



United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Great Plains Regional Office
115 Fourth Avenue S.E., Suite 400
Aberdeen, South Dakota 57401




IN REPLY REFER TO:
DESCRM
MC-208

OCT 19 2011

MEMORANDUM

TO: Superintendent, Fort Berthold Agency

FROM: ^{Acting} Regional Director, Great Plains Region 

SUBJECT: Environmental Assessment and Finding of No Significant Impact

In compliance with the regulations of the National Environmental Policy Act (NEPA) of 1969, as amended, an Environmental Assessment (EA) has been completed and a Finding of No Significant Impact (FONSI) has been issued. The EA authorizes land use for the proposed Danks non-hazardous oil field waste disposal facility on the Fort Berthold Indian Reservation.

All the necessary requirements of the National Environmental Policy Act have been completed. Attached for your files is a copy of the EA Addendum, FONSI and Notice of Availability. The Council on Environmental Quality (CEQ) regulations require that there be a public notice of availability of the FONSI (40 C.F.R. Part 1506.6(b)). Please post the attached notice of availability at the Agency and Tribal buildings for 30 days.

If you have any questions, please call Marilyn Bercier, Regional Environmental Scientist, Division of Environment, Safety and Cultural Resources Management, at (605) 226-7656.

Attachment

cc: Tex Hall, Chairman, Three Affiliated Tribes (with attachment)
Elgin Crows Breast, Tribal Historic Preservation Officer (with attachment)
Derek Enderud, BLM, Bureau of Land Management (with attachment)
John Schultz, Wenck (with attachment)
Jonathon Shelman, Corps of Engineers
Jeff Hunt, Fort Berthold Agency

Finding of No Significant Impact

Theodore J. Danks

Non-Hazardous Oil Field Waste Disposal Facility Dunn County, North Dakota

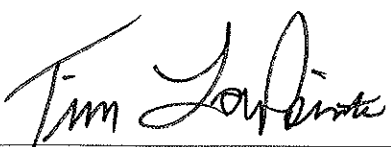
The U.S. Bureau of Indian Affairs (BIA) received a proposal to authorize land use by Theodore J. Danks for a proposed Non-Hazardous Oil Field Waste Disposal Facility located in Section 17, Township 149 North, Range 92 West in Dunn County on the Fort Berthold Reservation. Associated federal actions by BIA include determinations of effect regarding cultural resources and approvals of leases, rights-of-way and easements.

Potential of the proposed action to impact the human environment is analyzed in the attached Environmental Assessment (EA), as required by the National Environmental Policy Act. Based on the recently completed addendum to the EA, I have determined the proposed project will not significantly affect the quality of the human environment. No Environmental Impact Statement is required for any portion of the proposed activities.

This determination is based on the following factors:

1. Agency and public involvement was solicited and environmental issues related to the proposal were identified.
2. Protective and prudent measures were designed to minimize impacts to air, water, soil, vegetation, wetlands, wildlife, water resources, and cultural resources. The potential for impacts was disclosed for both the proposed action and the No Action alternative.
3. Guidance from the U.S. Fish and Wildlife Service has been fully considered regarding wildlife impacts, particularly in regard to threatened or endangered species. This guidance includes the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) (MBTA), the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.) (NEPA), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) (BGEPA), Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds", and the Endangered Species Act (16 U.S.C. 1531 et seq.) (ESA).
4. The proposed action was designed to avoid adverse effects to historic, archaeological, cultural, and traditional properties, sites, and practices. The Tribal Historic Preservation Officer has concurred with BIA's determination that no historic properties will be affected.
5. Environmental justice was fully considered.
6. Cumulative effects to the environment are either mitigated or minimal.
7. No regulatory requirements have been waived or require compensatory mitigation measures.
8. The proposed project will improve the socioeconomic condition of the affected Indian community.

Acting


Regional Director – Great Plains Regional Office

10-19-11
Date

Environmental Assessment

Proposed Danks Non-Hazardous Oil Field Waste Disposal Facility, Ft. Berthold Reservation, Dunn County, North Dakota

Prepared for:

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Submitted to:

BUREAU OF INDIAN AFFAIRS
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October 2011



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Environmental Assessment
Proposed Danks Non-Hazardous Oil Field Waste Disposal Facility
Dunn County, North Dakota

EXECUTIVE SUMMARY

TJD Consulting proposes to construct a disposal site for oil well cuttings within the Fort Berthold Reservation on tribal lands managed by the Bureau of Indian Affairs. The project area consists of 18 acres in the N1/2 of the NW1/4 of the NW1/4 of Section 17, T149N, R92W in Dunn County, North Dakota. A proposed access road will begin at BIA Road 10 in the NE1/4 of Section 7, T149N, R92W and continue south near the east edge of Section 7 to the northwest corner of Section 17 where it will enter the project site. The site is about two (2) miles south of Lake Sakakawea. The project site will consist of a level pad of approximately 5.4 acres (including cut and fill slopes) within which a receiving facility, four (4) disposal slurry ponds, and one (1) evaporation pond will be constructed. The access road will be about 1.2 miles long, of which a portion will be an upgrade of an existing gravel road and a portion will be new construction. A maximum disturbed right-of-way (ROW) width of sixty six (66) feet for the road would result in 46.4 acres of potential surface disturbance.

The proposed action includes roadway improvements and construction, installation of buried utilities, construction of a receiving facility, four (4) disposal slurry ponds, and one (1) evaporation pond, installation of monitoring wells upstream and downstream, heavy vehicle traffic, and interim and final reclamation. Construction and operation activities would follow all standards, guidelines, and practices for development of similar facilities in the region and as outlined in the Operation and Maintenance Plan. All project components will be stabilized and reclaimed and mitigation measures will be used to minimize the potential impacts of the project.

The proposed disposal site is on a high ridge within an 80 acre parcel owned by M. Danks. Several other ridges and rolling prairie extend from the proposed disposal site, with lower drainages between the ridges running to the low-lying Upper Skunk Creek and its tributaries to the south of the 80 acre parcel. The vegetation and wildlife habitat of the site are typical of the region, with no unique areas affected. Potential environmental impacts to the site are expected to be minor. No surface waters, groundwater, or wetland/riparian habitats would be affected by the project. Contamination of the site by pollutants would be prevented by utilizing double-lined pits of geomembrane and compacted clay and a run-off water evaporation pit on the site. Upon completion the disposal pit contents will be treated, solidified, backfilled, and buried. Best management practices will be implemented to control soil erosion and the spread of noxious weed populations. No adverse effects are expected for any threatened, endangered, or species of concern that may be present in the region. Construction and operation of the site may cause temporary displacement of wildlife and a localized decrease in air quality due to factors such as dust. No significant effects are expected for socioeconomics, environmental justice, infrastructure and utilities, and public health and safety in the area. No historic properties were identified within the project area. The project is not expected to add significantly to cumulative impacts of the region.

1.0 Purpose and Need for Action

1.1 INTRODUCTION

TJD Consulting has proposed to construct a disposal pit for oil well cuttings within the Fort Berthold Indian Reservation (The Reservation) in Dunn County, North Dakota. The Bureau of Indian Affairs (BIA) is the surface management agency for the potentially affected tribal lands. The site is located on 18 acres in the northwest corner of an 80-acre tract of trust land owned by M. Danks (Figure 1). The site is approximately two (2) miles south of Lake Sakakawea and 13 miles east of the community of Mandaree, ND. The access road begins where BIA Road 10 crosses the east edge of Section 7 and runs southeast to the northwest corner of Section 17 where it joins the site (Figure 1). The legal description of the proposed disposal pit site is as follows: N1/2, NW1/4, NW1/4 of Section 17, Township 149 North, Range 92 West, Dunn County, North Dakota within the Fort Berthold Reservation.

The Fort Berthold Reservation encompasses 988,000 acres, 457,837 of which are in tribal and individual Indian ownership by the Three Affiliated Tribes (Mandan, Hidatsa, and Arikara) and its members. The Reservation is located in west central North Dakota and is split into three areas by Lake Sakakawea, which traverses the center of the Reservation. It occupies portions of six counties: Dunn, McKenzie, McLean, Mercer, Mountrail, and Ward.

1.2 DESCRIPTION OF THE PROPOSED ACTION

The proposed action will involve the construction of an oil waste disposal facility that will serve oil production facilities on the reservation. The facility will include a receiving facility, four (4) slurry ponds, an evaporation pond, monitoring wells, and an access route (Figures 1 and 2). Completion activities include acquisition of rights-of-way, infrastructure for the proposed disposal pits, and roadway improvements. Detailed design plans are found in Appendix A.

The Bureau of Indian Affairs (BIA) will approve easements, leases, and rights-of-way (ROWs) associated with the action. Because the approval of the easements, leases, and ROWs is a federal action, the BIA must comply with the National Environmental Policy Act of 1969 (NEPA) and regulations of the Council on Environmental Quality (CEQ) for the implementation of NEPA (40CFR 1500-1508). The purpose of this Environmental Assessment (EA) is to document the proposed action, alternative actions, potential environmental impacts, and the responses to these actions and to provide the information necessary for the BIA to assess the potential effects of its approval on the human and natural environment. This EA serves to:

- Ensure that the environmental consequences of the proposed action have been considered.
- Make project and environmental information available to all parties involved.
- Develop enough information to determine if a Finding of No Significant Impact (FONSI) is warranted.

1.3 NEED FOR THE PROPOSED ACTION

As the number of closed system oil pads being installed on the reservation continues to grow, the need for a local disposal area for oil production waste has increased. The development of a disposal facility on the reservation would provide a necessary service to the oil companies, reduce the amount of road travel, and provide income to some allottees. A local disposal site would also lessen the chance for accidental spills of waste products on the reservation because it would decrease the haul distance necessary for their disposal.

1.4 PURPOSE OF THE PROPOSED ACTION

The purpose of the proposed action is to allow the Three Affiliated Tribes and the BIA to increase the number of closed system oil pads on the Reservation by providing a local disposal site that could serve the surrounding region.

1.5 REGULATIONS THAT APPLY TO THE PROPOSED ACTIVITIES

The BIA is the land-administering agency and will approve any easements, leases, and ROWs associated with the construction and operation of the facility. Because the lease action is a federal undertaking, BIA must comply with the National Environmental Policy Act of 1969

(NEPA). Under 25 CFR Part 225-Oil and Gas, Geothermal, and Solid Minerals Agreements, the BIA must comply not only with NEPA but also the regulations promulgated by the Council on Environmental Quality (CEQ) found at 40 CFR parts 1500–1508 before it approves easements, leases, and rights-of-way (ROWS) associated with the action. An EA for the proposed site is necessary to analyze the direct, indirect, and cumulative impacts of the BIA's approval of any easements, leases, and ROWs on the natural and human environment. The BIA must also ensure that all necessary surveys are performed and clearances obtained in accordance with 36 CFR parts 60, 63, and 800 and with the requirements of the Archaeological and Historic Preservation Act (16 U.S.C. 469 *et seq.*), the National Historic Preservation Act (16 U.S.C. 470 *et seq.*), the American Indian Religious Freedom Act (42 U.S.C. 1996), and Executive Order 11593 (3 CFR 1971–1975 Comp., p. 559, May 13, 1971).

