be interpreted as a violation of our regulations.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; March 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal" form (NAO-RFA). If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA form within sixty (60) days of the date of the NAO-RFA.

Should you have any questions regarding this matter, please call Philip Shannin of our Regulatory Division at 415-503-6781. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

Jane Morang
for

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copy Furnished

CA RWQCB, Santa Rosa, CA

CLOVERDALE RANCHERIA

Wetland Delineation Report

Prepared for
End to End Enterprises

February 2009

CLOVERDALE RANCHERIA

Wetland Delineation Report

Prepared for
End to End Enterprises

February 2009

2600 Capitol Avenue
Suite 200
Sacramento, CA 95816
916.564.4500
www.esassoc.com

Los Angeles

Oakland

Olympia

Petaluma

Portland

San Diego

San Francisco

Seattle

Tampa

Woodland Hills

207737

ESA

TABLE OF CONTENTS

Report Title

		Page
1.	**Summary**	**1-1**
2.	**Introduction**	**2-1**
2.1	Study Area	2-1
2.2	Purpose of Assessment	2-2
3.	**Methodology**	**3-1**
3.1	Definitions	3-1
3.2	Pre-field Review	3-3
3.3	Field Investigation	3-3
3.4	Mapping and Acreage Calculations	3-4
4.	**Results**	**4-1**
4.1	Soils	4-1
4.2	Field Investigation	4-3
5.	**References**	**5-1**

Appendices

A. Plant Species Observed
B. Wetland Delineation Data Sheets
C. Site Photographs

List of Tables and Figures

Table 4-1	Potential Jurisdictional Features within the Study Area	4-11
Figure 2-1	Regional Location	2-3
Figure 2-2	Project Area	2-4
Figure 2-3	Project Area (USGS quad base)	2-5
Figure 4-1	Soils Map	4-2
Figure 4-2	Connection to TNW	4-8
Figure 4-3	Potentially Jurisdictional Waters of the U.S.	4-10

SECTION 1.0
Summary

On behalf of End to End Enterprises, in March and May 2008 and January 2009, Environmental Science Associates (ESA) conducted a wetland delineation for property associated with the Cloverdale Rancheria of Pomo Indians of California located in Cloverdale, Sonoma County, California. This wetland delineation report describes those features within the study area that may be considered waters of the United States (U.S.), and are therefore subject to Section 404 of the Clean Water Act (CWA).

The contact information for End to End Enterprises is:

Mr. Rick Harris
End to End Enterprises
One Sealaska Plaza, Suite 400
Juneau, AK 99801-1245
907-586-9245, phone

The study area is located towards the head of the Alexander Valley in northeastern Sonoma County. While a majority of the study area being in unincorporated Sonoma County, it is within the sphere of influence (SOI) of the City of Cloverdale, and also has a small portion within the City limits. The study area is located just east of Cloverdale, spanning the area between Highway 101 and the Russian River. It is bordered to the north for the most part by the City of Cloverdale's Waste Water Treatment Plant (WWTP); the southern border more or less parallels Santana Drive, which occurs a few hundred feet further to the south of the site's western portion.

Directions to the site:

- From Sacramento, take I-80 westbound
- Take CA-37 westbound
- Take 101 northbound
- Exit South Cloverdale Blvd.
- Right on S Redwood Highway
- Left on Asti Road
- Site is on the right immediately after Santana Drive

The subject property occurs as two disjunct areas, separated by the north-south running Northwestern Pacific Railroad right-of-way (NWPR ROW). For purposes of providing a contiguous study area, the NWPR ROW was also included to connect the two property sites. The east portion of the study

area (east of the NWPR ROW) is relatively flat, occurring on floodplain adjacent to the Russian River. It is almost entirely developed as a vineyard, but also includes settlement ponds for the City of Cloverdale's wastewater treatment facility. Additionally, it contains portions of Porterfield Creek with associated riparian habitat in segments along the west and south boundary.

The west portion of the study area (west of the NWPR ROW), found farther to the west from the Russian River and Porterfield Creek, exhibits greater topographic variation than the east portion of the study area, with raised portions in the north and south dipping to a broad centrally located swale. The greater part of the area is grazed pasture. It also contains six rural residences and associated outbuildings including barns, horse paddocks, and corrals.

Approximately 2.36 acres of potentially jurisdictional waters of the U.S. were identified in the study area. A summary of Waters of the U.S. and associated information is provided in Section 4.0, Results.

This report documents wetland and channel boundary delineation and the best professional judgment of ESA investigators. All conclusions presented should be considered preliminary and subject to change pending official review and verification in writing by the U.S. Army Corps of Engineers (Corps).

This wetland delineation has been conducted in accordance with the 1987 "Corps of Engineers Wetlands Delineation Manual" and the "Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region."

SECTION 2.0
Introduction

2.1 Study Area

The study area is located in unincorporated Sonoma County, within the sphere of influence (SOI) of the City of Cloverdale (**Figure 2-1**). It is within the Rincon De Musalacon Land Grant on the Cloverdale U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (USGS, 1960). Elevation of the study areas ranges from approximately 280 to 330 feet above mean sea level (msl). Study area topography varies from flat floodplain adjacent to the Russian River to rolling terrain further west of the river.

The subject property occurs as two disjunct areas, separated by the north-south running Northwestern Pacific Railroad right-of-way (NWPR ROW). For purposes of providing a contiguous study area, the NWPR ROW was also included to connect the two property sites. (**Figure 2-2**). The project site and its topography are also shown on the 1960 (most current) Cloverdale USGS quadrangle in **Figure 2-3**.

Current land uses within the study area include vineyard and a wastewater treatment facility in the eastern floodplain area, and pasture, rural residences and outbuildings in the western portion. Segments of Porterfield Creek and Coyote Creek, with associated riparian habitat, occur within the study area. Surrounding uses include a wastewater treatment facility to the north, industrial warehouses and storage facilities to the south, and Highway 101 and residential neighborhoods to the west. The Russian River occurs beyond the eastern border of the study area, beyond which is agricultural land. Regional freeway access to the project site is provided by Highway 101 with local access provided by South Cloverdale Boulevard via Highway 101. The study area consists of six individual assessor parcels (Assessor Parcel Numbers (APN) 116-310-039, 116-310-040, 116-310-035, 116-310-020, 116-310-044, 116-310-005) totaling ±78.35 acres of land.

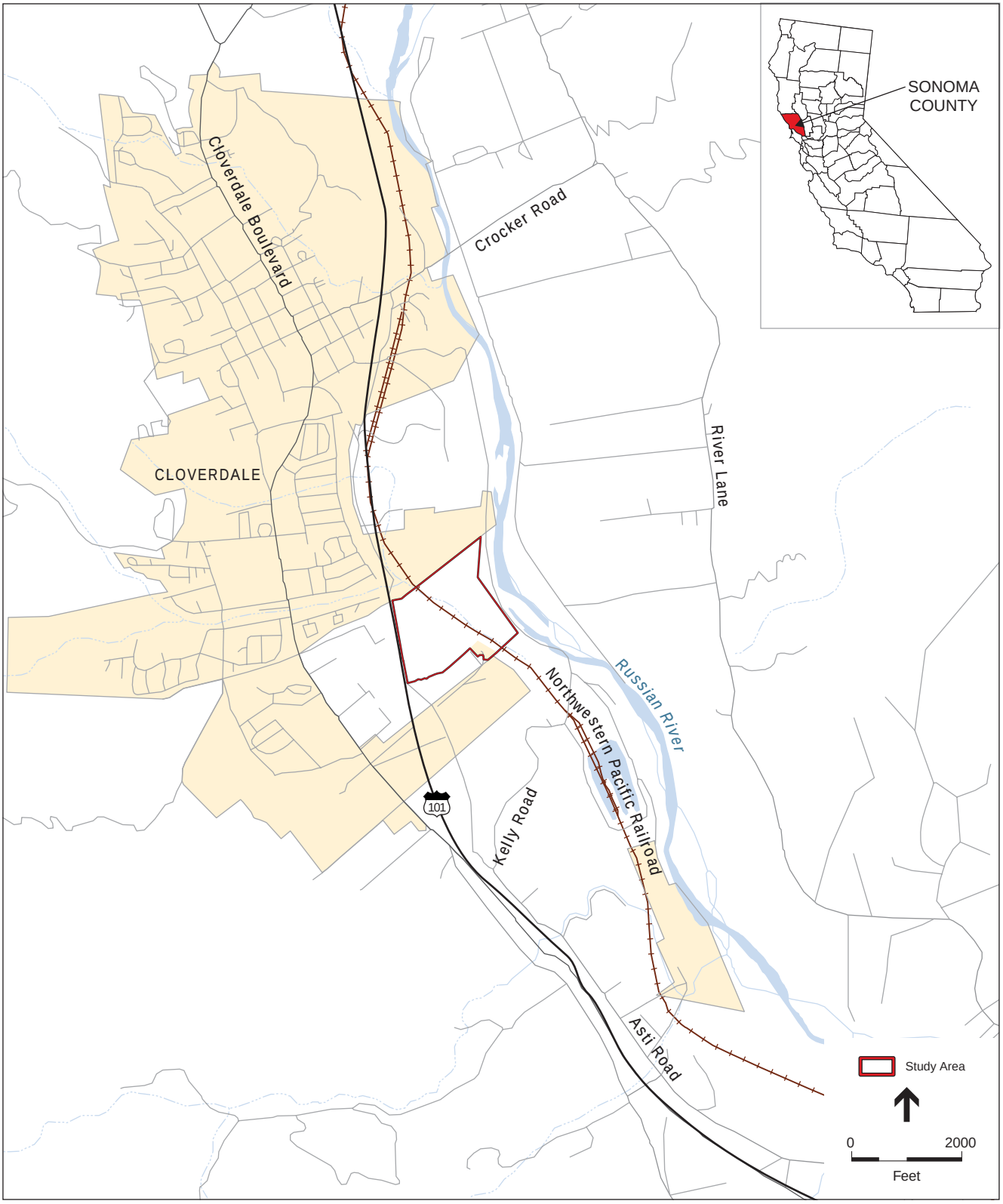
The east portion of the study area is almost entirely comprised of a vineyard occurring on relatively flat flood plain adjacent to the Russian River. Elevation in the ranges from approximately 280 feet above mean sea level (msl) in the southeast corner to 285 feet above msl in the northwest corner. It is bordered to the northwest by a private agricultural road that forms the border of the vineyard. The border extends linearly eastward into the adjacent water treatment facility such that the northern portion of the east portion of the study area includes a triangular-shaped overflow basin. The western border of the area is formed by an agricultural road, Porterfield Creek and associated riparian vegetation, and the NWPR ROW. The southern border of the area more or less follows the boundary of the vineyard.

The west portion of the study area is comprised principally of grazed non-native annual grassland. It also contains six rural residences and associated outbuildings including barns, horse paddocks, and corrals. Here, the study area's topography consists of gently rolling terrain. The northern portion is raised, reaching approximately 330 feet above msl near the northwest corner. Moving south, the terrain dips down to a broad swale ranging from approximately 317 feet above msl at its western extent to 305 feet above msl to the east. Moving further south, the terrain rises to approximately 332 feet above msl in the southwest portion, then dips down again to the I-2 drainage, which ranges from approximately 310 feet above msl at the study area's west border, to 300 feet above msl at its eastern border.

Boundaries for the west portion of the study area are formed by Lile Lane to the north, Lile Lane and the NWPR ROW to the east, and Asti Road, which parallels Highway 101, to the west. The southern border follows existing parcel boundaries, with Santana Drive running parallel to it further to the south.

2.2 Purpose of Assessment

The purpose of this investigation is to describe and delineate all waters of the U.S. within the study area that are subject to Section 404 of the CWA. If necessary, information from this report may be used in preparing permit applications for future actions proposed in the study area. This report will be reviewed by the Corps to verify their jurisdiction over wetlands and other waters of the U.S.



SOURCE: ESRI, 2006; and ESA, 2008

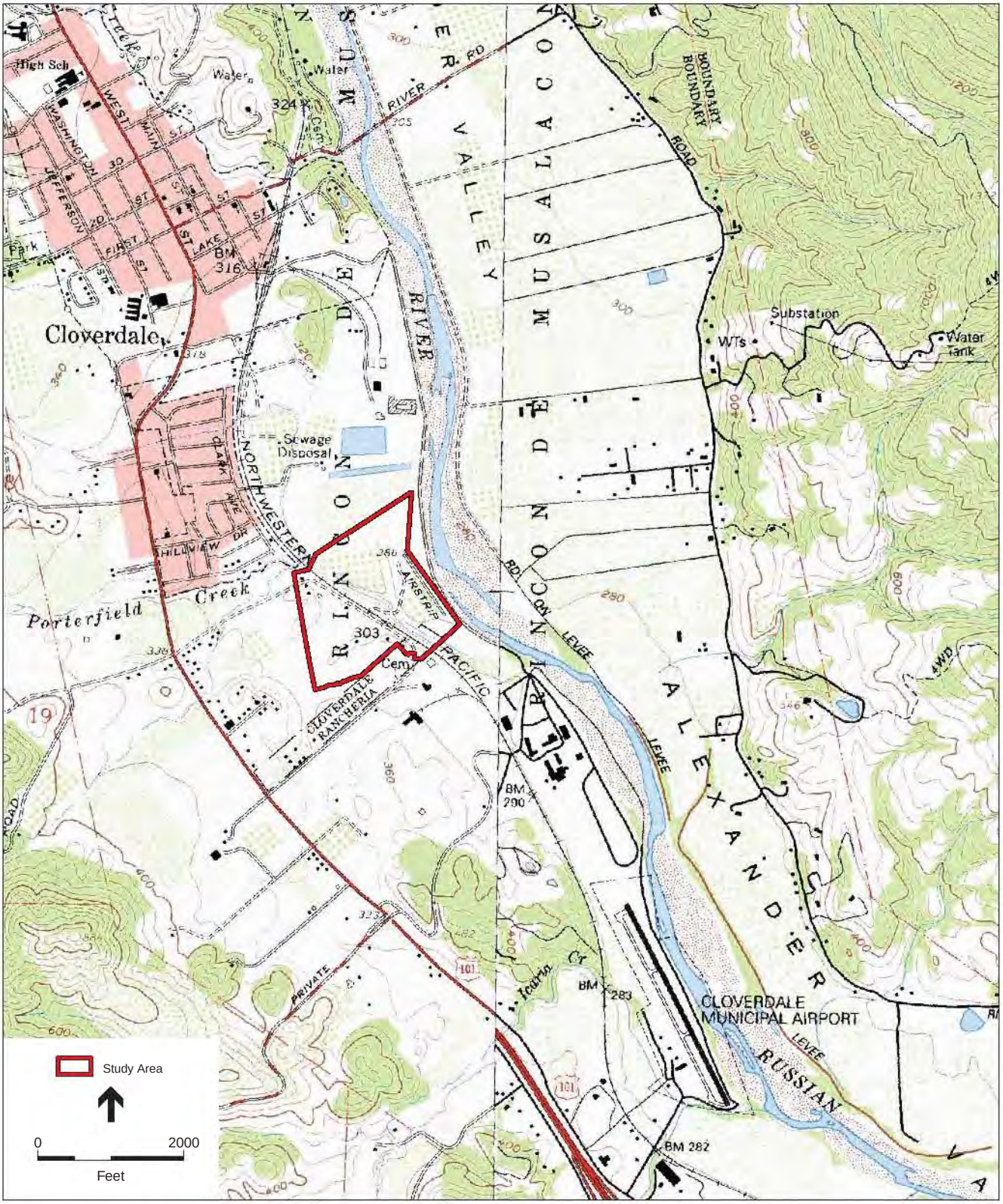
Cloverdale Rancheria Wetland Delineation . 207737

Figure 2-1
Regional Location

SOURCE: NAIP, 2006; GlobeXplorer, 2007; and ESA, 2008

Cloverdale Rancheria Wetland Delineation . 207737

Figure 2-2
Study Area



SOURCE: USGS Topographic Quadrangle, 1960-1963; and ESA, 2008

Cloverdale Rancheria Wetland Delineation . 207737

Figure 2-3

Study Area – USGS Quadrangle Based

SECTION 4
Results

4.1 Soils

The *Sonoma County Area California Soil Survey* (NRCS, 2008a) shows five soil units occurring within the study area (**Figure 4-1**). Two of the three soil units occurring in the east portion of the study area are listed as hydric, or contain inclusions that are hydric, per the national hydric soils list for Sonoma County, California (NRCS, 2008b) and the Sonoma County Field Office List of Hydric Soils (NRCS, 2008c). The two soil units occurring on the west portion of the study area are not included on the hydric soils list. A brief description of each soil unit is provided below.

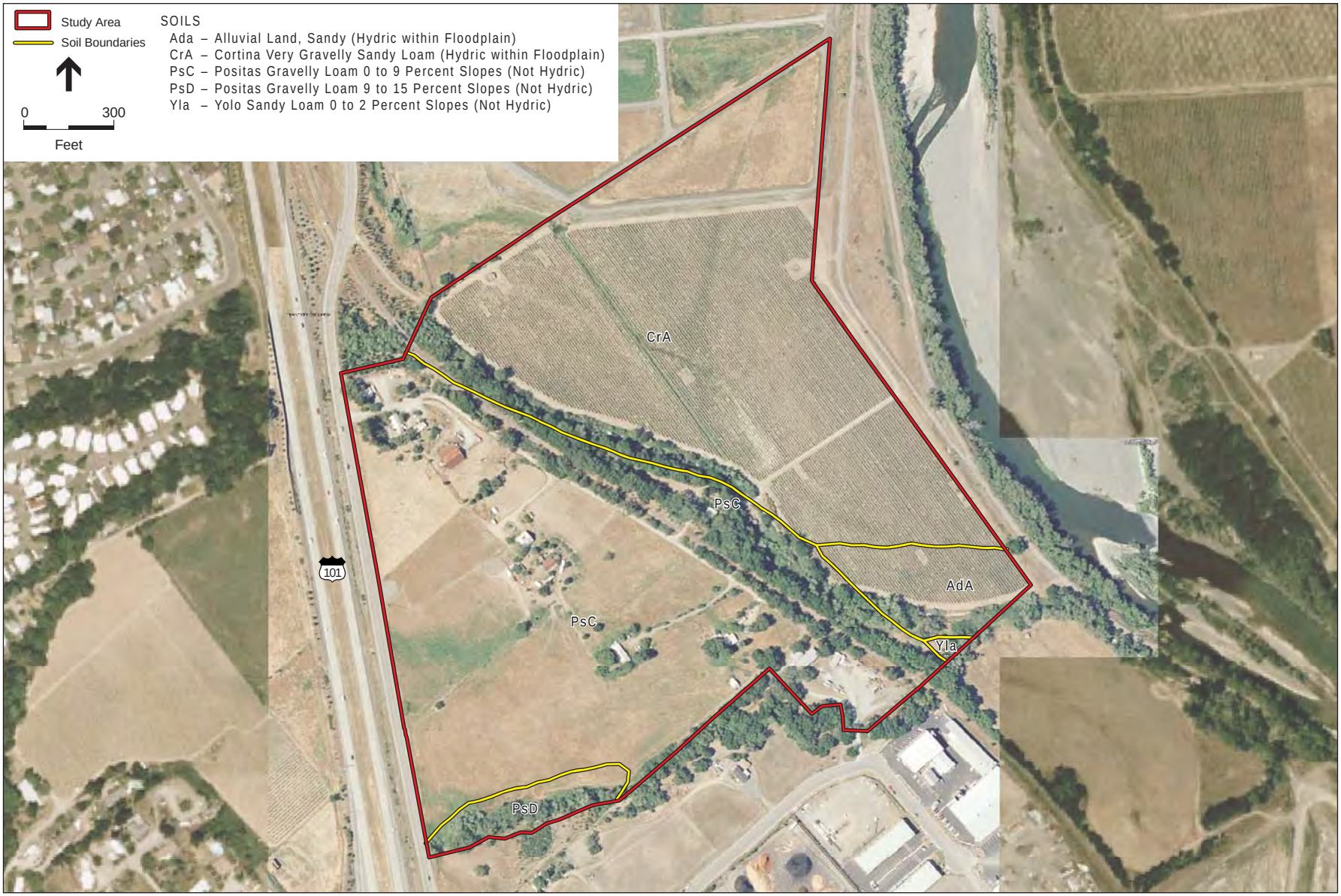
Alluvial Land, Sandy (AdA) soil is excessively drained soil occurring on floodplains. A typical profile includes gravelly sand to 10 inches, subtended by stratified very gravelly course sand to sand. Fifteen percent of the mapping unit is composed of an unnamed inclusion. Although extremely well draining, the series is considered hydric due to frequent flooding of long duration.

This series occurs in a minor portion of the east portion of the study area, including the southern portion of the vineyard and a small portion of Porterfield Creek and associated riparian vegetation.

Cortina Very Gravelly Sandy Loam, 0 to 2 Percent Slopes (CrA) soil series comprises very deep, somewhat excessively-drained soils on alluvial fans and floodplains. Typically, the surface horizon and subsoil is light brownish gray very gravelly sandy loam to 32 inches depth, subtended by light gray and light brownish gray very gravelly sand. Runoff is negligible to low and permeability is rapid. Inclusions in this soils unit are Cole, Yolo, and Riverwash soils. Riverwash soil, occurring in floodplain channels, is the only component of this mapping unit that is classified as hydric.

This soil series occurs on all but the western and southern edges (i.e. areas associated with Porterfield Creek) of the east portion of the study area. Land cover currently consists primarily of vineyard, although the waste water treatment facility and a portion of the riparian vegetation associated with Porterfield Creek also occur in this mapping unit.

Positas Gravelly Loam, 0 to 9 Percent Slopes (PsC) soil consists of deep to very deep soil located on stream terraces formed in alluvial material. The series is moderately well drained, with medium to very high runoff and slow to very slow permeability. A typical profile includes a surface layer of brown gravelly loam to 8 inches, a similar but slightly lighter colored layer from 8-11 inches, subtended by a subsoil reddish brown clay layer from 11-20 inches. The series is not considered hydric. All but the southwest corner of the west portion of the study area is covered by this soil series.



SOURCE: USDA, 1997; GlobeXplorer, 2006; NAIP, 2006; and ESA, 2008

Cloverdale Rancheria Wetland Delineation . 207737

Figure 4-1

Soils in the Study Area

Positas Gravelly Loam, 9 to 15 Percent Slopes (PsD) soil is similar to the series described above but occurs on areas with slightly greater sloping. This series is mapped in the southwest corner of the west portion of the study area. Current topography of the area does not conform with the indicated slope range for this series, nor to the topography shown in the 1960 USGS Cloverdale quadrangle. It is likely that this area has undergone considerable manipulation (e.g. excavation and grading) since the topographic and soils mapping were conducted over 40 years ago.

Yolo Sandy Loam, 0 to 2 Percent Slopes (Yla) soils are typically located on nearly level to moderately sloping alluvial fans. The series is well drained with slow to medium runoff and moderate permeability. Soils in the Yolo Series are typically silty loams. The Yolo Series soil found within the study area has been mapped as a sandy loam. The series is not considered hydric. The series occurs in a small area in the southeast section of the study area near the junction of Coyote and Porterfield Creeks.

4.2 Field Investigation

4.2.1 Study Area Setting

The combined study area is located within unincorporated Sonoma County, within the SOI of the City of Cloverdale and is surrounded by a mix of commercial, residential, municipal, and agricultural development. Regionally, the project is located at the northern end of the Alexander Valley, with the Mayacamas Mountains rising to the east and coastal range hills rising to the west. The project site occurs on the relatively flat valley floor, spanning an area more or less from the developed portion of Cloverdale to the west and the Russian River to the east. Regional natural plant communities in the study area include those that are common to the Central Franciscan subsection of the Northern California Coast Ranges, such as mixed oak, mixed conifer forest, and needlegrass grassland (Miles and Goudey, 1997). Climate is typically temperate and humid. Typical elevations within this ecological subsection range from 300 feet above sea level up to 6,175 feet at Big Signal Peak. Mean annual precipitation is approximately 35 to 110 inches. Mean annual temperature ranges from 40 to 58 degrees Fahrenheit (Miles and Goudey, 1997).

Within the study area, the terrain varies from flat floodplain adjacent to the Russian River to mildly rolling terrain further west of the river. Hydrology features in the study areas include two intermittent drainages; Porterfield Creek (I-1) and Coyote Creek (I-2). A broad swale and a topographic depression in the area of rolling terrain support seasonal wetlands. An excavated vegetated drainage swale through the vineyard on the floodplain carries drainage of Heron Creek (I-3) entering the project area from the north.

4.2.2 Study Area Plant Communities and Habitats

Plant communities are assemblages of plant species that occur together in the same area, which are defined by species composition and relative abundance. Upland plant communities and habitats within the study area include non-native annual grassland, disturbed/ruderal, agricultural lands (vineyards), urban/developed, central coast riparian forest, north coast riparian scrub. Plant communities and habitats associated with aquatic settings include seasonal wetland and freshwater emergent wetland.

Upland Plant Communities and Habitats

Non-Native Annual Grassland

Non-native annual grassland is generally found in open areas in valleys and foothills throughout coastal and interior California (Holland, 1986). It typically occurs on soils consisting of fine-textured loams or clays that are somewhat poorly drained. This vegetation type is dominated by non-native annual grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, that have replaced native perennial grasslands, scrub and woodland as a result of human disturbance. Scattered native wildflowers and grasses, representing remnants of the original vegetation may also be common.