Oil and gas development activities on Indian lands are subject to a variety of federal environmental regulations and policies under authority of the BIA and BLM. This inspection and enforcement authority derives from the United States trust obligations to the Tribes, the Indian Mineral Leasing Act of 1938, the Indian Mineral Development Act of 1982, and the Federal Oil and Gas Royalty Management Act of 1982. Under the BIA's regulations of 25 CFR Part 225, the BLM exercises authority over oil and gas development on leases on Tribal lands under its implementing regulations of 43 CFR Part 3160 and its internal supplemental regulations and policies. The BLM authority includes the inspection of oil and gas operations to determine compliance with applicable statutes, regulations, and all applicable orders. These include, but are not limited to, conducting operations in a manner which ensures the proper handling, measurement, disposition, and site security of leasehold production; and protecting other natural resources, environmental quality, life, and property.

The facility would also have to comply with the stipulations that the TAT Tribal EPA includes in its permit.

2.0 Alternatives

2.1 INTRODUCTION

This chapter provides information on the development and evaluation of project alternatives. The development of alternatives is directly related to the purpose and need for the project. Two alternatives are being considered for this project: a no action alternative and a proposed action alternative.

2.2 ALTERNATIVE A: NO ACTION

Under the no action alternative (Alternative A), the BIA would not approve easements, leases, and rights-of-way (ROWs) associated with the action. There would be no environmental impacts associated with Alternative A. However, the Three Affiliated Tribes would not receive potential economic benefits and would contend with increased traffic and increased risk of accidental contamination and spills associated with oil and gas development on the Reservation.

2.3 ALTERNATIVE B: PROPOSED ACTION

Alternative B would involve the construction of:

- access roads
- a receiving facility
- slurry ponds
- an evaporation pond
- monitoring wells
- utilities

The design plans are presented in Appendix A. These facilities are described in more detail in Appendix B - *Operation and Maintenance Plan Danks Non-Hazardous Oil Field Waste Disposal Facility*.

2.3.1 Access Roads

Existing roadways would be used to the extent possible to access the proposed disposal pits; however, existing roadways would need to be improved and a new access roads would also have to be constructed. The running surface of all access roads would be surfaced with scoria or crushed rock from a previously approved location, and erosion control measures would be installed as necessary. A maximum right-of-way width of 66 feet would be disturbed, consisting of a 28-foot wide roadway with the remainder of the disturbed area due to borrow ditches and construction slopes. The out-slope portions of constructed access roads would be re-seeded upon completion of construction to reduce access road related disturbance. Access road construction would follow road design and construction standards of the BIA Division of Transportation.

The existing access roads lead up to and cross a portion of the property. A new access road would need to be constructed for approximately the last ½ mile to the facilities. This road would be constructed to the above specifications.

2.3.2 Receiving Facility

The receiving facility would consist of a small building and gated entrance where each delivery would be logged and inspected by a traffic clerk. Drivers would receive instructions here as to where the material is to be unloaded prior to being placed in the slurry ponds.

2.3.3 Slurry Ponds

The facility would include four (4) slurry ponds, each measuring 172 feet by 172 feet by 18 feet in depth. The holding capacity of each would be approximately 6.57 acre-feet or 10,527 cubic yards, assuming a fill depth of 16 feet. Each pond would have a leachate collection system and sampling manhole to monitor the quality of water discharged to the evaporation pond.

2.3.4 Evaporation Pond

The facility would contain one (1) evaporation pond that would measure 375 feet by 110 feet by 18 feet in depth. The holding capacity would be approximately 7.95 acre-feet or 12,826 cubic yards, assuming a fill depth of 15 feet. Both the outer and inner dike slopes would be sloped 2:1

(horizontal to vertical); the outer slopes would be sloped to prevent surface runoff from entering the pond. The minimum width of the dike top would be 16 feet to allow access to maintenance vehicles and to assure structural stability. The pond would be fed by excess water that gravity flows via PVC piping from each of the slurry ponds. The pond would be designed for 100 percent retention.

2.3.5 Monitoring Wells

At least two monitoring wells each would be placed upstream and downstream of the facility to monitor ground water levels and quality. The wells would be 3 inches in diameter, screened, and gravel packed and would have locking lids to prevent tampering. The locations of the wells would be determined according to geotechnical and hydrologic conditions identified during construction. Monitoring well construction and monitoring activities will follow the standards in Groundwater Monitoring Well Construction Requirements, North Dakota Administrative Code Chapter 33-18-02 or any standards or requirements specified by TAT EPA. The contaminants to be tested for are listed in Appendix B of the Operation and Maintenance Plan (Appendix B this document). The wells would be inspected weekly to ensure proper function and integrity.

2.3.6 Utilities

The anticipated utilities required to service the site are electric and water. These utilities would be buried and the utility corridor would follow the roadway into the site as closely as possible. Since the proposed facility is a disposal pit site, no pipelines are anticipated. Water lines would be buried below the frost line to prevent freezing. Electrical would also be buried and placed in a manner that minimizes surface impacts.

2.3.7 Construction

The proposed site pad for the four (4) double-lined slurry ponds with geomembrane and compacted to store oil field waste and the one (1) system run-off evaporation pond would consist of a leveled area measuring approximately 425 X 550 feet (approximately 5.4 acres) and surfaced with approximately six inches of gravel or crushed scoria. A two-foot high berm

embankment would be constructed around the pad exterior as a precautionary measure against spills. An ingress-egress roadway encircling the pad would be constructed on top of the embankment for use as a containment measure to ensure materials are not leaked off the pad site. The pad would be fenced and the disposal pits covered with netting to protect wildlife from hazardous areas. Pad corners would be rounded as necessary to protect drainage ways and wooded draws. The pad area would be cleared of vegetation, stripped of topsoil, and graded to specifications in BLM's Onshore Oil and Gas Order No. 7-Approval of Operations on Onshore Federal and Indian Oil and Gas Leases. Topsoil would be stockpiled and stabilized until disturbed areas are reclaimed and re-vegetated. Excavated subsoil would be used in pad construction and graded to ensure water drains away from the site. Erosion control would be maintained through the use of best management practices (BMPs), which may include, but not limited to, water bars, bar ditches, silt fences, matting, and re-vegetation of disturbed areas.

Soil used to construct pond embankments would provide an adequate foundation for the geomembrane liner. The soil would be compacted to compacted to 95% of standard proctor within 2% of optimum moisture content and have a permeability of less than or equal to 1×10^{-7} cm/sec to ensure structural stability and reduce hydraulic seepage and settling. Soils used in constructing pond bottom and embankment cores would be relatively incompressible, have low permeability, and be free from organic material or trash. Outer dike embankment slopes would be sloped 2:1 (horizontal to vertical). The outer slopes would prevent surface runoff from entering the ponds. Inner dike slopes would be sloped 2:1 (horizontal to vertical). The minimum top dike width would be 16 feet to allow access to maintenance vehicles and to assure structural stability.

The primary liner for the ponds would be a polyvinyl chloride or polypropylene 60 mils thick geomembrane liner. The permeability of the linear would be less than 10^{-7} centimeters per second. The burst strength of the linear would be equal to or greater than 300 pounds per square inch, a puncture strength equal to or greater than 160 pounds per square inch, and a grab tensile strength equal to or greater than 150 pounds per square inch. The outer edges of the geomembrane line would extend 10 feet past the upper edge of the slurry ponds. A 30 inch deep

trench would be constructed 5 feet beyond the outer perimeter of the slurry pond and the geomembrane would be placed in the trench, backfilled and compacted. This procedure would anchor the geomembrane on the sloped embankments of the slurry pond. A minimum of 18 inches of clay soil would be placed over the geomembrane to prevent damage.

Secondary containment for the geomembrane liner would consist of a compacted clay liner. The specifications for the liner would be based upon the results of a preliminary testing and would contain the type of material, optimum and acceptable range in water content, acceptable range for compaction, and maximum allowable particle size. The compacted clay liners used to protect groundwater quality would meet the following criteria:

- A 36-inch compacted clay liner with a maximum permeability of 1×10^{-7} cm/sec.
- The tests for water content and density would be taken during the placement of each lift of the liner. The soil would be compacted at a water content that would ensure structural stability, reduce hydraulic seepage, and reduce settling. Optimum moisture conditions would be maintained during construction of the clay liner. A total minimum liner thickness of three (3) feet would be provided and would be constructed with maximum lifts of one-half (0.5) foot. Permeability testing of undisturbed core samples from the in-place seal would be conducted. One (1) test would be conducted per acre per lift. For core sampling of the in-place liner, one (1) core of the completed liner would be tested per acre. For compacted clay liners,

Construction activities would begin after July 15 to avoid impacts to migratory birds during the breeding/nesting season. Pre-construction surveys for migratory birds or their nests would be conducted within five days prior to the initiation of access road construction activities if the project construction is to take place between February 1 and July 15. The areas may be mowed in the fall if construction is scheduled in the following spring. In addition, if any deceased migratory bird is found on-site during construction, construction activities shall cease and the US Fish and Wildlife Service (USFWS) shall be notified for advice on how to proceed.

2.3.8 Reclamation

Immediately upon completion of operations, the ponds would be reclaimed to BLM and North Dakota Industrial Commission (NDIC) standards or to those of the TAT Tribal EPA, whichever is the more stringent. Drilling fluids would be drawn from the pits and disposed of properly. The pit contents would be treated, solidified, backfilled, and buried. Other interim reclamation measures to be implemented upon pit completion would include reduction of cut and fill slopes, redistribution of stockpiled topsoil, and reseeded of disturbed areas. Reclamation activities would include leveling, re-contouring, treating, backfill, and re-seeding. Erosion control measures would be installed as appropriate. Stockpiled topsoil would be redistributed and reseeded as recommended by the BIA.