Within the study area, non-native annual grassland is present in the pastures occupying most of the west portion of the study area. These pastures are currently in use primarily for horse grazing. Non-native annual grasses occurring include wild oats (*Avena fatua*), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), Mediterranean barley (*Hordeum marinum* ssp.*gussoneanum*), hare barley (*Hordeum murinum* ssp. *leporinum*), Italian ryegrass (*Lolium multiflorum*), hedgehog dogtail (*Cynosurus echinatus*), and rattail fescue (*Vulpia myuros*), among others. Common nonnative forbs include English plantain (*Plantago lanceolata*), field bindweed (*Convolvulus arvensis*), curly dock (*Rumex crispus*), fiddle dock (*Rumex pulcher*), Italian thistle (*Carduus pycnocephalus*), yellow star thistle (*Centauria solstitialis*), bristly ox-tongue (*Picris echioides*), little hop clover (*Trifolium dubium*), and red-stemmed filaree (*Erodium cicutarium*), among others. Non-native Himalayan blackberry (*Rubus discolor*) is also present. Despite the dominance of non-native annual grasses and forbs, native species are also present in the grasslands. These native species include Fitch's spikeweed (*Centromadia fitchii*), hayfield tarweed (*Hemizonia congesta* ssp. *luzulifolia*), and Spanish-clover (*Lotus purshianus*), among others. Native shrubs including coyote brush (*Baccharis pilularis*) and poison oak (*Toxicodendron diversilobum*)are scattered throughout the non-native grassland but not in sufficient densities to be considered a distinct vegetation community. The majority of the non-native grassland within the study area is subject to grazing.

Disturbed/Ruderal

Disturbed/ruderal habitat occurs in areas such as along roadsides, trails, parking lots, etc. These communities are subjected to ongoing or past disturbances (e.g., vehicle activities, mowing). Ruderal habitat in these disturbed areas supports a diverse weedy flora, primarily composed of non-native invasive species.

Within the study area, ruderal vegetation is found adjacent to roads, in some high-use areas near buildings and in pastures, scattered within the vineyard, and occupying the wastewater treatment overflow basin.

Dominant species vary per locale but include introduced common annual weedy forbs such as bur-clover (*Medicago polymorpha*), red-stem filaree, wild radish (*Raphanus sativus*), black mustard (*Brassica nigra*), field bindweed, milk thistle (*Silybum marianum*), and others. Non-native grasses are also represented including ripgut brome, Italian wildrye, wild oat, and others.

The ruderal vegetation complement in the wastewater treatment overflow basin includes dense areas of broadleaf filaree (*Erodium botrys*) and black mustard in robust growth. Some areas of broadleaf filaree are supplemented by Italian wildrye.

Agricultural Lands- Vineyards

The vineyard occurring in the study area is comprised of cultivated grapes. Vines are intertwined in rows but open between rows. The understory is primarily barren but contains scattered ruderal vegetation as noted above. Most of the east portion of the study area is currently planted in vineyard.

Urban/Developed

Urban habitats are those dominated by plant species introduced by humans and established or maintained by human disturbances or activities (Holland and Keil, 1990). Some are entirely artificial such as areas influenced by urban or suburban landscaping or plantings. Within the study are, urban habitats include roadways, buildings, and the areas around the residences, barns, horse paddocks, and corrals. There are six rural residences within the study area.

Planted trees around the residences include tulip tree (*Liriodendron tulipifera*), coast redwood (*Sequoia sempervirens*), Monterey pine (*Pinus radiata*), English walnut (*Juglans regia*), flowering cherry (*Prunus cerasifera*), pear (*Pyrus communis*), peach (*Prunus persica*), persimmon (*Diospyros kaki*), olive (*Olea europaea*), and apple (*Malus* sp.). Ornamental shrubs include spiraea (*Spiraea* sp.), oleander (*Nerium oleander*), and rose (*Rosa* sp.). Ruderal non-native species present in disturbed areas around the horse paddocks and corrals include Italian thistle, rough pigweed (*Amaranthus retroflexus*), yellow star thistle, spiny cocklebur (*Xanthium spinosum*), horehound (*Marrubium vulgare*), teasel (*Dipsacus sativus*), and other non-native species listed above under non-native grassland.

Coast Live Oak Woodland

Coast live oak woodland is typically found on north-facing slopes and shaded ravines in the southern and inland portions of the state and on more exposed, mesic sites in the north. This community is dominated by coast live oak (*Quercus agrifolia*), which frequently occurs in pure, dense stands with a closed canopy. Coast live oak may be the only overstory species or, on more mesic sites, trees characteristic of mixed evergreen forests mix with coast live oak, such as California bay (*Umbellularia californica*) and madrone (*Arbutus menziesii*).

Within the study area, coast live oak woodland is present in a narrow band along the northern and eastern boundary of the west portion of the study area. This habitat is dominated by coast live oak, with scattered California bay and California buckeye (*Aesculus californica*). Native shrub species include toyon (*Heteromeles arbutifolia*), Himalyan blackberry, and poison oak, among others.

North Coast Riparian Scrub/Woodland

North coast riparian scrub typically consists of shrubby, streamside, open to impenetrable thickets composed of any of several species of willow (*Salix* spp.) and other fast-growing shrubs and vines. This plant community occurs on sand and gravel bars along and at the mouths of streams, within the coastal fog incursion zone from Sonoma County into Oregon usually below 1,000 feet in

elevation. Some tree species are also included in riparian scrub (Holland, 1986). North coast riparian scrub is generally considered "seral," meaning that it typically precedes the development of other riparian woodland or forest communities in the absence of severe flooding.

Dominant overstory species in the study area include red willow (*Salix laevigata*), arroyo willow (*S. lasiolepis*), Pacific willow (*S. lucida* ssp. *lasiandra*), valley oak (*Quercus lobata*), coast live oak, California buckeye, box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*) and California bay. The understory consists of native species such as mugwort (*Artemisia douglasiana*), willow-herb (*Epilobium ciliatum* ssp. *ciliatum*), poison oak, and coyote brush, among others. Non-native understory species include klamathweed (*Hypericum perforatum*) and Himalayan blackberry, among others.

Two occurrences of riparian habitat are found in the study area. One is associated with Coyote Creek, along, and in parts within, the southern boundary of the west portion of the study area (**Figure 1-2**). The other is associated with Porterfield Creek, again along, and in parts within, the western and southern boundary of the east portion of the study area. Different areas along these creeks appear to be at different seral stages, with some areas dense with willows and appearing to be at early successional stages, while others are dominated with more mature valley oaks, coast live oaks and other riparian trees, appearing to be at later successional stages and approaching a more woodland or forest type of structure. In general, riparian habitat along Porterfield Creek is relatively mature, dominated by sometimes moderately large coast live and valley oaks, and with ample presence of Fremont cottonwood (*Populus fremontii*), arroyo willow, red willow, Oregon ash, and California bay. Small areas of relatively recent disturbance are dominated by dense willow growth. Riparian habitat along Coyote Creek is less mature, with most of the corridor dominated by a relatively dense mix of the variety of trees discussed above, occurring at moderate size.

Aquatic Plant Communities and Habitats

Seasonal Wetland

Seasonal wetlands are ephemeral wetlands that pond or remain flooded for extended periods during a portion of the year, then may dry in spring or early summer. Seasonal wetlands occur in the west portion of the study area, associated with a low-lying area in the southwest corner of the parcel and with a broad drainage swale, draining west to east through the central portion of the study area. Common hydrophytic species in these features include spiny-fruit buttercup (*Ranunculus muricatus*), pennyroyal (*Mentha pulegium*), curly dock, Italian ryegrass, and Mediterranean barley.

Freshwater Emergent Wetland

Freshwater emergent wetland typically occurs in low-lying sites that are permanently flooded or saturated with fresh water and lacking significant current. Freshwater marsh is most extensive where surface flow is slow or stagnant or where the water table is so close to the surface as to saturate the soil from below. This vegetation community characteristically forms a dense vegetative cover dominated by perennial, emergent monocots one to 15 feet high that reproduce by underground rhizomes.

Within the study area, freshwater emergent wetland is restricted to a section of low gradient stream at the western extreme of Coyote Creek. Aquatic plant species recorded here include umbrella sedge, narrow-leaved cattail (*Typha angustifolia*), low bulrush (*Scirpus cernuus*), punctuate smartweed, watercress (*Nasturtium officinale*), dallis grass (*Paspalum dilatatum*), and pennyroyal, among others.

Riverine/Intermittent Drainage

Coyote Creek, an intermittent tributary to Porterfield Creek, flows along the southern boundary of the west portion of the study area. The portions of the creek that that lie within the study area are comprised of well-developed over and understory growth with infrequent openings. The streambanks vary from gently sloping to steeply incised with dense bank vegetation, exposed roots, and areas of active erosion. The main channel is comprised of a low-grade riffle, run, and pool complexes with a limited number of shallow to moderately deep pools up to one foot in depth. The main channel contains root wads, small woody debris, and overhanging vegetation. Overall the substrate is silty, with few gravel to cobble-sized rocks.

Porterfield Creek has similar characteristics, but is wider and with a more mature riparian corridor. At the time of both surveys most of the creek bed was dry, with occasional pools and stretches of creek carrying water.

4.2.3 Site Hydrology Overview

The study area is situated in flat to rolling terrain in an area that lies adjacent and west of the south-flowing Russian River. Ground surface elevation ranges from approximately 280 feet msl near to the Russian River, in the southeast corner of the East Parcel, to 330 feet near the northwest corner of the West Parcel. The two creeks within the study area are part of the Russian River Watershed that eventually drains to the Pacific Ocean at Jenner, California. All study area drainage flows into Porterfield Creek within the study area. Porterfield Creek joins the Russian River approximately 400 feet east of the point where Porterfield Creek leaves the study area. The Russian River is a traditional navigable waterway (TNW) (**Figure 4-2**).

Hydrological input to the study area is through culverted drainages from west of the site, creek and channelized drainage from north of the site, and direct rainfall. Some sheetflow from off-site is likely to enter the site from adjacent areas, in addition to runoff from Asti Road and the NWPR ROW. The majority of the study area is drained by surface percolation and intermittent drainages that convey flow to the Russian River.

The primary hydrological input into Coyote Creek is from the west, entering the study area by way of a culvert traversing beneath Highway 101 and Asti Road. This creek did not exist at the time the 1960 Cloverdale USGS quad was created, which was produced prior to the construction of Highway 101 and Asti Road. No stream line is indicated and topography in the area does not suggest any concentrated drainage. Topography in this area was most likely significantly altered for or prior to building of these roadways, or for other purposes, including excavation of the current stream. Judging by the natural appearance of the present-day stream, and the well-developed riparian canopy, the creek has existed in its present form for a moderate length of time. There are no apparent surface level drainages supplying the creek in the developed area west of the Highway 101/Asti Road culvert,

SOURCE: NAIP, 2006; GlobeXplorer, 2007; and ESA, 2008

Cloverdale Rancheria Wetland Delineation . 207737

Figure 4-2

Connection of Study Area Waters to TNW

nor in the foothills further west. The source of significant flows observed in Coyote Creek appears to be from groundwater pumping from a commercial facility west of the site. Additional input into Coyote Creek occurs as sheet flow from adjacent pastures. With partial inclusions in the southern part of the west portion of the study area, Coyote Creek flows east, is culverted beneath the NWPR ROW, and then joins Porterfield Creek at the southern tip of the east portion of the study area.

Hydrological input into the large seasonal wetland swale (sw-3) north of Coyote Creek is also by way of a culvert passing beneath Highway 101 and Asti Road. The source of the drainage is from pastures and agricultural fields to the west of Highway 101. This drainage may be supplemented by drainage from the roadways. Additional input into the swale is from direct precipitation and runoff from the pasture slopes adjacent to the swale. After traversing the west portion of the study area, drainage from the swale enters a culvert beneath the NWPR ROW and empties into Porterfield Creek within the ROW.

An intermittent drainage, Heron Creek (I-3) enters the east portion of the study area from the north. The source of the drainage north of the site is unknown, but it essentially follows the course of a blueline stream on the 1960 USGS quadrangle. On the quad, it joins Porterfield Creek near the northwest corner of the vineyard (**Figure 2-3**). This confluence was apparently filled at some point and the stream was diverted to the east, where it currently ponds before entering the site. After entering the site, the feature is confined to a ditch approximately 2-feet wide (**Appendix C**). The ditch is used and maintained for agricultural purposes when water is present. During the time of the January 2009 site visit, the ditch did not have a connection with Porterfield Creek.

On the USGS quadrangle, the blueline turns west near the north end of the present WWTP, traverses Cloverdale and continues into the hills west of Cloverdale. This drainage can be observed on current aerials in Cloverdale, south of the intersection of Upper Westside Drive and South Foothill Blvd and extending west. Downstream of the intersection, it appears to extend as far east as Tarman Drive before perhaps being culverted beneath a few blocks of residential units, then Highway 101 and Asti Road before emptying into the current drainage north of the project site.

Porterfield Creek, originating as two branches and connected tributaries in the foothills west of Cloverdale, traverses a mostly residential area of the city. It then enters the northwest corner of the east portion of the study area after having passed in culverts beneath Highway 101, Asti Road, and the NWPR ROW. The creek then follows the western and southern borders of the study area, occurring within the study area for two segments within the west and south border of the east portion of the study area. In exits the southeast corner of the study area, emptying into the Russian River approximately 400 feet east of this point. Between the points where the creek enters the study area and then leaves it, all study area drainages drain into the creek. Sheet flow from the east portion of the study area, as well as drainage from the NPRR ROW also enters Porterfield Creek along this stretch.

The wetlands occurring in the study areas vary in their hydrology. Freshwater emergent wetlands wetlands are located within the intermittent water features (drainages) and receive water from the water table and storm events. Seasonal wetlands are found in low-lying areas where drainage is slow, and they derive hydrology from surface sources typically associated with precipitation events and/or groundwater.

4.2.4 Jurisdictional Waters of the U.S.

A total of 2.36 acres of potential jurisdictional features occur within the study area. Jurisdictional features include 1.60 acres of wetlands and 0.76 acres (3,499.88 linear feet) of other waters of the U.S. Wetlands within the study area include 0.02 acre of freshwater emergent wetland and 1.58 acres of seasonal wetlands. Other waters of the U.S. within the study area include 0.76 acres (3,499.88 linear feet) of intermittent drainage.

The locations and extent of potentially jurisdictional features are depicted in **Figure 4-3**. Wetland determination data sheets are provided as Appendix B. Representative site photographs of wetland and upland communities are provided as Appendix C. A list of plants observed during the survey can be found in Appendix A. A summary of potentially jurisdictional features and their extent (including average width and linear feet for drainages) within the project site is presented in **Table 4-1**.

TABLE 4-1
POTENTIAL JURISDICTIONAL FEATURES WITHIN THE STUDY AREA

Map ID	Type of Potentially Jurisdictional Feature	Average Width	Linear Feet	Acres
Wetland				
SW-1	Seasonal PEM - Seasonal wetland	n/a	n/a	0.09
SW-2	Seasonal PEM - Seasonal wetland	n/a	n/a	0.16
SW-3	Seasonal PEM - Seasonal wetland	n/a	n/a	1.33
FEW-1	PPEM - Freshwater emergent wetland	n/a	n/a	0.02
	Wetland Subtotal:	n/a	n/a	1.60
Intermittent Drainage				
I-1	Intermittent Channel – Porterfield Creek	10	2,370.20	0.61
I-2	Intermittent Channel – Coyote Creek	7	1,129.68	0.15
	Other Waters Subtotal:	–	3,499.88	0.76
	Total area of potentially jurisdictional features			**2.36**

NOTES: PEM = palustrine emergent; PPEM = palustrine persistent emergent; n/a = not applicable.

Jurisdictional Wetlands

The wetland delineation survey conducted by ESA biologists identified seven wetland features within the study area. With the exception of the agricultural ditch, all wetlands in the study area are hydrologically connected to other waters of the U.S. through direct adjacency or drainage patterns resulting in hydrological linkages between wetlands and stream channel.

Seasonal Wetland

Three seasonal wetland units were identified in the study area. Seasonal wetlands SW-1 and SW-2 (0.09 and 0.16 acres respectively) are associated with a low area in the southwest corner of the west portion of the study area adjacent to Coyote Creek. Seasonal wetland SW-3, (1.33 acres) occupies a west-to-east draining broad swale centrally located in the west portion of the study area.

These wetlands are dominated by moderately to weakly hydrophytic species. Hydrologic input is from a combination of runoff from adjacent uplands, concentrated runoff entering each wetland area through culverts traversing beneath Asti Road, and direct precipitation. Seasonal wetlands are classified as seasonal palustrine emergent using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et. al, 1979). The boundaries of seasonal wetlands were determined based on moderately abrupt changes in vegetation composition, topography, and presence of hydric soil.

Freshwater Emergent Wetland

One freshwater emergent wetland (FEW-1) (0.02 acre) was identified in the study area. This wetland, occurring in a low gradient stretch of Coyote Creek, was primarily dominated by narrow-leaved cattail, a perennial obligate hydrophyte, accompanied by occurrences of low bulrush, punctuate smartweed, watercress, and other hydrophytic species. Freshwater emergent wetlands are classified as palustrine persistent emergent wetland using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et. al, 1979).

Other Waters of the United States

Intermittent Drainage

Intermittent channels have flowing water only periodically during the year, generally coinciding with the rainy season in the project region. Runoff from rainfall is the primary source of water for stream flow, although groundwater may contribute. Two intermittent channels were identified in the study area: Coyote Creek occurs in two segments along the southern boundary, (0.15 acre; 1,129.68 linear feet) and Porterfield Creek occurs along the western boundary of the east portion of the study area (0.61 acre; 2,370.20 linear feet).

4.2.5 Conclusions

A total of approximately 2.36 acres of potential jurisdictional features occur within the study area consisting of approximately 1.60 acres of wetlands and 0.76 acre of other waters of the U.S. (3,499.88 linear feet). The estimated acreages and linear lengths of the individual features are shown in Table 4-1.

This report documents the wetland boundary delineation and best professional judgment of ESA investigators. All conclusions presented should be considered preliminary and subject to change pending official review and verification in writing by the Corps.

Seasonal Wetlands	Acres
SW-1	0.09
SW-2	0.16
SW-3	1.33
TOTAL	1.58

Freshwater Emergent Wetland	Acres
FEW-1	0.02

Other Waters of the U.S.	Acres	Length	OHWM
Channel I-1	0.61	2370 Feet	10 Feet
Channel I-2	0.15	1130 Feet	7 Feet
Agricultural Ditch	0.04	972 Feet	2 Feet
TOTAL	0.80	4472 Feet	

Non-Jurisdictional Features	
Sewer Treatment Pond	3.64
Irrigated Pasture	0.38
TOTAL	4.02

REFERENCES

Delineators / Surveyors: Mark Fogiel, Kiffanie Stahl, David Beecroft – March 19, 2008
Chariss Tweedy – January 14, 2009

Date of Initial Map Preparation – February 2009 (Revised September 2009)

SOURCE: GlobeXplorer, 2007; ESRI, 2007; and ESA, 2009

Cloverdale Rancheria EIS. 207737

Figure 4-3

Wetland Delineation

Appendix A
Plant List

APPENDIX A
SPECIES OBSERVED AT THE CLOVERDALE RANCHERIA PROJECT SITE

Species name	Common name	Wetland Indicator Status
ACERACEAE		
Acer negundo var. californicum	California box elder	**FACW**
AMARANTHACEAE		
Amaranthus retroflexus	rough pigweed	**FACU**
ANACARDIACEAE		
Toxicodendron diversilobum	poison oak	**UPL***
APIACEAE		
Conium maculatum	poison hemlock	**FACW**
Foeniculum vulgare	sweet fennel	**FACU**
APOCYNACEAE		
Nerium oleander	oleander	**UPL***
ASTERACEAE		
Anthemis cotula	dog-fennel	**FACU**
Artemisia douglasiana	mugwort	**FACW**
Baccharis pilularis	coyote brush	**UPL***
Carduus pycnocephalus	Italian thistle	**UPL***
Centaurea solstitialis	yellow star-thistle	**UPL***
Centromadia fitchii	fitch spikeweed	**UPL***
Hemizonia congesta ssp. luzulifolia	hayfield tarweed	**UPL***
Hypochaeris radicata	rough cat's ear	**UPL***
Picris echioides	bristly ox-tongue	**FAC***
Silybum marianum	milk thistle	**UPL***

Species name	Common name	Wetland Indicator Status
Xanthium spinosum	spiny cocklebur	**FAC+**
BRASSICACEAE		
Brassica nigra	black mustard	**UPL***
Raphanus sativus	wild radish	**UPL***
Rorippa nasturtium-aquaticum	watercress	**OBL**
CALLITRICHACEAE		
Callitriche sp.	water starwort	**OBL**
CONVOLVULACEAE		
Convolvulus arvensis	bindweed	**UPL***
CYPERACEAE		
Cyperus eragrostis	umbrella sedge	**FACW**
Scirpus cernuus	low bulrush	**OBL**
DIPSACACEAE		
Dipsacus sativus	teasel	**NI**
EBENACEAE		
Diospyros kaki	persimmon	**UPL***
ERICACEAE		
Arbutus menziesii	madrone	**UPL***
FABACEAE		
Genista monspessulana	French broom	**UPL***
Lotus purshianus	Spanish-clover	**UPL***
Medicago polymorpha	burclover	**UPL***
Trifolium dubium	little hop clover	**FACU***

Species name	Common name	Wetland Indicator Status
Trifolium fragiferum	strawberry clover	**NI***
Vicia sp	vetch	
FAGACEAE		
Quercus agrifolia	coast live oak	**UPL***
Quercus lobata	valley oak	**FAC***
GERANIACEAE		
Erodium botrys	broadleaf filaree	**UPL***
Erodium cicutarium	red-stemmed filaree	**UPL***
Geranium dissectum	cut-leaf geranium	**UPL***
HIPPOCASTANACEAE		
Aesculus californica	California buckeye	**UPL***
HYPERICACEAE		
Hypericum perfolatum	klammath weed	**UPL***
JUGLANDACEAE		
Juglans regia	English walnut	**UPL***
JUNCACEAE		
Juncus spp	rush	**FACW**
LAMIACEAE		
Marrubium vulgare	horehound	**FAC**
Mentha pulegium	pennyroyal	**OBL**
LAURACEAE		
Umbellularia californica	California bay laurel	**FAC**

Species name	Common name	Wetland Indicator Status
LILIACEAE		
Allium sp.	allium	
Chlorogalum pomeridianum	soap plant	**UPL***
LYTHRACEAE		
Lythrum hyssopifolia	hyssop loosestrife	**FACW**
MAGNOLIACEAE		
Liriodendron tulipifera	tulip tree	**UPL***
OLEACEAE		
Fraxinus latifolia	Oregon ash	**FACW**
Olea europaea	olive	**UPL***
ONAGRACEAE		
Epilobium ciliatum ssp. ciliatum	willow-herb	**FACW**
PINACEAE		
Pinus radiata	Monterey pine	**UPL***
PLANTAGINACEAE		
Plantago lanceolata	English plantain	**FAC-**
POACEAE		
Avena fatua	wild oats	**UPL***
Bromus diandrus	ripgut brome	**UPL***
Bromus hordeaceus	soft chess	**UPL***
Cynosurus echinatus	hedgehog dogtail grass	**UPL***
Hordeum marinum ssp. gussoneanum	Mediterranean barley	**UPL***
Hordeum murinum ssp. leporinum	hare barley	**UPL***
Lolium multiflorum	Italian ryegrass	**FAC***

Species name	Common name	Wetland Indicator Status
Paspalum dilatatum	dallisgrass	**FAC**
Vulpia myuros	rattail fescue	**FACU***
POLYGONACEAE		
Polygonum punctatum	water smartweed	**OBL**
Rumex crispus	curly dock	**FACW-**
Rumex pulcher	fiddle dock	**FAC+**
PRIMULACEAE		
Anagallis arvensis	scarlet pimpernel	**FAC**
RANUNCULACEAE		
Ranunculus muricatus	spiny-fruit buttercup	**FACW+**
ROSACEAE		
Heteromeles arbutifolia	toyon	**UPL***
Malus sp.	apple	
Prunus cerasifera	cherry plum	**UPL***
Prunus persica	peach	**UPL***
Pyrus communis	pear	**UPL***
Rosa sp.	rose	
Rubus discolor	Himalayan blackberry	**FACW***
Spiraea sp.	spiraea	
SALICACEAE		
Populus fremontii ssp. fremontii	Fremont’s cottonwood	**FACW**
Salix laevigata	red willow	**FACW**
Salix lasiolepis	arroyo willow	**FACW**

Species name	Common name	Wetland Indicator Status
Salix lucida ssp. lasiandra	Pacific willow	**OBL**
SCROPHULARIACEAE		
Veronica anagallis-aquatica	water speedwell	**OBL**
TAXODIACEAE		
Sequoia sempervirens	coast redwood	**UPL***
TROPAEOLACEAE		
Nasturtium officinale	watercress	**OBL**
TYPHACEAE		
Typha angustifolia	narrow-leaf cattail	**OBL**

Appendix B

Wetland Delineation Data Sheets

ESA

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 1/14/09

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DE-01

Investigator(s): Chariss Tweedy Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 89.79354685900 Long: -123.00873973100 Datum: NAD 83

Soil Map Unit Name: Alluvial Land, Sandy NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ○	
Hydric Soil Present?	Yes ○	No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks: Data point was taken at the edge of the standing water. Feature appears to have a bed and bank where water flows. There are cattails upstream from data point. Although hydrophytic vegetation and wetland hydrology are present, hydric soil is not. Therefore, this does not qualify as a wetland feature.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Paspallum dilatatum*	50	Yes	FAC
2. *Cyperus eragrostis*	25	Yes	FACW
3. *Mentha pulegium*	25	Yes	OBL
4.			
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	25	x 2 =	50
FAC species	50	x 3 =	150
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	100 (A)		225 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: Adjacent vegetation consists of unknown grass seedlings.

SOIL

Sampling Point: DE-01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/2	100					Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks: No redox features or oxidized rhizospheres in soil. No hydrogen sulfide odor present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches):
Water Table Present?	Yes ●	No ○	Depth (inches): 6"
Saturation Present? (includes capillary fringe)	Yes ●	No ○	Depth (inches): Surface

Wetland Hydrology Present? Yes ● No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Data point was taken immediately adjacent to the ponded water.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 5/6/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DE-05

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.79005314380 Long: -123.00352507600 Datum: NAD 83

Soil Map Unit Name: Alluvial Land, Sandy NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◯	No ◉	

Remarks: Data point is within riparian canopy with sparse hydrophytic ground cover. Soil without hydric indicators; no wetland hydrology indicators.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	50	Yes	FACW
2. *Salix lasiolepis*	50	Yes	FACW
3.			
4.			
Total Cover:	100%		
Sapling/Shrub Stratum			
1. *Rubus discolor*	50	Yes	FACW
2.			
3.			
4.			
5.			
Total Cover:	50 %		
Herb Stratum			
1. *Artemisia douglasiana*	50	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	50 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 50 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	200	x 2 =	400
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	200 (A)		400 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: Nearby canopy trees includes Populus fremontii.