Upon final abandonment of commercial operations, all disturbed areas would be reclaimed within one year of the pit closure. As part of the final reclamation process, access roads and pit areas would be re-contoured to match topography of the original landscape and reseeded with a native grass seed mixture consistent with surrounding native species to ensure a diverse mix that is free of noxious weeds. Erosion control measures would be installed as appropriate. Maintenance and successful reclamation of the site would be consistent with the BLM Gold Book standards for well site reclamation. An exception to these reclamation measures may occur if the BIA approves assignment of an access road either to the BIA roads inventory or to concurring surface allottees.

2.3.9 Waste Disposal

The facility would be used for the disposal of authorized oil and gas exploration and production wastes. These would include but not be limited to:

- Produced water
- Drilling fluids
- Drill cuttings
- Stimulation products
- Wastes from production separators
- Gas plant dehydration wastes and

- Gas plant sweetening wastes

Unauthorized wastes would include be not be limited to:

- Hazardous wastes, i.e. ignitable solvents, paints, fuels, corrosive acids and alkalies, reactives, and listed wastes.

2.3.10 Operation and Maintenance

The facility would be operated and maintained according to *Operation and Maintenance Plan Danks Non-Hazardous Oil Field Waste Disposal Facility* (Appendix B).

2.3.11 Potential for Future Development

Once filled, the ponds would be reclaimed and new ponds developed on the site as described herein. Further development would be subject to applicable regulations, including 43 CFR Part 3160, and the BLM's Onshore Oil and Gas Order No. 7-Approval of Operations on Onshore Federal and Indian Oil and Gas Leases, and would be subject to review under NEPA, as appropriate. Any additional development associated with the construction, operation, and maintenance of the facility not disclosed and/or addressed herein will require additional analysis under NEPA.

3.0 Description of the Affected Environment and Impacts

3.1 INTRODUCTION

This chapter describes the existing conditions within the study area. The existing conditions, or affected environment, are the baseline conditions that may be affected by the proposed action. This chapter also summarizes the potential positive and negative direct environmental impacts of the project alternatives, as well as cumulative impacts. Indirect impacts are discussed in impact categories where relevant. Information regarding the existing environment, potential effects to the environment resulting from the proposed alternative, and avoidance, minimization, and/or mitigation measures for adverse impacts is included.

3.2 CLIMATE, GEOLOGICAL SETTING, AND LAND USE

The climate of Dunn County is cool, semiarid and continental. The winters can be very cold with frequent snow falls. The summers are generally warm with frequent hot spells. The annual mean temperature for the area is 43.2 degrees Fahrenheit (F) and the average annual precipitation is 16.36 inches (NOAA 2002). These figures were estimated from the Dunn Center Station from 1971 through 2000 (NOAA 2002).

The surface stratigraphy at the site is the Sentinel Butte Formation. The Sentinel Butte is part of the Fort Union Strata and is composed of alternating beds of sandstone, siltstone, mudstone, clay stone, and lignite (Murphy 2001).

Physiographically, the site is located in the Coteau Slope region of the Great Plains physiographic province (Bluemle 2000). The topography of the site consists of a series of ridges and draws that drain into Upper Skunk Creek. This ephemeral stream is a tributary of South Fork Creek and was flowing at the time of the site visit.

The site is currently used as grazing land for cattle. Site photographs are attached as Appendix C.

3.2.1 Mitigation

Alternative A – No Action

Alternative A would have no environmental impact on climate, geology, or land use.

Alternative B – Proposed Action

Alternative B would result in the conversion of approximately 46.4 acres of land from present use for use as the disposal pit facility. Mineral resources would not be impacted through the development of the proposed site. Impacts to the climate, geologic setting and paleontological resources are not anticipated.

3.3 SOILS

Soils are classified into types based on physical and chemical properties, topographical position, drainage patterns, the types of plants or crops supported by the soil, and parent materials (NRCS 1982). Areas of primarily one type of soil, or a complex of two or more kinds of soil, are delineated into “soil map units” (NRCS 1982).

Based on the Dunn County Soils Index, the soils on the proposed access road and disposal pit site consist of variations of the Cabba loam complex (NRCS 2011a, NRCS 1982) (Figure 3). These soils are generally used for rangeland and are considered poor soils for cultivated crops and are therefore not identified as prime farmland soils (NRCS 1982). There is a small area of Zahl-Williams loams situated at the north end of the proposed access road (Figure 3). The soils or soil complexes present at the site are listed in Table 1, along with characteristics related to slope, drainage, topsoil depth, and suitability for crops. Table 1 indicates whether each soil is present within the proposed disposal pit site, the proposed access road, or both areas.

A soil survey of the site confirmed the county soil index assessment. Hand auger probes were excavated to an approximate depth of 18 inches along the proposed roadway and across the survey area. The results of the survey are summarized in Appendix D. The estimated acres of disturbance for each soil type are listed in Table 2.

Table 1 Soils of Proposed Access Road and Disposal Site

| Soil Type | Map Unit | Present Within Area of Proposed: | | Slope Percentage | Drainage Class | Depth Class | Capability Subclass ¹ |
|------------------------|----------|----------------------------------|------|------------------|----------------------------|-----------------------------|----------------------------------|
| | | Pits | Road | | | | |
| Cabba Loam | 9E | Yes | Yes | 15-45 | Well-Drained | Shallow | VIIe |
| Cabba-Badlands Complex | 11F | Yes | Yes | 15-70 | Well-Drained | Shallow | VIIe |
| Dogtooth-Cabba Complex | 62D | Yes | Yes | 9-15 | Moderately to Well-Drained | Deep and Shallow | VI s |
| Zahl-Williams Loams | 93D | No | Yes | 9-15 | Well-Drained | Deep | VIe |
| Cohagen-Vebar | 30E | No | Yes | 9-25 | Excessive to Well-Drained | Shallow and Moderately Deep | VIe |

Source: NRCS 2011a. ¹Capability classification generally indicates suitability of soils for field crops. Class VI = soils have severe limitations that make them generally unsuitable for cultivation. Class VII = soils have very severe limitations that make them unsuitable for cultivation. Subclass definitions: e = main limitation is risk of erosion, s = main limitation is that soil is shallow, droughty, or stony.

Table 2 Estimated Acres of Disturbance for Each Soil

| Soil | Map Unit | Total Acres ^{1,2} | Percent of Total |
|--------------------------------------------------------|----------|----------------------------|------------------|
| Cabba loam, 15 to 45 percent slopes | 9E | 20.10 | 43.32% |
| Cabba-Badlands complex, 15 to 70 percent slopes | 11F | 10.81 | 23.30% |
| Cohagen-Vebar fine sandy loams, 9 to 25 percent slopes | 30E | 0.85 | 1.83% |
| Dogtooth-Cabba complex, 9 to 15 percent slopes | 62D | 12.91 | 27.82% |
| Zahl-Williams loams, 9 to 15 percent slopes | 93D | 0.87 | 1.88% |
| Water | W | 0.85 | 1.83% |

Source: NRCS 2011b. ¹Includes both new roads and roads proposed for upgrading. ²Based on 150 foot maximum disturbed ROW width.

3.3.1 Mitigation

Alternative A – No Action

Alternative A would have no environmental impact on soils.

Alternative B – Proposed Action

Construction activities associated with the proposed site and associated access road would result in soil disturbances. However, impacts to soils associated with the proposed action are not anticipated to be significant. Stockpile quantities for the site were calculated using an assumed

six (6) inches of existing topsoil. A minimum of 4,330 cubic yards of topsoil will be stockpiled on site for future site reclamation of the pad area. An additional 1,300 cubic yards of topsoil will be required to reclaim the proposed roadway.

Based on the Natural Resource Conservation Service (NRCS) soil profiles and push-probe sampling, topsoil likely exists in excess of 3-9 inches at the site, yielding sufficient quantity of topsoil for construction and reclamation activities. Topsoil and embankment stockpiles are proposed to be located on the south side of the pad. The stockpile will be positioned to assist in diverting runoff away from the disturbed area, thus minimizing erosion. The stockpile, as well as engineered cuts, will be hydro/drill seeded to re-establish vegetative cover soon after construction.

Soil impacts would be localized, and BMPs would be implemented to minimize these impacts. Surface disturbance caused by road improvements and facilities construction would result in the removal of vegetation from the soil surface. This can damage soil crusts and destabilize the soil. As a result, the soil surface could become more prone to accelerated erosion by wind and water. Recommended best BMPs to reduce these impacts would include the use of erosion and sediment control measures during and after construction, segregating topsoil from subsurface material for future reclamation, reseeded of disturbed areas, use of construction equipment appropriately sized to the scope and scale of the project, ensuring the road gradient fits closely with the natural terrain, and maintaining proper drainage. These BMP recommendations were discussed at the on-site field assessment and parallel standard industry practices. For specific construction BMP situations and recommendations, the BLM Gold Book would be utilized for use during construction, operation, and reclamation (BLM & USFS).”

Another soil resources issue is soil compaction, which can occur by use of heavy equipment. When soil is compacted, it decreases permeability and increases surface runoff. This is especially evident in silt and clay soils. In addition, soils may be impacted by mixing of soil horizons. Soil compaction and mixing of soil horizons would be minimized by the previously discussed topsoil segregation. Contamination of soils from various chemicals and other pollutants used during oil

development activities is not anticipated. In the rare event that such contamination may occur, the owner/operator of the facility event would report the contamination to the TAT Tribal EPA, BIA, BLM and the North Dakota Department of Health (NDDH), and the procedures of the surface management agency would be followed to contain spills and leaks until the owner/operator of the facility completes the clean-up and remediation. Prior to initiating operations, the owner/operator of the facility would either secure a bond or insurance to ensure that resources are available to complete any necessary remediation.

3.4 WATER RESOURCES

The Federal Water Pollution Control Act of 1972, as amended by the Clean Water Act of 1977, provides the authority to the Environmental Protection Agency (EPA) and United States Army Corps of Engineers (USACE) to establish water quality standards, control discharges into surface and ground waters, develop waste treatment management plans and practices, and issue permits for discharges (Section 402) and for dredged or fill material (Section 404). Within the Fort Berthold Reservation, the Missouri River and Lake Sakakawea are both considered navigable waters and are therefore subject to Section 10 of the Rivers and Harbors Act of 1899.

3.4.1 Surface Waters

The project area is in the region of North Dakota, between the Missouri River and the Missouri Slope Uplands region to the west (Bluemle 2001). Much of the Missouri Slope Uplands is distinguished by badlands topography. This is an arid area with few isolated surface water basins. The majority of the surface waters in the region are associated with the Missouri River, Lake Sakakawea, and tributaries to these water bodies. Surface water generally flows overland until draining into these systems. The entire proposed site is located in the Lake Sakakawea basin, meaning surface waters within this basin drain to Lake Sakakawea (Klausing, 1979).