SOIL

Sampling Point: DE-05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/4	100					Loamy Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches):
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches):

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-01

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78896852590 Long: -123.00637527200 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◉	No ◯	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◯	No ◉	

Remarks: Data point is outside the study area boundaries.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus lobata*	80	Yes	FAC*
2. *Salix lasiolepis*	5	No	FACW
3.			
4.			
Total Cover:	85 %		
Sapling/Shrub Stratum			
1. *Genista monspessulana*	1	Yes	UPL
2.			
3.			
4.			
5.			
Total Cover:	1 %		
Herb Stratum			
1. *Chlorogalum pomeridianum*	1	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	1 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 99 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	5	x 2 =	10
FAC species	80	x 3 =	240
FACU species		x 4 =	0
UPL species	2	x 5 =	10
Column Totals:	87 (A)		260 (B)

Prevalence Index = B/A = 2.99

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: Data point taken in mid riparian corridor made up of mixed valley oak, coast live oak, Oregon ash, arroyo willow, red willow, and others. Data point in area of moderately thick litter of oak leaves. Data point is located outside the study area boundaries.

SOIL

Sampling Point: DW-01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	7.5YR 3/2	70	2.5YR 4/6	30	C	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Data point is located near the upper edge of the flood terrace of I-2.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-02

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78822176690 Long: -123.0099320220 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ○	
Hydric Soil Present?	Yes ○	No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Wetland Hydrology Present?	Yes ○	No ◉	

Remarks: Sample point is just beyond the upper edge of seasonal wetland SW-1 in horse grazed non-native annual grassland. Site of this data point is somewhat influenced by adjacent wetlands (e.g. degree of soil moisture observed; strong presence of FAC species) but lacking in soil and hydrology indicators.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Cynodon dactylon*	50	Yes	FAC
2. *Trifolium dubium*	25	Yes	FACU
3. *Plantago lanceolata*	20	Yes	FAC
4. *Lotus purshianus var. purshianus*	4	No	UPL
5. *Convolvulus arvensis*	1	No	UPL
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	70	x 3 =	210
FACU species	25	x 4 =	100
UPL species	5	x 5 =	25
Column Totals:	100 (A)		335 (B)

Prevalence Index = B/A = 3.35

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: Generally in the study area, Lotus purshianus and Convolvulus arvensis are consistently associated with uplands. One of two types of clover is often dominant; Trifolium dubium in uplands and Trifolium fragiferum in wetlands.

SOIL

Sampling Point: DW-02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2	100					Clay Loam	Relatively high clay content

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Sample point on the upland edge of wetland depression, sampled by DW-03. Soil slightly moist (not as dry and hard as is the soil at higher upland points.)

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-03

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78823808870 Long: -123.00993302200 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◉	No ◯	**Is the Sampled Area within a Wetland?** Yes ◉ No ◯
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: Seasonal wetland is in a swale extension of the low terrace adjacent to the I-2.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Lolium multiflorum*	45	Yes	FAC*
2. *Ranunculus muricatus*	35	Yes	FACW
3. *Mentha pulegium*	15	No	OBL
4. *Rumex crispus*	5	No	FACW
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	40	x 2 =	80
FAC species	45	x 3 =	135
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	100 (A)		230 (B)

Prevalence Index = B/A = 2.30

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: Sample point is dominated by strong and moderate hydrophytes with subdominance of obligate Mentha pulegium. There is a clear disjunction in species complement between wetland and adjacent upland.

SOIL

Sampling Point: DW-03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2	90	2.5YR 3/6	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Soil is moist but not saturated at 6-12".

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☒ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Seasonal wetland is in a swale extension of the low terrace adjacent to the I-2 creek. Input is from a culvert beneath Asti Road, sheetflow from adjacent uplands, and perhaps occasional overflow from the I-2. There are deep cow hoof prints present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-04

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78826525620 Long: -123.00993490900 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◉	No ◯	**Is the Sampled Area within a Wetland?** Yes ◉ No ◯
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: Seasonal wetland is in a swale extension of the low terrace adjacent to the I-2.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Ranunculus muricatus*	45	Yes	FACW
2. *Lolium multiflorum*	25	Yes	FAC
3. *Mentha pulegium*	20	Yes	OBL
4. *Rumex crispus*	5	No	FACW
5. *Trifolium gragiferum*	5	No	UPL
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	50	x 2 =	100
FAC species	25	x 3 =	75
FACU species		x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	100 (A)		220 (B)

Prevalence Index = B/A = 2.20

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: Sample point is dominated by strong and moderate hydrophytes with subdominance of obligate Mentha pulegium. Trifolium fragiferum is consistently associated with hydrophyte dominated wetlands in the study area. There is a clear disjunction in species complement between wetland and adjacent upland.

SOIL

Sampling Point: DW-04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	10YR 3/2	80	2.5YR 3/6	10	C	M	Clay Loam	
			10YR 5/6	10	C	M		
6-12	10YR 3/2	90	10YR 5/6	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☒ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Seasonal wetland is in a swale extension of the low terrace adjacent to the I-2 creek. Input is from a culvert beneath Asti Road, sheetflow from adjacent uplands, and perhaps occasional overflow from the I-2. There are deep cow hoof prints present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-05

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78828624900 Long: -123.00993724100 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◯	No ◉	

Remarks: Sample point is just beyond the upper edge of seasonal wetland SW-1 in horse grazed non-native annual grassland. Site of this data point is somewhat influenced by adjacent wetlands (e.g. presence of redox features in soil; moderate presence of FAC species) but lacking in vegetation and hydrology indicators.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Trifolium dubium*	70	Yes	FACU
2. *Cynodon dactylon*	20	Yes	FAC
3. *Plantago lanceolata*	7	No	FAC
4. *Erodium dissectum*	1	No	UPL
5. *Convolvulus arvensis*	1	No	UPL
6. *Mentha pulegium*	1	No	OBL
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species		x 2 =	0
FAC species	27	x 3 =	81
FACU species	70	x 4 =	280
UPL species	2	x 5 =	10
Column Totals:	100 (A)		372 (B)

Prevalence Index = B/A = 3.72

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks: Generally in the study area, Lotus purshianus and Convolvulus arvensis are consistently associated with uplands. One of two types of clover is often dominant; Trifolium dubium in uplands and Trifolium fragiferum in wetlands.

SOIL

Sampling Point: DW-05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2	90	2.5YR 3/6	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks: Percentage of redox concentrations is a limit for indicator status. Sample point represents the limit of the extension of hydrological influence of adjacent depression (SW-1) as pertains to soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches):
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches):

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Sample point on the upland edge of wetland depression SW-1, sampled by DW-04.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-06

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78786777370 Long: -123.00986312400 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 9-15% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ○	
Hydric Soil Present?	Yes ◉	No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks: Sample point is in a low terrace area adjacent to the I-2 creek which has a low bank.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Mentha pulegium*	25	Yes	OBL
2. *Rumex crispus*	20	Yes	FACW
3. *Lolium multiflorum*	5	No	FAC*
4.			
5.			
6.			
7.			
8.			
Total Cover:	50 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	20	x 2 =	40
FAC species	5	x 3 =	15
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	50 (A)		80 (B)

Prevalence Index = B/A = 1.60

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: 50% open water. Sample point has strong compliment of hydrophytic species. There is a clear disjunction in species complement between wetland and upland.

SOIL

Sampling Point: DW-06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-2	gley2.25/10BG	100					Clay Loam	
2-12	10YR 3/2	90	2.5YR 3/6	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☒ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Soil has a very strong odor.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☒ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches): 2"
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Sample point under 2" of water. Hydrological input is from culvert beneath Asti Road (through wetland SW-1), sheetflow from adjacent uplands, and overflow from the adjacent I-2 creek.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-07

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78798758850 Long: -123.00985952900 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 9-15% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◉	No ◯	**Is the Sampled Area within a Wetland?** Yes ◉ No ◯
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: Sample point is in a low terrace area adjacent to the I-2 creek which has a low bank.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Lolium multiflorum*	50	Yes	FAC*
2. *Trifolium fragiferum*	20	Yes	UPL
3. *Mentha pulegium*	20	Yes	OBL
4. *Cyperus eragrostis*	10	No	FACW
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	10	x 2 =	20
FAC species	50	x 3 =	150
FACU species		x 4 =	0
UPL species	20	x 5 =	100
Column Totals:	100 (A)		290 (B)

Prevalence Index = B/A = 2.90

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: Generally in the study area, one of two types of clover is often dominant- Trifolium dubium in the uplands and Trifolium fragiferum (not listed, given UPL status per Arid West supplement guidelines) in wetlands. The sample point has a strong compliment of hydrophytic species. There is a clear disjunction in species complement between wetland and the adjacent upland.

SOIL

Sampling Point: DW-07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2	90	2.5YR 3/6	10	C	M	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches): 2"
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Soil is moist but not saturated at 6-12". Hydrological input is from culvert beneath Asti Road (through wetland SW-1), sheetflow from adjacent uplands, and overflow from the adjacent I-2 creek.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-08

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78805359700 Long: -123.00987512100 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 9-15% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: The sample point is is a broad swale that contains areas of wetlands above (SW-1) and below (SW-2) it. The swale begins at a culvert outlet from beneath Asti Road, flows through seasonal wetland SW-1, then though a length of broad swale with weak soil and hydrological indicators, but lacking vegetation indicators, then into seasonal wetland SW-2, then into I-2.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Bromus hordeaceus*	50	Yes	FACU
2. *Trifolium dubium*	30	Yes	FACU
3. *Lotus purshianus var. purshianus*	10	No	UPL
4. *Dipsacus sativus*	8	No	UPL
5. *Geranium dissectum*	2	No	UPL
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	80	x 4 =	320
UPL species	20	x 5 =	100
Column Totals:	100 (A)		420 (B)

Prevalence Index = B/A = 4.20

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks:

SOIL

Sampling Point: DW-08

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	10YR 3/2	95	2.5YR 3/6	5	C	M	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: Point is located in a broad swale between seasonal wetlands SW-1 and SW-2. Apparently period of saturation is sufficient for the development of observed redox feature.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Oxidized rhizospheres few, in upper 4". Sample point is in broad swale area between seasonal wetlands SW-1 and SW-2.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-09

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78978895460 Long: -123.01038998700 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: The sample point is in grazed upland adjacent to seasonal wetland SW-3. The sample point is within the area subject to the hydrological regime of the adjacent wetland, enough so to result in slight soil and hydrological indicators, but not to support hydric vegetation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Hordeum marinum ssp. gussoneanum*	40	Yes	FAC
2. *Trifolium dubium*	20	Yes	FACU
3. *Hypochaeris radicata*	15	No	UPL
4. *Allium sp.*	10	No	UPL
5. *Erodium cicutarium*	10	No	UPL
6. *Plantago lanceolata*	5	No	FAC*
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	45	x 3 =	135
FACU species	20	x 4 =	80
UPL species	35	x 5 =	175
Column Totals:	100 (A)		390 (B)

Prevalence Index = B/A = 3.90

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks: Vegetation at the sample has weak hydric tendencies, but not within the range to be a hydric indicator. The sample point was within the upland portion of the clearly visible disjunction between upland and wetland vegetation at SW-3.

SOIL

Sampling Point: DW-09

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	10YR 4/3	85	7.5YR 4/6	15	C	M	Clay Loam	Redox features fine

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Oxidized rhizospheres few, in upper 4"..

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-10

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78982610160 Long: -123.01039621400 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: The sample point is in grazed upland adjacent to seasonal wetland SW-3. Further upland than DW-9 The sample point is within the area subject to the hydrological regime of the adjacent wetland, enough so to result in hydrological indicators, but not to support hydric vegetation or soil indicators.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Erodium cicutarium*	70	Yes	UPL
2. *Allium sp.*	15	No	UPL
3. *Bromus hordeaceus*	10	No	FACU
4. *Hypochaeris radicata*	5	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	10	x 4 =	40
UPL species	90	x 5 =	450
Column Totals:	100 (A)		490 (B)

Prevalence Index = B/A = 4.90

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks:

SOIL

Sampling Point: DW-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 4/3	100					Clay Loam	gravelly

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: A few oxidized root channels in the 0-2" layer.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-11

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78993465120 Long: -123.01039995900 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◯	No ◉	

Remarks: The sample point is in grazed upland typical for the study area. Clearly lacking in any wetland indicators.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Erodium dissectum*	80	Yes	UPL
2. *Avena fatua*	10	No	UPL
3. *Trifolium dubium*	5	No	FACU
4. *Allium sp.*	4	No	UPL
5. *Vicia sp.*	1	No	UPL
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	5	x 4 =	20
UPL species	95	x 5 =	475
Column Totals:	100 (A)		495 (B)

Prevalence Index = B/A = 4.95

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks:

SOIL

Sampling Point: DW-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 4/2	100					Clay Loam	very clayey

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: Soil is not as compact as DW-9 and DW-10

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-12

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78971600460 Long: -123.01037587400 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◉	No ◯	**Is the Sampled Area within a Wetland?** Yes ◉ No ◯
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Trifolium fragiferum*	50	Yes	UPL
2. *Ranunculus muricatus*	20	Yes	FACW
3. *Mentha pulegium*	20	Yes	OBL
4. *Vulpia myuros*	5	No	FACU
5. *Rumex crispus*	5	No	FACW
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66.7 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	25	x 2 =	50
FAC species		x 3 =	0
FACU species	5	x 4 =	20
UPL species	50	x 5 =	250
Column Totals:	100 (A)		340 (B)

Prevalence Index = B/A = 3.40

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: Sample point is dominated by strong and moderate hydrophytes. Trifolium fragiferum is consistently associated with hydrophyte dominated wetlands within the study area. There is a clear disjunction in species complement between wetland and adjacent upland.