Runoff throughout the study area is by sheet flow until collected by ephemeral and perennial streams draining to Lake Sakakawea. Surface runoff for the site would typically travel to Lake Sakakawea via drainage patterns as follows:

- Run off from the pad would travel approximately 850 feet west and south into the Upper Skunk Creek drainage system. The Upper Skunk Creek runs 0.22 mile southeast and discharges into South Fork Creek, an intermittent stream that flows approximately two miles east into Lake Sakakawea.

3.4.2 Groundwater

The potential aquifers in Dunn County include the Golden Valley, Sentinel Butte, Tongue River, Cannonball, Ludlow, Hell Creek, Fox Hills, and Pierre formations (Table 3). Of these, the potentially productive aquifers beneath the site are the Tongue River, Hell Creek and the Fox Hills.

Table 3 Characteristics of Dunn County Aquifers

| Aquifer | Approximate Elevation Top of Formation (feet above msl) | Maximum Thickness (feet) | Lithology | Water Yielding Characteristics |
|----------------------------------------|----------------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Golden Valley | Not Present at Site | 375 | Sandstone, silt, clay, clay stone, lignite, and carbonaceous shale | 1 to 20 GPM from springs |
| Sentinel Butte | Surface | 670 | Clay, clay stone, shale, sandstone, siltstone, lignite | Sandstone wells 5 to 100 GPM Lignite wells 1 to 200 GPM |
| Tongue River | 1,300 | 490 | Clay, clay stone, shale, sandstone, siltstone, lignite | Sandstone wells less than 100 GPM |
| Cannonball & Ludlow (undifferentiated) | | 660 | Cannonball - marine sandstone, clay shale, siltstone Ludlow - continental siltstone, sandstone, shale, clay, lignite | Sandstone wells less than 50 GPM |
| Hell Creek | 700 | 300 | Siltstone, sandstone, shale, clay stone, lignite | Sandstone wells 5 to 100 GPM |
| Fox Hills | 500 | 300 | Sandstone, shale, siltstone | Sandstone wells generally less than 200 GPM; some individual wells to 400 GPM |
| Pierre | | 2,300 | Shale and silt | Not known to yield water to wells |

Source: Klausing, 1979

The North Dakota State Water Commission has issued one (1) permit for a water well or surface impoundment within one mile of the project area in Section 12, Township 149N Range 93W. It was for a surface water monitoring site about 0.9 miles west/northwest of the proposed access

road (Table 4; Figure 4). Information on water permits within the township of the proposed project and within the adjacent township to the west is summarized in Table 4 (NDSWC 2011).

Table 4 Existing Water Permits in T149N, R92W and T149N, R93W, Dunn County, ND

| Permit Number | Legal Subdivision | Section | Permit Type | Aquifer ¹ | Total Depth (ft) | Date Drilled |
|-------------------|----------------------|---------|-------------------------------|----------------------|------------------|--------------|
| 149-092-22 CDC | SW1/4 SE1/4 SW1/4 | 22 | Unknown | SB of FU | Unknown | Unknown |
| 149-092-27 BBB | NW1/4 NW1/4 NW1/4 | 27 | Surface Water Monitoring Site | --- | --- | --- |
| 149-092-30 CA | SW1/4 NE1/4 | 30 | Surface Water Monitoring Site | --- | --- | --- |
| 149-093-02 ACB | NW1/4 SW1/4 NE1/4 | 2 | Unknown | SB-TR | Unknown | 1962 |
| 149-093-05 CDC | SW1/4 SE1/4 SW1/4 | 5 | Unknown | SB-TR | Unknown | 1961 |
| 149-093-08 DCC | SW1/4 SW1/4 SE1/4 | 8 | Unknown | SB-TR | Unknown | 1960 |
| 149-093-09 CCD | SE1/4 SW1/4 SW1/4 | 9 | Unknown | SB-TR | Unknown | 1952 |
| 149-093-12 ACC | SW1/4 SW1/4 NE1/4 | 12 | Surface Water Monitoring Site | --- | --- | --- |
| 149-093-21 DCA | NE1/4 SW1/4 SE1/4 | 21 | Unknown | SB-TR | Unknown | Unknown |
| 149-093-21 DCC | SW1/4 SW1/4 SE1/4 | 21 | Surface Water Monitoring Site | --- | --- | --- |
| 149-093-27 ABA | NE1/4 NW1/4 NE1/4 | 27 | Surface Water Monitoring Site | --- | --- | --- |

Source: North Dakota State Water Commission website: www.swc.state.nd.us (NDSWC 2011). ¹FU=Fort Union; SB=Sentinel Butte; TR=Tongue River; Unknown=Unknown.

3.4.3 Mitigation

Alternative A – No Action

Alternative A would have no environmental impact on water resources.

Alternative B – Proposed Action

Alternative B would have no anticipated environmental impact on water resources. All abandoned pits would be solidified with fly-ash and buried in accordance with applicable law.

3.5 AIR QUALITY

The Clean Air Act, as amended, requires the EPA to establish air quality standards for pollutants considered harmful to public health and the environment by setting limits on emission levels of various types of air pollutants.

The NDDH operates a network of Ambient Air Quality Monitoring (AAQM) stations. The AAQM station in Dunn Center, North Dakota is approximately 26.7 miles south-southwest from the proposed site. Criteria pollutants tracked under EPA's National Ambient Air Quality Standards (NAAQS) in the Clean Air Act include SO (sulfur dioxide), PM (particulate matter), NO, (nitrogen dioxide), O (ozone), Pb (lead), and CO (carbon monoxide). In addition, the NDDH has established state air quality standards. State standards must be as stringent as (but may be more stringent than) federal standards. The federal and state air quality standards for these pollutants are summarized in Table 5.

Table 5 Federal and State Air Quality Standards and AAQM Data

| Pollutant | Averaging Period | Federal Standard | North Dakota Standard | AAQM Data |
|-------------------|----------------------|-----------------------|-----------------------|----------------------|
| SO ₂ | 24-Hour | 0.14 ppm | 0.0999 ppm | 0.003 ppm |
| | Annual Mean | 0.030 ppm | 0.023 ppm | 0.000 ppm |
| PM ₁₀ | 24-Hour | 150 ug/m ³ | 150 ug/m ³ | 53 ug/m ³ |
| | Annual Mean | 50 ug/m ³ | 50 ug/m ³ | 15 ug/m ³ |
| PM _{2.5} | 24-Hour | 35 ug/m ³ | 35 ug/m ³ | - |
| | Weighted Annual Mean | 15 ug/m ³ | 15 ug/m ³ | - |
| NO ₂ | Annual Mean | 0.053 ppm | 0.053 ppm | 0.002 ppm |
| CO | 1-Hour | 35 ppm | 35 ppm | - |
| | 8-Hour | 9 ppm | 9 ppm | - |
| Pb | 3-Month | 1.5 ug/m ³ | 1.5 ug/m ³ | - |
| O ₃ | 1-Hour | 0.12 ppm | 0.12 ppm | 0.065 ppm |
| | 8-Hour | 0.08 ppm | 0.08 ppm | 0.065 ppm |

Source: NDDH

North Dakota was one of thirteen states in 2008 that met standards for all criteria pollutants (NDDH 2009). The state also met standards for fine particulates and the eight-hour ozone standards established by the EPA (NDDH). In addition, the Fort Berthold Reservation complies with the North Dakota Ambient Air Quality (NDAAQ) Standards and visibility protection (NDDH). The Clean Air Act affords additional air quality protection near Class I areas. Class I areas include national parks greater than 6,000 acres in size, national monuments, national

seashores, and federally designated wilderness areas larger than 5,000 acres designated prior to 1977. There are no Federal Class I areas within the project area. The Theodore Roosevelt National Park is the nearest Class I area, located approximately 37 miles west-southwest of the site.

3.5.1 Mitigation

Alternative A – No Action

Alternative A would have no environmental impact on air quality.

Alternative B – Proposed Action

The Fort Berthold Reservation complies with NDAAQ Standards and visibility protection. Alternative B would not include any major sources of air pollutants. Construction activities would temporarily generate minor amounts of dust and gaseous emissions of PM, SO, NO, CO, and volatile organic compounds. Emissions would be limited to the immediate project area and are not anticipated to cause or contribute to a violation of National Ambient Air Quality Standards (NAAQS). No detectable or long-term impacts to air quality or visibility are expected within the air-sheds of the Fort Berthold Reservation, State, or Theodore Roosevelt National Park. No mitigation or monitoring measures are recommended.

3.6 WETLANDS AND FLOODPLAINS

Wetlands are defined in both the 1977 Executive Order 11990, Protection of Wetlands, and Section 404 of the Clean Water Act of 1986, as those areas that are inundated by surface or groundwater with a frequency to support and under normal circumstances do or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Three parameters that define a wetland, as outlined in the Federal Manual for Delineating Jurisdictional Wetlands (Environmental Laboratory 1987) are hydric soils, hydrophytic vegetation, and hydrology. Wetlands are an important natural resource serving many functions, such as providing habitat for wildlife, storing floodwaters, recharging groundwater, and improving water quality through purification.

3.6.1 Mitigation

Alternative A – No Action

Alternative A would have no environmental impact on wetlands.

Alternative B – Proposed Action

The proposed access road runs within 100 feet of a small impoundment. This section of the access road however is existing; therefore impacts to this impoundment would be minimal. BMPs will be used to prevent sediment and any potential spills from running into the impoundment. BMPs used to reduce these impacts would include the use of erosion and sediment control measures during and after construction.

The areas of proposed access road construction and the site pad maintain a distance of 750 feet or greater from wetlands and woody draws. BMPs will be used to prevent sediment and any potential spills from running off-site.

3.7 VEGETATION AND INVASIVE SPECIES

The proposed project area is located in an area of rough topography within the Missouri Coteau and is comprised of a series of ridges and draws that drain into Upper Skunk Creek. The composition of vegetation in the area is highly dependent on soil and slope as well as the direction of slope. The site is currently used for grazing and is in good to excellent condition. No rare or sensitive species were observed in the project area.

The botany survey included the access road and the entire 80-acre parcel owned by M. Danks (Figure 1). The project area includes the access road and 18 acres in the northwest corner of the 80-acre parcel. Although wooded draws are present on the 80-acre parcel, very few trees are present on the 18-acre site. The proposed access road does pass by some wooded areas. The Botany Survey Report is attached as Appendix E.

A total of five species listed on the US Forest Service Invasive Species List were identified during the botany survey. The survey also identified two species from the North Dakota Noxious Weed List and two problematic species. The invasive species are listed in Table 6.