SOIL

Sampling Point: DW-12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2	60	7.5YR 4/4	40	C	M	Clay Loam	Very loamy

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Redox features are very distinct.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Soil is moist, but not saturated.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-13

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78965417070 Long: -123.01024826600 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ○	
Hydric Soil Present?	Yes ◉	No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Ranunculus muricatus*	60	Yes	FACW
2. *Mentha pulegium*	15	No	OBL
3. *Rumex crispus*	15	No	FACW
4. *Trifolium fragiferum*	10	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	75	x 2 =	150
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	10	x 5 =	50
Column Totals:	100 (A)		215 (B)

Prevalence Index = B/A = 2.15

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: Sample point is dominated by strong and moderate hydrophytes. Trifolium fragiferum is consistently associated with hydrophyte dominated wetlands within the study area. There is a clear disjunction in species complement between wetland and adjacent upland.

SOIL

Sampling Point: DW-13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 2/1	70	5YR 4/2	30	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Redox features are very distinct.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-14

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78970350910 Long: -123.01020003200 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◉	No ◯	**Is the Sampled Area within a Wetland?** Yes ◉ No ◯
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Mentha pulegium*	50	Yes	OBL
2. *Lolium multiflorum*	20	Yes	FAC*
3. *Rumex crispus*	10	No	FACW
4. *Callitriche marginata*	10	No	OBL
5. *Ranunculus muricatus*	5	No	FACW
6.			
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	15	x 2 =	30
FAC species	20	x 3 =	60
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	95 (A)		150 (B)

Prevalence Index = B/A = 1.58

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: Sample point is dominated by strong and moderate hydrophytes. Sub-dominants are strongly hydrophytic. There is a clear disjunction in species complement between wetland and adjacent upland.

SOIL

Sampling Point: DW-14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 2/1	70	5YR 4/3	30	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Redox features are very distinct.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Near edge of ponded area. Deep cattle hoof prints are present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-15

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78964924370 Long: -123.01018549900 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ○	
Hydric Soil Present?	Yes ◉	No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Trifolium fragiferum*	70	Yes	UPL
2. *Lolium multiflorum*	20	Yes	FAC*
3. *Allium sp.*	3	No	UPL
4. *Ranunculus muricatus*	5	No	FACW
5. *Rumex crispus*	1	No	FACW
6. *Polygonum sp.*	1	No	FACW
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	7	x 2 =	14
FAC species	20	x 3 =	60
FACU species		x 4 =	0
UPL species	73	x 5 =	365
Column Totals:	100 (A)		439 (B)

Prevalence Index = B/A = 4.39

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☒ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: Trifolium fragiferum is consistenly associated with hydrophyte dominated wetlands in the study area. This species is not listed on the wetland indicator list and therefore the indicator status of UPL must be used per the Arid West Supplement guidelines. Because of this, the vegetation is considered problematic. However, both soil and hydrology qualify, therefore allowing vegetation to also qualify as problematic.

SOIL

Sampling Point: DW-15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2	70	7.5YR 4/4	25	C	M	Clay Loam	
			5YR 4/6	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Redox features are very distinct.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-16

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78958767390 Long: -123.01015373900 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ○	
Hydric Soil Present?	Yes ◉	No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Trifolium fragiferum*	40	Yes	UPL
2. *Lolium multiflorum*	30	Yes	FAC*
3. *Allium sp.*	17	No	UPL
4. *Ranunculus muricatus*	5	No	FACW
5. *Polygonum sp.*	5	No	FACW
6. *Plantago lanceolata*	1	No	FAC
7. *Trifolium dubium*	1	No	FACU
8. *Lotus purshianus var. purshianus*	1	No	UPL
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	10	x 2 =	20
FAC species	31	x 3 =	93
FACU species	1	x 4 =	4
UPL species	58	x 5 =	290
Column Totals:	100 (A)		407 (B)

Prevalence Index = B/A = 4.07

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☒ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: Trifolium fragiferum is consistenly associated with hydrophyte dominated wetlands in the study area. This species is not listed on the wetland indicator list and therefore the indicator status of UPL must be used per the Arid West Supplement guidelines. Because of this, the vegetation is considered problematic. However, both soil and hydrology qualify, therefore allowing vegetation to also qualify as problematic.

SOIL

Sampling Point: DW-16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2	80	7.5YR 4/4	15	C	M	Clay Loam	some gravel
			5YR 4/6	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Redox features are very distinct.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-17

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78952192770 Long: -123.01008997700 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◯	No ◉	

Remarks: The sample point was taken in grazed upland adjacent to seasonal wetland SW-3. The sample point is within the area subject to the hydrological regime of the adjacent wetland, enough to result in redox features in the soil, but not to support hydric vegetation. No wetland hydrology indicators were observed.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Allium sp.*	45	Yes	UPL
2. *Trifolium dubium*	30	Yes	FACU
3. *Hordeum marinum ssp. gussoneanum*	12	No	FAC
4. *Trifolium fragiferum*	9	No	UPL
5. *Hypochaeris radicata*	1	No	UPL
6. *Plantago lanceolata*	1	No	FAC
7. *Geranium dissectum*	1	No	UPL
8. *Ranunculus muricatus*	1	No	FACW
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	1	x 2 =	2
FAC species	13	x 3 =	39
FACU species	30	x 4 =	120
UPL species	56	x 5 =	280
Column Totals:	100 (A)		441 (B)

Prevalence Index = B/A = 4.41

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks: The annual grassland is moderately to heavily grazed by horses.

SOIL

Sampling Point: DW-17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2	90	7.5YR 4/6	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-18

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78962800190 Long: -123.00977088000 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◉	No ◯	**Is the Sampled Area within a Wetland?** Yes ◉ No ◯
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Trifolium fragiferum*	70	Yes	UPL
2. *Rumex crispus*	20	Yes	FACW*
3. *Lolium multiflorum*	10	No	FAC*
4.			
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	20	x 2 =	40
FAC species	10	x 3 =	30
FACU species		x 4 =	0
UPL species	70	x 5 =	350
Column Totals:	100 (A)		420 (B)

Prevalence Index = B/A = 4.20

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☒ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: Trifolium fragiferum is consistenly associated with hydrophyte dominated wetlands in the study area. This species is not listed on the wetland indicator list and therefore the indicator status of UPL must be used per the Arid West Supplement guidelines. Because of this, the vegetation is considered problematic. However, both soil and hydrology qualify, therefore allowing vegetation to also qualify as problematic.

SOIL

Sampling Point: DW-18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2	65	7.5YR 3/4	30	C	M	Clay Loam	
			5YR 4/6	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Redox features are very distinct.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Moist but not saturated.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-19

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78946584060 Long: -123.00969550100 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◉	No ◯	**Is the Sampled Area within a Wetland?** Yes ◉ No ◯
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Lolium multiflorum*	50	Yes	FAC*
2. *Rumex crispus*	20	Yes	FACW*
3. *Trifolium fragiferum*	20	Yes	UPL
4. *Geranium dissectum*	5	No	UPL
5. *Mentha pulegium*	5	No	OBL
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66.7 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	20	x 2 =	40
FAC species	50	x 3 =	150
FACU species		x 4 =	0
UPL species	25	x 5 =	125
Column Totals:	100 (A)		320 (B)

Prevalence Index = B/A = 3.20

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: There is a clear disjunction in species complement between wetland and adjacent upland.

SOIL

Sampling Point: DW-19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2	65	7.5YR 3/4	30	C	M	Clay Loam	
			5YR 4/6	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Redox features are very distinct. Heavy clay.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Moist but not saturated.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-20

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78933243100 Long: -123.00975188000 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◯	No ◉	

Remarks: The sample point was taken in grazed upland adjacent to seasonal wetland SW-3.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Bromus hordeaceus*	60	Yes	FACU
2. *Allium sp.*	20	Yes	UPL
3. *Trifolium dubium*	8	No	FACU
4. *Geranium dissectum*	5	No	UPL
5. *Plantago lanceolata*	5	No	FAC
6. *Ranunculus muricatus*	1	No	FACW*
7. *Vicia sp.*	1	No	UPL
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	1	x 2 =	2
FAC species	5	x 3 =	15
FACU species	68	x 4 =	272
UPL species	26	x 5 =	130
Column Totals:	100 (A)		419 (B)

Prevalence Index = B/A = 4.19

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks: The annual grassland is moderately to heavily grazed by horses.

SOIL

Sampling Point: DW-20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2	90	7.5YR 4/6	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches):
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches):

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-21

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78986820770 Long: -123.00973284400 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◯	No ◉	

Remarks: The sample point was taken in grazed upland adjacent to seasonal wetland SW-3.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Allium sp.*	30	Yes	UPL
2. *Bromus hordeaceus*	20	Yes	FACU
3. *Trifolium dubium*	20	Yes	FACU
4. *Erodium dissectum*	20	Yes	UPL
5. *Plantago lanceolata*	5	No	FAC
6. *Anagallis arvensis*	5	No	FAC
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	10	x 3 =	30
FACU species	40	x 4 =	160
UPL species	50	x 5 =	250
Column Totals:	100 (A)		440 (B)

Prevalence Index = B/A = 4.40

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks: The annual grassland is moderately to heavily grazed by horses.

SOIL

Sampling Point: DW-21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 4/3	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: Soil is very dry.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-22

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78963143690 Long: -123.00924973100 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ○	
Hydric Soil Present?	Yes ◉	No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Trifolium fragiferum*	40	Yes	UPL
2. *Rumex crispus*	30	Yes	FACW*
3. *Lolium multiflorum*	23	Yes	FAC*
4. *Ranunculus muricatus*	5	No	FACW
5. *Mentha pulegium*	1	No	OBL
6. *Vulpia myuros*	1	No	FACU
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66.7 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	35	x 2 =	70
FAC species	23	x 3 =	69
FACU species	1	x 4 =	4
UPL species	40	x 5 =	200
Column Totals:	100 (A)		344 (B)

Prevalence Index = B/A = 3.44

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: There is a clear disjunction in species complement between wetland and adjacent upland.

SOIL

Sampling Point: DW-22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 2/2	60	7.5YR 4/4	20	C	M	Clay Loam	
			5YR 4/6	20	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Redox features are very distinct.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Moist but not saturated.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-23

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78950886990 Long: -123.00916902400 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◯	No ◉	

Remarks: The sample point was taken in grazed upland adjacent to seasonal wetland SW-3.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Trifolium dubium*	40	Yes	FACU
2. *Erodium dissectum*	30	Yes	UPL
3. *Bromus hordeaceus*	20	Yes	FACU
4. *Plantago lanceolata*	10	No	FAC
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	10	x 3 =	30
FACU species	60	x 4 =	240
UPL species	30	x 5 =	150
Column Totals:	100 (A)		420 (B)

Prevalence Index = B/A = 4.20

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks: The annual grassland is moderately to heavily grazed by horses.

SOIL

Sampling Point: DW-23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/4	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches):
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches):

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-24

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range:

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78988786480 Long: -123.00882626000 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◉	No ◯	**Is the Sampled Area within a Wetland?** Yes ◉ No ◯
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Lolium multiflorum*	50	Yes	FAC*
2. *Rumex crispus*	40	Yes	FACW*
3. *Geranium dissectum*	1	No	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	91 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 9 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	40	x 2 =	80
FAC species	50	x 3 =	150
FACU species		x 4 =	0
UPL species	1	x 5 =	5
Column Totals:	91 (A)		235 (B)

Prevalence Index = B/A = 2.58

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: There is a clear disjunction in species complement between wetland and adjacent upland.

SOIL

Sampling Point: DW-24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	10YR 2/2	85	10YR 4/1	15	C	M	Clay Loam	
6-12	10YR 4/1	60	5YR 3/4	20	C	M	Clay Loam	
			10YR 2/2	20	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Redox features are very distinct.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Moist but not saturated.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-25

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78981116700 Long: -123.00878338800 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◯	No ◉	

Remarks: The sample point was taken in grazed upland adjacent to seasonal wetland SW-3.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Trifolium dubium*	60	Yes	FACU
2. *Vulpia myuros*	15	No	FACU
3. *Bromus hordeaceus*	10	No	FACU
4. *Unknown annual herb*	13	No	UPL
5. *Plantago lanceolata*	1	No	FAC
6. *Erodium dissectum*	1	No	UPL
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	1	x 3 =	3
FACU species	85	x 4 =	340
UPL species	14	x 5 =	70
Column Totals:	100 (A)		413 (B)

Prevalence Index = B/A = 4.13

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks: The annual grassland is moderately to heavily grazed by horses.

SOIL

Sampling Point: DW-25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 4/6	90	10YR 5/6	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches):
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches):

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-26

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78986744580 Long: -123.00829987700 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◯	No ◉	

Remarks: The sample point was taken in grazed upland adjacent to seasonal wetland SW-3.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Bromus hordeaceus*	60	Yes	FACU
2. *Trifolium dubium*	27	Yes	FACU
3. *Vulpia myuros*	7	No	FACU
4. *Unknown annual herb*	5	No	UPL
5. *Rumex crispus*	1	No	FACW
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	1	x 2 =	2
FAC species		x 3 =	0
FACU species	94	x 4 =	376
UPL species	5	x 5 =	25
Column Totals:	100 (A)		403 (B)

Prevalence Index = B/A = 4.03

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks: The annual grassland is moderately to heavily grazed by horses.

SOIL

Sampling Point: DW-26

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 4/4						Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks: Soil is dry.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-27

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78996948580 Long: -123.008285009300 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◉	No ◯	**Is the Sampled Area within a Wetland?** Yes ◉ No ◯
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Lolium multiflorum*	60	Yes	FAC*
2. *Rumex crispus*	25	Yes	FACW*
3. *Vulpia myuros*	9	No	FACU
4. *Trifolium fragiferum*	5	No	UPL
5. *Trifolium dubium*	1	No	FACU
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	25	x 2 =	50
FAC species	60	x 3 =	180
FACU species	10	x 4 =	40
UPL species	5	x 5 =	25
Column Totals:	100 (A)		295 (B)

Prevalence Index = B/A = 2.95

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: There is a clear disjunction in species complement between wetland and adjacent upland.

SOIL

Sampling Point: DW-27

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2	80	7.5YR 3/4	20	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Redox features are very distinct.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-28

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.79049618300 Long: -123.00712318300 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◉	No ◯	**Is the Sampled Area within a Wetland?** Yes ◉ No ◯
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Lolium multiflorum*	50	Yes	FAC*
2. *Rumex crispus*	20	Yes	FACW*
3. *Ranunculus muricatus*	10	No	FACW
4. *Medicago polymorpha*	1	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	81 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 9 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	30	x 2 =	60
FAC species	50	x 3 =	150
FACU species		x 4 =	0
UPL species	1	x 5 =	5
Column Totals:	81 (A)		215 (B)

Prevalence Index = B/A = 2.65

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: Algal matting. There is a clear disjunction in species complement between wetland and adjacent upland.

SOIL

Sampling Point: DW-28

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2	80	7.5YR 4/6	20	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Redox features are very distinct.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☒ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-29

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.79043415280 Long: -123.00713272200 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◯	No ◉	

Remarks: The sample point was taken in grazed upland adjacent to DW-28 in seasonal wetland SW-3.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Medicago polymorpha*	70	Yes	UPL
2. *Bromus diandrus*	27	Yes	UPL
3. *Vulpia myuros*	1	No	FACU
4. *Ranunculus muricatus*	1	No	FACW
5. *Lotus purshianus var. purshianus*	1	No	UPL
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	1	x 2 =	2
FAC species		x 3 =	0
FACU species	1	x 4 =	4
UPL species	98	x 5 =	490
Column Totals:	100 (A)		496 (B)

Prevalence Index = B/A = 4.96

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks:

SOIL

Sampling Point: DW-29

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/3	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches):
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches):

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 1/14/09

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-30

Investigator(s): Chariss Tweedy Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 38.78780368030 Long: -123.00987386200 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 9-15% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ○	
Hydric Soil Present?	Yes ◉	No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks: Sample point is at the edge of a Freshwater Emergent Wetland. Water source is from culvert under road. Wetland feeds into Coyote Creek (I-2).

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *Nasturtium officinale*	50	Yes	OBL
2. *Typha angustifolia*	25	Yes	OBL
3. *Polygonum amphibium var. emersum*	10	No	OBL
4.			
5.			
6.			
7.			
8.			
Total Cover:	85 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 15 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85	x 1 =	85
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	85 (A)		85 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: Cattails are very thick in most of the wetland. Data point was taken at the edge of a more open area.

SOIL

Sampling Point: DW-30

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-18	Gley 2 2.5/10G	100					Sandy Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes (●) No ( )

Remarks: Soil is very mucky and has a very strong odor.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ( )	No (●)	Depth (inches):
Water Table Present?	Yes ( )	No (●)	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes (●)	No ( )	Depth (inches): Surface

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Data point is located at the edge of the standing water. Saturated at the surface.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 5/6/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-31

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.79007005090 Long: -123.00778598300 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◉	No ◯	**Is the Sampled Area within a Wetland?** Yes ◉ No ◯
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Hordeum marinum ssp. gussoneanum*	60	Yes	FAC
2. *Lolium multiflorum*	35	Yes	FAC*
3. *Mentha pulegium*	4	No	OBL
4. *Convolvulus arvensis*	1	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	4	x 1 =	4
FACW species		x 2 =	0
FAC species	95	x 3 =	285
FACU species		x 4 =	0
UPL species	1	x 5 =	5
Column Totals:	100 (A)		294 (B)

Prevalence Index = B/A = 2.94

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks: There is a clear disjunction in species complement between wetland and adjacent upland.

SOIL

Sampling Point: DW-31

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-8	10YR 2/1	90	10YR 3/4	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Redox features very distinct.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 5/6/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-32

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.79010346760 Long: -123.00781510000 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ◯ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ◯

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◯	No ◉	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◯	No ◉	

Remarks: The sample point was taken in grazed upland adjacent to DW-31 in seasonal wetland SW-3.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Trifolium dubium*	80	Yes	FACU
2. *Hordeum murinum ssp. leporinum*	10	No	UPL
3. *Colvolvulus arvensis*	9	No	UPL
4. *Lolium multiflorum*	1	No	FAC*
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	1	x 3 =	3
FACU species	80	x 4 =	320
UPL species	19	x 5 =	95
Column Totals:	100 (A)		418 (B)

Prevalence Index = B/A = 4.18

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◯ No ◉

Remarks:

SOIL

Sampling Point: DW-32

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	10YR 4/2	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches):
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches):

Wetland Hydrology Present? Yes ○ No ●

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

Appendix C
Photo Appendix

ESA

PHOTOGRAPH 1. West Study Area – Coyote Creek (I-2)

PHOTOGRAPH 2. West Study Area – Seasonal Wetland SW-1

SOURCE: ESA, 2008

Appendix C-1

Project Site Photographs

PHOTOGRAPH 3. West Study Area – Seasonal Wetland SW-3

PHOTOGRAPH 4. West Study Area – Upland Non-Native Grassland (pasture)

SOURCE: ESA, 2008

Appendix C-2

Project Site Photographs

PHOTOGRAPH 5. West Study Area – Freshwater Emergent Wetland (January 14, 2009)

PHOTOGRAPH 6. East Study Area – Porterfield Creek

SOURCE: ESA, 2008

PHOTOGRAPH 7. East Study Area – Porterfield Creek

PHOTOGRAPH 8. East Study Area – Wasterwater Treatment Plant Overflow Basin

SOURCE: ESA, 2008

Appendix C-4

Project Site Photographs

PHOTOGRAPH 9. East Study Area – Agricultural Ditch (January 14, 2009)

PHOTOGRAPH 10. East Study Area – Ponded Area Feeding into Agricultural Ditch (January 14, 2009)

SOURCE: ESA, 2009

Appendix P

LM?? Dgqfcpgcq _lb

USFWS Letters

ESA

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

July 18, 2011

In response refer to:
2010/06482

Amy Dutschke, Regional Director
Bureau of Indian Affairs, Pacific Region
2800 Cottage Way
Sacramento, California 95825

Dear Ms. Dutschke:

Thank you for your letter of December 1, 2010, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 as amended (ESA), and the Essential Fish Habitat (EFH) provisions of the Magnuson Stevens Fishery Conservation and Management Act (MSA) for the proposed fee-to-trust conveyance and subsequent development of the Cloverdale Rancheria of Pomo Indians' Resort Hotel and Casino project on 69.77± acres near the City of Cloverdale in Sonoma County California. These consultations pertain to a Bureau of Indian Affairs, U.S. Department of the Interior (BIA) proposed fee-to-trust conveyance of six parcels of real property totaling approximately 69.77 acres. The fee-to-trust conveyance of the 6 parcels is proposed by BIA on behalf of the Cloverdale Rancheria of Pomo Indians (Tribe). The property is proposed by the Tribe for fee-to-trust conveyance for development of a Resort Hotel and Casino on the proposed parcels.

NMFS staff has reviewed the Cloverdale Rancheria of Pomo Indians Fee-to-Trust Conveyance and Resort Casino Draft Environmental Impact Statement (DEIS) (Environmental Science Associates, August 2010) and the Biological Assessment prepared for the BIA (Environmental Science Associates, March 2009). NMFS staff visited the site and walked the property and stream channels on February 22, 2011, and has reviewed the additional hydrological reports we requested at that time, which were received April 19, 2011 (Hydrometrics, April 2011).

The project proposal includes construction of a two story, 211,445 square foot Casino and support services building, a 287,000 square foot Hotel complex of up to four stories tall, a two story, 48,600 square foot Convention Center, a 28,100 square foot Entertainment Center building, and a 20,000 square foot Tribal Government Administration building. Approximately 3,400 parking spaces would be constructed, including a parking garage structure up to five stories above ground level and surface parking sites. Ancillary components of the project include the drainage system, water supply, wastewater services, driveways, fire protection and

law enforcement for the project site. Both the water supply system and waste water treatment will either be provided privately onsite or in partnership with the City of Cloverdale Municipal water supply and wastewater treatment facilities.

Endangered Species Act (ESA)

Available information indicates that ESA listed species of the following Distinct Population Segments [DPS] or Evolutionarily Significant Units [ESU]) may occur near the project site:

California Coastal Chinook salmon ESU (*Oncorhynchus tshawytscha*)
Threatened (June 28, 2005, 70 FR 37160)
Designated critical habitat (September 2, 2005, 70 FR 52488)

Central California Coast (CCC) coho salmon ESU (*Oncorhynchus kisutch*)
Endangered (June 28, 2005; 70 FR 37160)
Designated critical habitat (May 5, 1999; 64 FR 24049)

Central California Coast steelhead DPS *(O. mykiss)*
Threatened (January 5, 2006; 71 FR 834)
Designated critical habitat (September 2, 2005; 70 FR 52488)

The project site is in the upper reach of the Alexander Valley and bounded on the eastern side by the Russian River which is designated critical habitat for the three species listed above. Chinook salmon and steelhead are known to migrate, spawn and rear in the river in the upper Alexander Valley. Coho salmon distribution in the Russian River is not currently known to extend above Dry Creek, a tributary that joins the Russian River downstream of Alexander Valley, just below the city of Healdsburg, nearly 30 miles downriver. The six parcels of the project site are bisected by a tributary to the Russian River, Porter Creek, and bounded on the southern side by a tributary to Porter Creek, named Coyote Creek. Steelhead are known to spawn, migrate and rear in these two creeks. Chinook salmon and coho salmon are not known to utilize these two creeks, nor are they expected to due to the small size of the creeks. Porter Creek through the project site is an ephemeral stream, going dry in the late spring through fall period. Coyote Creek is a spring fed stream which maintains surface flow to near the confluence with Porter Creek throughout the year and supports rearing steelhead year round.

NMFS has evaluated the proposed project for potential effects to ESA-listed anadromous salmonids and their designated critical habitat. Direct and indirect effects of proposed project actions which have potential to affect ESA listed Pacific salmonids, designated critical habitat, and EFH could include altering hydrology of the site, release of potentially contaminated runoff from impervious surfaces entering the stream system and Russian River, encroachment on riparian vegetation, groundwater pumping, wastewater discharges, and construction of points of discharge (POD) for storm drainage and wastewater treatment facilities.

Direct effects to salmonids and critical habitat are not expected to result from the project as all construction will occur in upland sections of the action area well away from stream and river channels. Encroachment into riparian areas is limited to 0.11 acres of the current total of 1.37 acres, resulting in an 8 percent reduction. However, the project's proposed 70 foot setback from

tributary channels and 200 feet from the river channel for all construction will allow for re-establishment of native riparian vegetation in disturbed areas near the channels in which the riparian zones are historically degraded from use as pasture. Construction of PODs to Porter Creek will occur when the stream is without flow or standing water in the summer period.