Table 6 Noxious, Invasive, or Problematic Plant in Project Area

| Species | ND Noxious Weed List | USFS Invasive Species List | Problematic Species Not Common to This Part of the State |
|---------------------------------------------------------|----------------------|----------------------------|----------------------------------------------------------|
| Canada Thistle (<i>Cirsium arvense</i>) | Yes | | |
| Absinthe Sage (<i>Artemisia absinthium</i>) | Yes | | |
| Yellow Sweet Clover (<i>Melilotus officinalis</i>) | | Yes | |
| Kentucky Bluegrass (<i>Poa pratensis</i>) | | Yes | |
| Crested Wheatgrass (<i>Agropyron cristatum</i>) | | Yes | |
| Smooth Brome (<i>Bromus inermis</i>) | | Yes | |
| Japanese Brome (<i>Bromus japonicus</i>) | | Yes | |
| Giant Ragweed (<i>Ambrosia trifida</i>) | | | Yes |
| Burdock (<i>Arctium minus</i>) | | | Yes |

Source: On-site botany survey by C. Godfread (Appendix E).

Of the eleven species declared as noxious weeds under North Dakota Law (Chapter 4.1-47), three (3) are known to occur in Dunn County, including absinth wormwood, Canada thistle, and leafy spurge (Table 7) (NDDA 2010a). Dunn County has not designated any additional species within its jurisdiction (NDDA 2010b).

Table 7 Approximate Acreages of Invasive Species in Dunn County, North Dakota

| Common Name | Scientific Name | Dunn County Acres |
|----------------------|-------------------------------------------------|-------------------|
| Absinth wormwood | <i>Artemisia absinthium</i> | 43,800 |
| Canada thistle | <i>Cirsium arvense</i> | 39,300 |
| Dalmation toadflax | <i>Linaria genistifolia</i> ssp. <i>Dalatia</i> | --- |
| Diffuse knapweed | <i>Centaurea diffusa</i> | --- |
| Leafy spurge | <i>Euphorbia esula</i> | 6,200 |
| Musk thistle | <i>Carduus nutans</i> | --- |
| Purple loosestrife | <i>Lythrum salicaria</i> | --- |
| Russian knapweed | <i>Acroptilon repens</i> | --- |
| Saltcedar (tamarisk) | <i>Tamarix ramosissima</i> | --- |

| | | |
|--------------------|-------------------------------|-----|
| Spotted knapweed | <i>Centaurea maculosa</i> | --- |
| Yellow starthistle | <i>Centaurea solstitialis</i> | --- |

Source: North Dakota Department of Agriculture website: www.agdepartment.com (NDDA 2010a).

3.7.1 Mitigation

Alternative A – No Action

Alternative A would have no environmental impact on vegetation.

Alternative B – Proposed Action

Ground clearing activities associated with construction of the proposed pad, disposal pits, evaporation pond, and access road would result in vegetation disturbance; however, the areas of proposed surface disturbances are minimal in the context of the setting, and these impacts would be further minimized in accordance with the BLM Gold Book standards (BLM & USFS 2007). Equipment would be washed to prevent the spread of noxious weeds. Following construction, interim reclamation measures to be implemented include reduction of cut and fill slopes, redistribution of stockpiled topsoil, and reseeded of disturbed areas and stockpiles with a native grass seed mixture consistent with surrounding vegetation. Reclamation activities would include leveling, re-contouring, treating, backfilling, and re-seeding with a native grass seed mixture from a BIA/BLM -approved source. Erosion control measures would be installed as appropriate. Stockpiled topsoil would be redistributed and reseeded as recommended by the BIA.

Maintenance of the re-vegetated site would continue until such time that the stand is consistent with the surrounding undisturbed vegetation and the site is free of noxious weeds. The surface management agency would provide final inspection to deem the reclamation effort complete.

3.8 WILDLIFE - THREATENED, ENDANGERED, AND SPECIES OF CONCERN

The USFWS identifies six federally listed species occurring in Dunn County: whooping crane, Interior least tern, pallid sturgeon, black-footed ferret, gray wolf, and piping plover. In addition, two species are candidates for listing under the Endangered Species Act (ESA), the Dakota skipper and Sprague’s pipit (USFWS 2011). Although delisted in 2007, the bald eagle remains a species of special concern to the BIA and the Department of Interior for the region including

Dunn County. The golden eagle is not listed, but is also a species of concern for the region. Both the bald eagle and the golden eagle are protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The state of North Dakota, BIA, BLM, and Fort Berthold Reservation do not have a list of threatened or endangered species different from the federal government. Tribes and states may recognize additional species of concern; such lists are taken under advisement by federal agencies, but are not legally binding in the manner of the ESA. No federally listed species or species of concern were observed during field reconnaissance of the proposed site.

The habitat at the site supports a variety of grassland birds, small mammals and ungulates. During the field survey (i.e., primary observation), nine (9) resident and migratory bird species were observed. These were American crow (*Corvus brachyrhynchos*), black-capped chickadee (*Poecile atricapilla*), blue jay (*Cyanocitta cristata*), house sparrow (*Passer domesticus*), sharp-tailed grouse (*Tympanuchus phasianellus*), wild turkey (*Meleagris galliopavo*), prairie horned lark (*Eremophila alpestris*), red-tailed hawk (*Buteo jamaicensis*), and Western meadowlark (*Sturnella neglecta*). The majority of available information on birds focuses on game species. A review of the ND Game and Fish Department annual game bird reports for central and western North Dakota indicates that populations are healthy and stable-to-increasing in this region.

3.8.1 Mitigation

Alternative A – No Action

Alternative A would have no environmental impact on wildlife.

Alternative B – Proposed Action

The determination of potential impacts of the proposed project on threatened, endangered, and candidate species was based on species presence/absence and availability of potential habitat on or near the project area. The following determinations were assigned: no effect, not likely to adversely affect, likely to adversely affect, beneficial effect. Measures to avoid or mitigate potential future effects/impacts were identified unless either “no effect” or “beneficial effect” was determined.

Construction and operation of the oil field waste disposal facility is expected to have no effect on five (5) of the six (6) federally listed threatened or endangered species that have ranges that include the project area. No effects are expected for the pallid sturgeon, black-footed ferret, and gray wolf because these species do not occupy the site or vicinity, other than occasional transients. Though potential habitat for the Interior least tern and piping plover are associated with the shoreline of Lake Sakakawea two (2) miles away from the proposed project, there is no potential habitat for these species within or adjacent to the site; thus no effects are anticipated for these species. The site does not have appropriate habitat for stopovers by migrating whooping cranes, but because the project area and vicinity are within the migration flyway of this species, the proposed project may affect, but is not likely to adversely affect this species. Potential habitat for the candidate species Dakota skipper and Sprague's pipit is found on the site and vicinity; the proposed project may affect, but would not likely adversely affect these species. Only indirect effects would be likely, such as temporary displacement caused by noise or presence of humans. Specific comments and determinations for each special-status species are described below.

Whooping crane (*Grus americana*)

Status: Endangered

Determination: May affect, but not likely to adversely affect

Whooping cranes historically nested in North Dakota, but the whooping crane is currently only a migrant through North Dakota in the spring and fall. During migration, large shallow marshes with minimal to nonexistent emergent zones are preferred for roost sites and upland cropland and pastures adjacent to and usually within one kilometer (0.62 mile) are used for foraging (Howe 1989). Suitable roosting habitat (palustrine emergent seasonally flooded (PEMC) wetlands) for whooping cranes is not present on-site. However, the proposed project is located within the Central Flyway where 75 percent of confirmed whooping crane sightings have occurred and suitable cropland food sources can be found nearby. The lack of a cropland/wetland matrix habitat at the proposed site makes migratory stopovers by whooping cranes unlikely, though stopovers along the shoreline of Lake Sakakawea two (2) miles from the site are possible. In addition, the proposed site is located on upland prairie that is at a considerably higher elevation than the Lake Sakakawea shoreline. The topographic features of the area provide sight and sound buffers that prevent disturbance of birds utilizing the shoreline. Therefore, the project may affect, but is not likely to adversely affect the whooping crane.

Mitigation: Per the USFWS recommendations, if a whooping crane is sighted within 1 mile of a site or associated facilities while under construction, then all work would cease within 1 mile of that part of the project and the USFWS would be contacted immediately. In coordination with USFWS, work may resume after the bird(s) leave the area.

Interior least tern (*Sterna antillarum*)

Status: Endangered

Determination: No effect

Natural habitat for interior least terns in North Dakota includes islands, beaches and sandbars of the Missouri and Yellowstone rivers and along the shorelines of Lake Sakakawea and Lake Oahe (USFWS 2006). Interior least terns are generally restricted to larger meandering rivers with a broad floodplain, slow currents and greater sedimentation rates, which allow for the formation of suitable habitat (USFWS 2006). There is no existing suitable habitat within or adjacent to the site that would be appropriate for this species. The closest potential habitat for this species is two (2) miles away along the shoreline of Lake Sakakawea. In addition, the proposed site is located on upland prairie that is at a considerably higher elevation than the Lake Sakakawea shoreline. The topographic features of the area provide sight and sound buffers that prevent disturbance of shoreline-nesting birds. No impacts are anticipated.

Pallid sturgeon (*Scaphirhynchus albus*)

Status: Endangered

Determination: No effect

In North Dakota, pallid sturgeons are known primarily from the confluence of the Missouri and Yellowstone rivers. Pallid sturgeons prefer turbid, main stem river channels. The project area is at least two (2) miles from the Missouri River channel within Lake Sakakawea, which would be the closest potential habitat for this species. Activities associated with the construction, production, or reclamation of the proposed project are not anticipated to affect water quality in Lake Sakakawea. No impacts are anticipated.

Black-footed ferret (*Mustela nigripes*)

Status: Endangered

Determination: No effect

Black-footed ferrets historically occurred in this region of North Dakota, but mostly in the extreme southwest part of the state (USFWS 2006). Suitable habitat includes large black-tailed prairie dog (*Cynomys sp.*) colonies or complexes of colonies. The black-footed ferret is presumed extirpated from North Dakota because it has not been observed in the wild for more than 20 years. The proposed site does not have active or historic

black-tailed prairie dog colonies. No black-footed ferrets have been reintroduced to the region. No suitable habitat is available for this species. No impacts are anticipated.

Gray wolf (*Canis lupus*)

Status: Endangered

Determination: No effect

The most suitable habitat for the gray wolf in North Dakota is in the dense and contiguous forested areas in the north central and northeast parts of the state. There have been documented occurrences of gray wolves in south-central North Dakota (1985, 1990, and 1991) and confirmed reports of gray wolves in the Turtle Mountains of North Dakota (NDGF 2006). The site does not contain dense, contiguous forested areas required by the gray wolf and there have been no historical wolf sightings within or near the project area (USFWS 2006). No impacts are anticipated.

Piping plover (*Charadrius melodus*)

Status: Threatened

Determination: No effect

Critical habitat for the piping plover includes sparsely vegetated shoreline beaches, peninsulas, islands composed of sand, gravel, or shale, and their interface with the water bodies (USFWS 2006). The site is at least two (2) miles south of Lake Sakakawea which is designated critical habitat for the piping plover (USFWS 2008). Suitable habitat for piping plovers is not present within or adjacent to the site as the site and surrounding area are primarily grassland habitats. In addition, the proposed site is located on upland prairie that is at a considerably higher elevation than the Lake Sakakawea shoreline. The topographic features of the area provide sight and sound buffers that prevent disturbance of shoreline-nesting birds. No impacts are anticipated.

Dakota skipper (*Hesperia dacotae*)

Status: Candidate

Determination: May affect, but is not likely to adversely affect

North Dakota has a stable to decreasing population of Dakota skippers. In the western part of the state, its habitat includes ungrazed native prairie with little bluestem (*Schizachyrium scoparium*), needle and thread (*Stipa comata*), purple coneflower (*Echinacea sp.*) and high forb and grass diversity (USFWS 2006). The Dakota skipper has been documented within both McKenzie and Dunn counties (USFWS 2006). The site has potentially suitable habitat for the Dakota skipper. The proposed project will remove habitat for this species, but will have a limited effect on the landscape area, which is dominated by native prairie. The loss of habitat from the project will not significantly reduce Dakota skipper habitat. Temporary displacement may occur due to loss of habitat in some areas.

Mitigation: Disturbance of native vegetation will be minimized as much as possible during construction and potential operation. The site will be reclaimed with native plant species.

Sprague's Pipit (*Anthus spragueii*)

Status: Candidate

Determination: May affect, but is not likely to adversely affect

Sprague's pipits have been historically observed in this region of North Dakota. Suitable Sprague's pipit habitat includes ungrazed or lightly grazed mixed-grass prairie that is open and extensive with minimal woody cover nearby. The site had a considerable amount of woody cover interspersed with native prairie, but a large portion of the grassland was sparse and open, due to the poor soils. Temporary displacement may occur due to a loss of habitat in some areas.

Mitigation: Disturbance of native vegetation will be minimized as much as possible during construction and potential operation. The site will be reclaimed with native plant species.

Bald Eagle (*Haliaeetus leucocephalus*)

Status: Delisted in 2007; protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act

Determination: No effect

In North Dakota, bald eagle breeding pairs are currently found along the Missouri River south of the Garrison Dam, the Red River, and various locations in the central and eastern part of the state. Bald eagles did not historically nest in the western part of the state, though transient individuals have been observed in this region (USFWS 2006). Bald eagles prefer wooded cover along lakes and rivers. The project area is at least two (2) miles from Lake Sakakawea and does not contain suitable nesting/perching habitat, concentrated feeding areas, or other necessary habitat for the bald eagle. No impacts are anticipated.

Golden Eagle (*Aquila chrysaetos*)

Status: Unlisted; protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act

Determination: No effect

The golden eagle prefers habitat characterized by open prairie, plains, and forested areas. Usually, golden eagles can be found in proximity to badland cliffs that provide nesting habitat. No golden eagle nests were found within ½ mile of the project area, and the project area does not contain suitable nesting habitat for golden eagles. Eagle prey species may be present within and around the project area. No impacts are expected for this species as a result of the activities associated with the construction and operation of the project area.

Regarding other wildlife species within the site, construction activities that remove vegetation and disturb soil may cause direct mortality, displacement, or increased exposure to predators for less mobile species (i.e. small mammals, amphibians, reptiles, ground-nesting birds). More mobile species (i.e. medium to large mammals and birds) would be expected to disperse from the site during construction and re-enter the area following completion of construction activities. Long-term habitat loss would be minimal and restricted to the localized area of permanently altered vegetation. Disturbance to wildlife due to noise, increased traffic, and human presence may temporarily displace individuals during the construction period. However, these effects are not likely to cause long term declines in populations.

Minimal impacts are expected for migratory birds. The project area would not be heavily utilized or visited by migratory waterfowl which would instead utilize the shoreline or wetlands along Lake Sakakawea. The site is at a distance and high elevation from these areas. No nests for raptors or other migratory birds are known within the project area.

Habitat fragmentation and disturbance will be minimized by locating the disposal pits and evaporation pond on one pad, placing utility lines along the access road, and using existing roadways for the access road to the extent possible. The area of habitat disturbed will be minimized as much as is feasible, the area of interim reclamation will be maximized, and noise and traffic disturbance will be controlled as much as possible. Potential wildlife mortality at the site will be prevented by netting open pits, keeping the site free from debris, and fencing the pad area. Reclamation using native seed mixtures would re-establish wildlife habitat.

3.9 SOCIOECONOMICS

Socioeconomic conditions depend on the character, habits, and economic conditions of people living within the proposed project area. Business, employment, transportation, utilities, etc. are factors that affect the social climate of a community. Other factors that distinguish the social habits of one particular area from another include the geography, geology, and climate of the area. The Fort Berthold Reservation is home to six major communities, consisting of New Town, White Shield, Mandaree, Four Bears, Twin Buttes, and Parshall. These communities provide small business amenities such as restaurants, grocery stores, and gas stations; however, they lack the larger shopping centers that are typically found in larger cities of the region such as Minot and Bismarck. According to 2000 US Census data, educational/health/social services is the largest industry on the Reservation, followed by the entertainment, recreation, accommodation, food industry. The Four Bears Casino, Convenience Store, and Recreation Park are also major employers with over 320 employees, 90% of whom are tribal members. In addition, several industries are located on the Reservation, including Northrop Manufacturing, Mandaree Electrical Cooperative, Three Affiliated Tribes Lumber Construction Manufacturing Corporation, and Uniband.

Several paved state highways provide access to the Reservation including ND Highways 22 and 23 and Highway 1804. These highways provide access to larger communities such as Bismarck, Minot and Williston. Paved and gravel BIA route roadways serve as primary connector routes within the Reservation. In addition, networks of rural gravel roadways are located throughout Reservation boundaries providing access to residences, oil and gas developments, and agricultural land. Major commercial air service is provided out of Bismarck and Minot, with small-scale regional air service provided out of New Town and Williston.

3.9.1 Mitigation

Alternative A – No Action

Alternative A would have no environmental impact on socioeconomics.

Alternative B – Proposed Action

Alternative B is not anticipated to substantially impact the socioeconomic conditions in the project area, but it does have the potential to yield beneficial impacts on Tribal employment and income. Qualified individual tribal members may find employment through site development and increase their individual incomes. Additionally, the proposed action may result in indirect economic benefits to tribal business owners resulting from construction workers expending money on food, lodging, and other necessities. The increased traffic during construction may create more safety concerns for residents. TJD Consulting will follow Dunn County, BIA, and North Dakota Department of Transportation rules and regulations regarding rig moves and oversize/overweight loads on state and county roads used as haul roads in order to maintain safe driving conditions.

3.10 CULTURAL RESOURCES

Because the BIA will approve any easements, leases, and ROWs associated with this action, the BIA must comply with Section 106 of the National Historic Preservation Act (NHPA – Public Law 89-665, *et seq*) and its implementing regulations 36 CFR Part 800 - Protection of Historic Properties. To provide the information necessary for the BIA to comply, archaeologists from Metcalf Archaeological Consultants, Inc. (MAC) undertook a Class III cultural resource inventory of the proposed location of the pits and access road, including a proposed reroute. The original inventory did not include the entire 80-acre tract; only the 18 acres on which the pits will be located, along with the access road. This inventory covered a total of 34 acres that included the disposal pits and access road corridor. The addendum for a reroute of the access road included another 23.5 acres.

Historic properties, or cultural resources, on federal or tribal lands are protected by many laws, regulations and agreements. The National Historic Preservation Act of 1966 (16 USC 470 *et seq.*) at Section 106 requires, for any federal, federally assisted or federally licensed undertaking, that the federal agency take into account the effect of that undertaking on any district, site, building, structure or object that is included in the National Register of Historic Places (National Register) before the expenditure of any federal funds or the issuance of any federal license.

Cultural resources is a broad term encompassing sites, objects, or practices of archaeological, historical, cultural and religious significance. Eligibility criteria (36 CFR 60.6) include association with important events or people in our history, distinctive construction or artistic characteristics, and either a record of yielding or a potential to yield information important in prehistory or history. In practice, properties are generally not eligible for listing on the National Register if they lack diagnostic artifacts, subsurface remains or structural features, but those considered eligible are treated as though they were listed on the National Register, even when no formal nomination has been filed. This process of taking into account an undertaking's effect on historic properties is known as "Section 106 review," or more commonly as a cultural resource inventory.

The area of potential effect (APE) of any federal undertaking must also be evaluated for significance to Native Americans from a cultural and religious standpoint. Sites and practices may be eligible for protection under the American Indian Religious Freedom Act of 1978 (42 USC 1996). Sacred sites may be identified by a tribe or an authoritative individual (Executive Order 13007). Special protections are afforded to human remains, funerary objects, and objects of cultural patrimony under the Native American Graves Protection and Repatriation Act (NAGPRA, 25 USC 3001 et seq.).

Whatever the nature of the cultural resource addressed by a particular statute or tradition, implementing procedures invariably include consultation requirements at various stages of a federal undertaking. The MHA Nation has designated a Tribal Historic Preservation Officer (THPO) by Tribal Council resolution, whose office and functions are certified by the National Park Service. The THPO operates with the same authority exercised in most of the rest of North Dakota by the State Historic Preservation Officer (SHPO). Thus, BIA consults and corresponds with the THPO regarding cultural resources on all projects proposed within the exterior boundaries of the Fort Berthold Reservation.

Cultural resource inventories of this disposal site and access road were conducted by personnel of Metcalf Archaeological Consultants, Inc., using an intensive pedestrian methodology. For the

original disposal site project approximately 34 acres were inventoried on June 17, 2010 (Stine 2010a). Three archaeological sites were located or revisited that may possess the quality of integrity and meet at least one of the criteria (36 CFR 60.6) for inclusion on the National Register. As the lead federal agency, and as provided for in 36 CFR 800.5, on the basis of the information provided, BIA reached a determination of adverse effect for this undertaking. This determination was communicated to the THPO on July 29, 2010; however, the THPO did not respond within the allotted 30 day comment period. An alternate access road covering approximately 23.5 acres was inventoried on November 8, 2010 (Stine 2010b). One archaeological site was located that may possess the quality of integrity and meet at least one of the criteria (36 CFR 60.6) for inclusion on the National Register. As the lead federal agency, and as provided for in 36 CFR 800.5, on the basis of the information provided, BIA reached a determination of no historic properties affected for this undertaking, as the archaeological site would not be further impacted by this project. This determination was communicated to the THPO on December 16, 2010; however, the THPO did not respond within the allotted 30 day comment period.