The potential for indirect effects on listed salmonids and critical habitat from project actions have been minimized to discountable levels by incorporating into the project conservation measures to either avoid or mitigate potential impacts. The storm water hydrology of the action area is not likely to be significantly altered because existing roads, constructed driveways and parking areas will be surfaced with porous concrete, and runoff from roofs will be discharged directly to landscaping areas and driveways. Surface runoff from driveways and parking areas will be routed through bioswales to remove potential contaminants and into an upland drainage-detention-and- release system designed to handle a 10-year precipitation event, rather than being discharged directly into action area stream channels. The project's Storm Water Pollution Prevention Plan includes best management practices (BMPs) during construction to prevent erosion and transport of fine sediments to stream channels. Landscaping and use of slope protection measures such as hydroseeding, planting native vegetation, use of natural fiber soil reinforcement mats and retaining wall construction will prevent erosion and transport of fine sediments into the Russain River and area streams after the project site construction.

As described above and in the DEIS, the project's water supply system will either use water furnished by the City of Cloverdale municipal system, or from onsite wells near the Russian River. If onsite wells are used, NMFS does not expect onsite well pumping will have an impact on summer surface flows in the action area. Well testing by an accredited engineering firm found there was not a significant capture effect on Russian River flows induced by extended well pumping (HydroMetrics, April 2011). The potential onsite use of wells near the Russian River are also not expected to effect the perennial flow of Coyote Creek which supports summer rearing of steelhead, as this short section of perennial flow is upstream of the wellhead location and the springs which feed this perennial section of stream are far removed (> ¼ mile) and are at a significantly higher elevation than the well head.

Also as described above and in the DEIS, the waste water system servicing the project will either be provided by the Cloverdale City municipal system, or from a system developed by the Tribe. If wastewater is handled by the Cloverdale municipal system, no adverse effects to salmonids or critical habitat are anticipated as the quality, quantity and season of discharges to the Russian River are regulated by the California Regional Quality Control Board to insure no adverse impacts to aquatic life and habitat. If an onsite system is developed by the Tribe, as a sovereign entity, permits will be required from the Environmental Protection Agency (EPA), and thus NMFS will conduct ESA section 7 consultation with the EPA for the issuance of the requisite discharge permits at that time.

Based on the best available scientific information, NMFS concurs with the BIA's determination that the proposed action and subsequent project development is not likely to adversely affect listed salmonids or their designated critical habitat. This concludes consultation in accordance with 50 CFR §402.13(a) for the proposed fee-to-trust conveyance and subsequent development of the Cloverdale Rancheria of Pomo Indians' Resort Hotel and Casino project. However,

further consultation may be required if: (1) new information becomes available indicating that listed species or critical habitat may be affected by the project in a manner or to an extent not previously considered; (2) current project plans change in a manner that causes an effect to listed species or critical habitat in a manner not previously considered; or (3) a new species is listed or critical habitat designated that may be affected by the action.

Magnuson-Stevens Fishery Conservation and Management Act

The project is located in the Russian River watershed within an area identified as EFH for various life stages of fish species managed with the following Fishery Management Plans (FMP) under the MSA:

Pacific Salmon FMP – Chinook salmon and Coho salmon.

NMFS has evaluated the proposed project for potential adverse effects to EFH pursuant to section 305(b)(2) of the MSA. NMFS concludes that with implementation of BMPs during construction, construction of the Storm Water Pollution Prevention Plan system designed specifically for the project site, the use of porous paving materials, and the project's incorporation of tributary stream and river setbacks into the design plan, the proposed project will not adversely affect EFH present in the Russian River adjacent to the project site. Therefore NMFS does not have further EFH conservation recommendations for this proposed project.

This concludes EFH consultation for the proposed fee-to-trust conveyance and subsequent development of the Cloverdale Rancheria of Pomo Indians' Resort Hotel and Casino project near Cloverdale California. Pursuant to 50 CFR 600.920(l) of the EFH regulations, the BIA must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations.

If you have any questions about these consultations, please contact John McKeon at (707) 575-6069.

Sincerely,

for Rodney R. McInnis
Regional Administrator

cc: John Rydzik, BIA, Sacramento
Patrick O'Mallan, BIA, Sacramento
Carl Wilcox, CDFG, Yountville
Copy to file, ARN 151422SWR2010SR00456

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

RECEIVED-BIA
2009 JUL 16 PM 1:
PACIFIC REGIONAL OFFICE

Reg Dir Amy
Dep Reg Dir Todd
Reg Adm Ofcr
Route DecRms
Response Required No
Due Date
Memo Ltr
Tele

In Reply Refer To:
81420-2009-I-0618

JUL 16 2009

Memorandum

To: Regional Director, Pacific Region, Bureau of Indian Affairs, Sacramento, California

From: Assistant Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California Cay C. Nowell

Subject: Informal Consultation on the Proposed Cloverdale Rancheria Casino Development Project, City of Cloverdale, Sonoma County, California

This is in response to the Bureau of Indian Affairs (BIA) March 20, 2009, request for informal consultation with the U.S. Fish and Wildlife Service (Service) on the Proposed Cloverdale Rancheria Casino Development Project near the City of Cloverdale in Sonoma County, California. Your request was received by the Service on March 24, 2009. At issue are the potential effects to the endangered California freshwater shrimp (*Syncaris pacifica*), threatened tidewater goby (*Eucyclogobius newberryi*), threatened delta smelt (*Hypomesus transpacificus*), threatened California red-legged frog (*Rana aurora draytonii*) (red-legged frog), threatened marbled murrelet (*Brachyramphus marmoratus*), threatened northern spotted owl (*Strix occidentalis caurina*), and endangered Pennell's bird's beak (*Cordylanthus tenius capillaries*). This response is issued under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*) (Act).

It is our understanding that the proposed project consists of the placement of 6 parcels of land totaling 69.77 acres into federal trust for the Pomo Indian Tribe and the subsequent development of casino, hotel, convention center, entertainment center, and other ancillary facilities.

Based on our review of the information provided by the BIA, a May 12, 2009, site visit attended by the Service and ESA Associates, and other information available to the Service, we concur that the proposed project is not likely to adversely affect the California freshwater shrimp, tidewater goby, delta smelt, marbled murrelet, northern spotted owl, or Pennell's bird's beak. The project site is either out of the known range of these species or suitable habitat does not exist within the action area. However, the proposed project site is located within the range of the red-legged frog and suitable foraging and dispersal habitat is available on site.

The California red-legged frog is the largest native frog in the western United States. Adult red-legged frogs typically use dense, shrubby, or emergent riparian vegetation closely associated with deep (>2.3 feet), still, or slow-moving water (Hayes and Jennings 1988). However, individuals also have been found in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation. This species disperses upstream and downstream of their breeding habitat to forage and seek sheltering habitat. Habitats include nearly any area within 1-2 miles of a breeding site that stays moist and cool throughout the summer (Fellers 2005). Potential sheltering habitat for California red-legged frogs is all aquatic, riparian, and upland areas within the range of the species and includes any landscape features that provide cover, such as existing animal burrows, boulders or rocks, organic debris such as downed trees or logs, and industrial debris. California red-legged frogs have been documented using a variety of upland habitats as well as riparian corridors for migration. They have been recorded migrating overland in approximately straight lines without apparent regard to vegetation type or topography. A study in northern Santa Cruz County found that the animals traveled distances from 0.25 miles to more than 2 miles without apparent regard to topography, vegetation type, or riparian corridors (Bulger *et al.* 2003).

The proposed project site contains open grassy upland areas, an ephemeral drainage with mature riparian vegetation, and a seasonal wetland, suitable to red-legged frogs as dispersal and foraging habitat. In addition, there are several ponds capable of providing breeding habitat within dispersal distance of this amphibian. Although Redwood Highway to the west and the Russian River to the east may act as physical barriers and reduce the likelihood of dispersing red-legged frogs from utilizing the project site, there are several culverts beneath Redwood Highway, in the vicinity of the project site, that would allow dispersing amphibians to reach the proposed project site. According the California Natural Diversity Database (CNDDB 2009), the nearest red-legged frog occurrence is located approximately 16 miles southwest of the proposed project site. Based on the biology of the species and habitat within and adjacent to the action area, we recommend a red-legged frog site assessment and protocol level surveys be conducted to determine the potential presence/absence of this listed amphibian.

By this letter, we give you our approval to implement a site assessment and protocol surveys for the California red-legged frog at the Proposed Cloverdale Rancheria Casino Development Project site. The site assessment and protocol survey must be conducted in accordance with the *Revised Guidance on Site Assessment and Field Surveys for the California Red-legged Frog*, dated August 2005, or the results will not be considered valid by the Service. We caution that given our current understanding of the red-legged frog, as well as the conditions at the project site, negative results may not be accepted by the Service.

If you have any questions or concerns regarding our response on the Proposed Cloverdale Rancheria Casino Development Project, please contact Ben Solvesky or Ryan Olah of my staff at the letterhead address, telephone (916) 414-6600, or electronic mail at Ben_Solvesky@fws.gov or Ryan_Olah@fws.gov.

Olah of my staff at the letterhead address, telephone (916) 414-6600, or electronic mail at Ben_Solvesky@fws.gov or Ryan_Olah@fws.gov.

cc:
Scott Wilson, California Department of Fish and Game, Yountville, California
Richard Fitzgerald, California Department of Fish and Game, Yountville, California

Literature Cited

Bulger, J. B., N. J. Scott, Jr., and R. B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frogs *Rana aurora draytonii* in coastal forests and grasslands. Biological Conservation 110:85-95.

California Natural Diversity Data Base (CNDDB). 2009. Natural Heritage Division. California Department of Fish and Game, Sacramento, California.

Fellers, G. 2005. *Rana draytonii* Baird and Girard, 1852b California red-legged frog. Pages 552-554 *in* M. Lannoo (ed.). Amphibian declines the conservation status of United States species. University of California Press. Berkeley, California.

Hayes, M.P., and M.R. Jennings. 1988. Habitat correlates of distribution of the California red-legged frog (*Rana aurora draytonii*) and the foothill yellow-legged frog (*Rana boylii*): implications for management. Pages 144-158 *in* R. Sarzo, K. E. Severson, and D. R. Patton (technical coordinators). Proceedings of the symposium on the management of amphibians, reptiles, and small mammals in North America. United States Department of Agriculture, Forest Service, Rocky Mountain Range and Experiment Station, Fort Collins, Colorado. General Technical Report (RM-166): 1-458.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In Reply Refer To:
81420-2009-I-0618-2

NOV 30 2009

Memorandum

To: Regional Director, Pacific Region, Bureau of Indian Affairs, Sacramento, California

From: FOR ~~Assistant Field Supervisor,~~ Sacramento Fish and Wildlife Office, Sacramento, California

Subject: Informal Consultation on the Proposed Cloverdale Rancheria Casino Development Project, City of Cloverdale, Sonoma County, California

This is in response to the Bureau of Indian Affairs (BIA) March 20, 2009, request for informal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Cloverdale Rancheria Casino Development project near the City of Cloverdale in Sonoma County, California. Your request was received by the Service on March 24, 2009. On July 16, 2009, we sent you a memo outlining our concerns regarding the potential presence of the threatened California red-legged frog (*Rana aurora draytonii*) (red-legged frog) and authorized you to conduct red-legged frog protocol level surveys. This response is issued under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*) (Act).

It is our understanding that the proposed project consists of the placement of 6 parcels of land totaling 69.77 acres into federal trust for the Pomo Indian Tribe and the subsequent development of casino, hotel, convention center, entertainment center, and other ancillary facilities.

The proposed project site contains open grassy upland areas, two ephemeral drainages with mature riparian vegetation that flow to the Russian River, and a shallow seasonal wetland. The Russian River is located approximately 500 feet east of the project site. Although occurrences are known from the Russian River watershed, there are no known occurrences from the mainstem of the Russian River and red-legged frogs are not known to use larger rivers for foraging or breeding due to the presence of predatory fishes and swift moving water. No aquatic features, capable of providing breeding or dry-season aquatic foraging habitat, are located within the proposed project site. Redwood Highway to the west and the Russian River to the east act as physical barriers; reducing the likelihood that dispersing amphibians could reach the site. According the California Natural Diversity Database (CNDDB 2009), the nearest documented red-legged frog occurrence is located approximately 16 miles southwest of the proposed project

TAKE PRIDE IN AMERICA

site and the second nearest occurrence is located in Mendocino County, 21.5 miles west of the proposed project site. Based on negative protocol levels survey results, a lack of documented red-legged frog occurrences within 5 miles of the project site, physical barriers that reduce the probability of dispersal to the site, and a lack of quality habitat with the action area, the Service believes the proposed Cloverdale Rancheria Casino Development project may affect, but is not likely to adversely affect the red-legged frog.

Therefore, unless new information reveals effects of the project that may affect federally listed species or critical habitat in a manner not identified to date, or if a new species is listed or critical habitat is designated that may be affected by the proposed action, no further action pursuant to the Act is necessary.

If you have any questions or concerns regarding our response on the proposed Cloverdale Rancheria Casino Development project, please contact Ben Solvesky or Ryan Olah of my staff at the letterhead address, telephone (916) 414-6600, or electronic mail at Ben_Solvesky@fws.gov or Ryan_Olah@fws.gov.

cc:
Scott Wilson, California Department of Fish and Game, Yountville, California
Jamie Galos, ESA Land Management, Sacramento, California

Regional Director, Pacific Region

Literature Cited

California Natural Diversity Data Base (CNDDB). 2009. Natural Heritage Division. California Department of Fish and Game, Sacramento, California.