3.10.1 Mitigation

Alternative A – No Action

Alternative A would have no environmental impact on cultural resources.

Alternative B – Proposed Action

Provided that sites 32DU112, 32DU1499, 32DU1464, and 32DU1542 are avoided and that construction of the pits and access road is limited to the area inventoried by Stine (2010a, 2010b), a finding of *No Historic Properties Affected* (36 CFR 800.4[d][1]) is recommended for this alternative. If the location moves or construction activities extend beyond the inventoried areas, the new area of disturbance will have to be inventoried to comply with Section 106 of NHPA before construction can proceed.

3.11 ENVIRONMENTAL JUSTICE

Per Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, measures must be taken to avoid disproportionately

high adverse impacts on minority or low-income communities. With 28% of its population living below the poverty line and the majority of its population of American Indian ancestry, the Fort Berthold Reservation contains both minority and low-income communities. The Fort Berthold Reservation and Dunn County have lower than statewide averages of per capita income and median household income. In addition, they have higher rates of individuals living below poverty level than the state average (Table 8). The Fort Berthold Reservation unemployment rate is also higher than the State average, where Dunn County has a slightly lower rate.

Table 8 Employment and Income

| Location | Per Capita Income | Median Household Income | Unemployment Rate | Individuals Living Below Poverty Level |
|---------------------------|-------------------|-------------------------|-------------------|----------------------------------------|
| Dunn County | \$14,624 | \$30,015 | 5.2% | 17.5% |
| Fort Berthold Reservation | \$10,291 | \$26,274 | 11.1% | 28.1% |
| Statewide | \$17,769 | \$34,604 | 4.6% | 11.9% |

Source: North Dakota Department of Commerce Economic Development and Finance

Population decline in rural areas of North Dakota has been a growing trend as individuals move toward metropolitan areas of the state, such as Bismarck and Fargo. While the Dunn County population has been slowly declining, the Fort Berthold Reservation has experienced a steady increase in population. American Indians are the majority population on the Fort Berthold Reservation and Dunn County but are the minority population in the state of North Dakota (Table 9).

Table 9 Demographic Trends

| Location | Population in 2000 | % of State Population | % Change 1999-2000 | Predominant Race | Predominant Minority |
|---------------------------|--------------------|-----------------------|--------------------|------------------------------|-------------------------|
| Dunn County | 3,600 | 0.56% | -1.1 | White | Native American (12.4%) |
| Fort Berthold Reservation | 5,915 | 0.92% | +9.8% | American Indian ¹ | White (26.9%) |
| Statewide | 642,200 | --- | +0.5% | White | American Indian (5%) |

Source: North Dakota Department of Human Services ¹According to the North Dakota Tourism Division, there are 10,400 enrolled members of the Three Affiliated Tribes.

3.11.1 Mitigation

Alternative A – No Action

Alternative A would have no environmental impact on environmental justice.

Alternative B – Proposed Action

Alternative B would not require relocation of homes or businesses, cause community disruptions, or cause disproportionately adverse impacts to members of the Three Affiliated Tribes. The proposed project has not been found to pose significant impacts to any other critical element (public health and safety, water, wetlands, wildlife, soils, or vegetation) within the human environment. The proposed project is not anticipated to result in disproportionately adverse impacts to minority or low-income populations. Employment opportunities related to development may lower the unemployment rate and increase the income levels on the Fort Berthold Reservation.

3.12 INFRASTRUCTURE AND UTILITIES

The Fort Berthold Reservation's infrastructure consists of roads, bridges and access points, utilities, and facilities for water, wastewater, and solid waste. Known utilities and infrastructure within the vicinity of the proposed project include both paved and gravel roadways as well as existing and proposed rural water distribution pipelines. The site location is approximately one (1) mile south of BIA Road 10 and four (4) miles west of BIA Road 12.

Safety hazards posed from increased traffic during the construction phase are anticipated to be short-term and minimal. It is anticipated that approximately 30 to 40 trips, over the course of several days, would be required to transport the associated equipment to the proposed location. Established load restrictions for state and BIA roadways would be followed and haul permits would be acquired as appropriate.

3.12.1 Mitigation

Alternative A – No Action

Alternative A would have no environmental impact on infrastructure and utilities.

Alternative B – Proposed Action

Alternative B would require improvements to existing roadways, as well as construction of minor new roadway segments. TJD Consulting will follow Dunn County, BIA, and North Dakota Department of Transportation rules and regulations regarding rig moves and oversize/overweight loads on state and county roads used as haul roads in order to maintain safe driving conditions. All contractors are required to permit their oversize/overweight loads through these entities. TJD Consulting contractors will be required to adhere to all local, county, and state regulations and ordinances regarding rig moves, oversize/overweight loads, and frost restrictions.

3.13 PUBLIC HEALTH AND SAFETY

Health and safety concerns include pit access and traffic hazards associated with construction equipment and delivery trucks.

3.13.1 Mitigation

Alternative A – No Action

Alternative A would have no environmental impact on public health and safety.

Alternative B – Proposed Action

Project design and operational precautions would minimize the likelihood of impacts from H₂S gases and hazardous materials, as described below. It is unlikely that the proposed action would result in release of H₂S at dangerous concentrations; however, TJD Consulting will submit H₂S Contingency Plans to the BLM. This plan establishes safety measures to be implemented throughout the operational process to prevent accidental release of H₂S into the atmosphere. The Contingency Plan is designed to protect persons living and/or working within 3,000 feet of the site and include emergency response procedures and safety precautions to minimize the potential for an H₂S gas leak.

The EPA specifies chemical reporting requirements under the Superfund Amendments and Reauthorization Act of 1986, as amended. No materials used or generated by this project for

production, use, storage, transport, or disposal are on either the Superfund list or on the EPA's list of extremely hazardous substances in 40 CFR 355.

The Spill Prevention, Control, and Countermeasure (SPCC) rule includes requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires specific facilities to prepare, amend, and implement SPCC Plans. An SPCC Plan would need to be submitted to the EPA prior to receiving any waste materials. Design considerations being implemented to contain potential spills on site include constructing a two-foot high berm around the pad exterior as a precautionary measure against spills, implementing BMPs to minimize wind and water erosion of soil resources.

3.14 CUMULATIVE IMPACTS

Cumulative impacts result from the incremental consequences of an action "when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7). Effects of an action may be minor when evaluated in an individual context, but these effects can add to other disturbances and collectively may lead to a measureable environmental change. By evaluating the impacts of the proposed action with the effects of other actions, the relative contribution of the proposed action to a projected cumulative impact can be estimated.

3.14.1 Past, Present, and Reasonably Foreseeable Actions

Oil and gas development in western North Dakota has occurred with varying intensity for the past 100 years. Gas development began in the area in 1909, and the first recorded oil well was drilled in 1920. North Dakota's oil production has boomed twice prior to the current boom; first in the 1950s, peaking in the 1960s, and again in the 1970s, peaking in the 1980s. North Dakota is currently experiencing its third oil boom, which has already far surpassed the previous booms in magnitude. This oil boom is occurring both within and outside the Fort Berthold Reservation. At the time this EA was written, there were approximately 352 active and/or proposed oil and gas wells within the Fort Berthold Reservation.

The Bakken Formation covers approximately 25,000 square miles beneath North Dakota, Montana, Saskatchewan, and Manitoba, with approximately two-thirds of the acreage beneath North Dakota. The Three Forks Formation lies beneath the Bakken. The North Dakota Department of Mineral Resources estimates that there are approximately 2 billion barrels of recoverable oil in each of these Formations and that there will be 30-40 remaining years of production, or more if technology improves.

It is reasonable to assume, based on the estimated availability of the oil and gas resource that further development will continue in the area for the next 30-40 years. It is also reasonable to assume that natural gas and oil gathering and/or transportation systems and disposal sites will be proposed and likely built in the future to facilitate the movement of products to market. Currently, natural gas gathering systems are being considered and/or proposed on the Fort Berthold Reservation, but as there are no approved projects; that information remains proprietary. Current impacts from oil and gas development in the immediate vicinity of the proposed project are still fairly dispersed, and BMPs would be implemented to minimize impacts of the proposed projects.

3.14.2 Cumulative Impact Assessment

The proposed project is not anticipated to directly impact other oil and gas projects. It is a reasonable generalization that, while oil and gas development proposals and projects vary based on the developer, well location, permit conditions, site constraints, and other factors, this proposed action is unique among others of its kind. However it is a reasonable generalization based on regulatory oversight by the BIA, BLM, NDIC, and other agencies as appropriate, that this proposed action is not unique in its attempts to avoid, minimize, or mitigate harm to the environment through the use of BMPs and site-specific environmental commitments. The following discussion addresses potential cumulative environmental impacts associated with the proposed project and other past, present, and reasonably foreseeable actions.

Geological Setting and Land Use- The proposed project, when added to past, present, or future oil and gas activity, would result in a cumulative impact to land use through the conversion of existing lands, such as agricultural, grazing or native prairie, into well pads, disposal sites, and

access roads. However, these facilities are generally selected to avoid sensitive land uses and to maintain the minimum impact footprint possible. The BIA views these developments to be temporary in nature as impacted areas would be restored to original conditions upon completion of oil and gas activity. When added to existing activity, no cumulative impacts are anticipated as these facilities have, or would, result in a temporary disturbance and would not permanently convert existing land uses. Therefore, cumulative land use impacts are not expected to result in a significant cumulative impact.

Air Quality- Air emissions related to construction and operation of past, present, or reasonably foreseeable oil and gas facilities when added to emissions resulting from the proposed project are anticipated to have a negligible cumulative impact. The Dunn Center AAQM Station emission levels are currently well below the Ambient Air Quality Standards, and it is anticipated that mobile air source emissions from truck traffic for the proposed project and other projects, as well as air emissions related to gas flaring, would be minor; therefore, the contribution of the proposed project to air emissions is not expected to be significant.

Wetlands, Wildlife, and Vegetation- The proposed project would result in a cumulative impact associated with habitat loss and fragmentation due to construction of disposal pits, access roads, and associated infrastructure. The North Dakota Parks and Recreation Department notes in its undated publication, "North Dakota Prairie: Our Natural Heritage" that approximately 80% of the state's native prairie has been lost to agriculture, with most of the remaining areas found in the arid west; ongoing oil and gas activity has the potential to threaten remaining native prairie resources. However, the proposed action and other similar actions are carefully planned to avoid or minimize these impacts. Multiple components of the process used by the BIA to evaluate and approve such actions, including biological and botanical surveys, on-site assessments with representatives from multiple agencies and entities, public and agency comment periods on this EA, and the use of BMPs and site-specific environmental commitments are in place to ensure that environmental impacts associated with construction, operation, and reclamation are minimized. The practice of utilizing existing roadways to the greatest extent practicable, as well as sharing access roads with future developments would minimize the potential impacts. The

proposed facility has also been sited to avoid sensitive areas such as surface water, wetlands, or riparian areas. In addition, the use of BMPs and continued reclamation are anticipated to minimize and mitigate disturbed habitat. Therefore, it is not anticipated that the proposed project, when added to past, present, and reasonably foreseeable oil and gas activity, would result in a significant cumulative impact.

Infrastructure and Utilities- The proposed action, along with other oil and gas facilities proposed in the Bakken and Three Forks Formations, requires infrastructure and utilities to provide needed resource inputs and accommodate outputs such as fresh water, power, site access, transportation for products to market, disposal for produced water and other waste materials. As with the proposed action, many other sites currently being proposed and/or built are positioned to make the best use of existing roads and to minimize the construction of new roads; however, some length of new access roads are commonly associated with new facilities. Facilities have been positioned in close proximity to existing roadways wherever possible to minimize the extent of access road impacts in the immediate area. Additionally, existing two-track roadways have been utilized wherever possible to minimize impacts to the surrounding landscape. The contribution of the proposed project and other projects to stress on local roadways used for hauling materials may result in a cumulative impact to local roadways. However, abiding by permitting requirements and roadway restrictions with the jurisdictional entities are anticipated to offset any cumulative impact that may result from the proposed project and other past, present, or future projects.

The proposed action has been planned to avoid impacts to resources such as wetlands, floodplains, surface water, cultural resources, and threatened and endangered species. Unavoidable impacts to these or other resources would be minimized and/or mitigated in accordance with applicable regulations. No significant cumulative impacts are reasonably foreseen from existing or proposed activities.

3.15 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Potential resource commitments include acreage devoted to disposal of cuttings, soil lost through wind and water erosion, cultural resources inadvertently destroyed, wildlife killed during earth-

moving operations or in collisions with vehicles, and energy expended during construction and operation. None of these impacts are expected to be significant.

3.16 PERMITS

Because this facility will serve a number of oil production facilities in the surrounding area and not just a single facility, the BIA requested that BLM, Environmental Protection Agency (EPA) , the NDHC, and NDIC be contacted to determine what permits will be required. Between July 27 and August 15, 2001, Kimball Banks of MAC called the Dickenson Office of BLM, both the Tribal Assistance Program and the Office of Solid Waste in EPA Region VIII, the Solid Waste Management Division of the North Dakota Department of Health, and the Oil & Gas Division of the North Dakota Industrial Commission. He also contacted the TAT Tribal EPA.

The BLM stated that it permits single leases; that if the facility is associated with a single lease, it would fall under their regulations. Since the Danks facility would be regional and not associated with a single, specific lease, BLM had no authority.

EPA stated that they would become involved if an environmental impact statement was required or if there was a violation of the Clean Water Act.

The NDDH and the NDIC stated they had no regulatory authority on Indian lands although the North Dakota Industrial Commission stated that they would issue a permit if requested since they permit such facilities off the reservation.

The TAT Tribal EPA will permit the project. The TAT Tribal Council made that determination at a meeting on October 6, 2011, and informed Marvin Danks of TJD Consulting of that decision.

TJD Consulting will be required to acquire the following permits prior to construction:

- TAT Tribal EPA permit
- Section 10 Permit - United States Army Corps of Engineers

- Stormwater Pollution Prevention Plan (SWPPP)-The rule requires specific facilities to prepare, amend, and implement SWPPPs.

3.17 ENVIRONMENTAL COMMITMENTS

TJD Consulting has made the following environmental commitments:

- Topsoil would be segregated and stored on-site to be used in the reclamation process. All disturbed areas would be re-contoured to original elevations as part of the reclamation process.
- BMPs specified in the BLM Gold Book would be implemented to minimize wind and water erosion of soils. Soil stockpiles would be positioned to help divert runoff around the site and seeded with a native grass mixture.
- The disposal pits, evaporation pond and access roads would be located to avoid surface waters. The proposed project would be constructed such that stream channels or drainage patterns are not altered.
- The disposal pits and evaporation pond would be located away from and areas of shallow ground water. Both would have a primary geomembrane liner and a secondary compacted clay liner to prevent potential leaks. A leak detection system would be installed. All spills or leaks of chemicals and other pollutants would be reported to TAT EPA, BIA and EPA. The procedures of TAT EPA and/or BIA would be followed to contain leaks or spills, depending upon which is more stringent.
- Wetlands and riparian areas would be avoided.
- Disturbed vegetation would be re-seeded in kind upon completion of the project and a noxious weed management plan would be implemented. The re-seeded site would be maintained until such time that the vegetation is consistent with surrounding undisturbed areas and the site is free of noxious weeds. Seed would be obtained from a BIA-approved source. TJD Consulting would wash equipment used on BIA projects prior to the start of construction to prevent the spread of noxious weeds.
- Sites 32DU112, 32DU1499, 32DU1464, and 32DU1542 would be avoided during the construction of the facility and access roads. If they cannot be avoided their eligibility to the NRHP would be evaluated in consultation with the BIA and THPO. If cultural

resources were discovered during construction or operation, work would immediately be stopped, the affected site secured, and BIA and THPO notified. In the event of a discovery, work would not resume until written authorization to proceed has been received from the BIA and the THPO.

- Access roads would be located at least seventy-five feet away from identified cultural resources. The boundaries of these 75-foot "exclusion zones" would be pin-flagged or fenced as an extra measure to ensure that inadvertent impacts to cultural resources are avoided.
- Project workers would be prohibited from collecting artifacts or disturbing cultural resources in any area under any circumstances.
- TJD Consulting would require all contractors working for the company to adhere to all local, county, and State regulations and ordinances regarding oversized or overweight loads, and frost law restrictions.
- Prior to construction, TJD Consulting would coordinate with the Fort Berthold Water Authority Director to ensure minimization of impacts to existing water distribution pipelines.
- Utility modifications would be identified during design and coordinated with the appropriate utility company.
- Disposal areas would be properly fenced to prevent human or animal access.
- Established load restrictions for state and BIA roadways would be followed and haul permits would be acquired as appropriate.
- Suitable mufflers would be put on all internal combustion engines and certain compressor components to mitigate noise levels.
- Associated facilities would be painted in colors to allow them to blend in better with the natural background color of the surrounding landscape.
- BMPs specified in the BLM Gold Book would be implemented to reduce environmental impacts during construction, operation, and maintenance.
- Pad corners would be rounded where applicable to lessen disturbance impacts.
- The disposal pits and evaporation pond would be fenced.

- If a whooping crane is sighted within one-mile of the site or associated facilities while it is under construction, all work would cease in that part of the project within one mile of the sighting. USFWS would be contacted immediately. In coordination with USFWS, work would only resume after the bird(s) have left the area.
- All construction activities would begin before February 1 and after July 15 to avoid impacts to migratory birds during the breeding/nesting season. Areas scheduled for spring construction would be mowed during the prior fall season to reduce impacts to potential nesting habitat for migratory birds. Pre-construction surveys for migratory birds or their nests would be conducted within five days prior to the initiation of all construction activities scheduled for spring. In addition, if any deceased migratory bird is found on-site during construction, construction activities would cease and the USFWS notified for advice on how to proceed.
- If a bald or golden eagle or eagle nest is sighted within 0.5 miles of the project area, construction activities would cease and the USFWS notified for advice on how to proceed.
- Wire mesh or grate covers would be placed over barrels positioned under valves and spigots to collect dripped oil.
- Netting with a maximum mesh size of 1.5 inches would be used to keep birds and other small animals out of disposal pits and the evaporation pond.
- Access roads would be fenced and cattle guards placed at necessary locations to protect livestock.
- Culverts would be placed along access roads to promote the natural flow through drainage ways.
- Signage for possible hazardous intersections would be placed along access roads in appropriate locations.
- Cut and fill slopes would be reseeded with a native grass mix to assist in preventing erosion and soil movement.
- Any additional development or activity associated with the construction, operation, and maintenance of the facility not disclosed and/or addressed herein would require additional analysis under NEPA.

- TAT EPA, BIA, EPA, and BLM would be allowed both random and periodic access to the facility records for wastes received and monitoring well sampling and testing data, including background data on water quality.

4.0 Preparers and Agency Coordination

4.1 INTRODUCTION

This chapter identifies the names and qualifications of the principal people contributing information to this EA. In accordance with Part 1502.6 of the CEQ regulations for implementing the NEPA, the efforts of an interdisciplinary team comprising technicians and experts in various fields were required to accomplish this study. This chapter also provides information about consultation and coordination efforts with agencies and interested parties, which has been ongoing throughout the development of this EA.

4.2 PREPARERS

Wenck Associates, Inc. prepared the draft of the EA under a contractual agreement with Metcalf Archaeological Consultants, Inc. on behalf of TJD Consulting. MAC completed the final. The list of individuals with the primary responsibility for conducting this study, preparing the documentation, and providing technical reviews is contained in Table 10.

Table 10 Preparers

| Affiliation | Name | Title | Project Role |
|--------------------------|-----------------|----------------------------------|-----------------------------------------------------------------------------------|
| Bureau of Indian Affairs | Marilyn Bercier | Regional Environmental Scientist | Review of Draft EA and Recommendation to Regional Director regarding FONSI or EIS |
| | Mark Herman | Environmental Engineer | |
| TJD Consulting | Marvin Danks | Owner | Project development and document review |
| | Ted Danks | Operator | |
| Wenck Associates | Bill Suess | Environmental Scientist | Impact assessment and principal author |
| | John Schulz | Wildlife Biologist | Project coordination and quality control |
| | Sara Simmers | Natural Resource Specialist | Quality control/Quality Assurance |
| Metcalf Archaeology | Kimball Banks | Archaeologist | Cultural resources, project coordination, quality control, and client contact |
| Northern Engineering | George Coulombe | Surveyor | Site Plats |

4.3 AGENCY COORDINATION

An onsite visit occurred on November 15, 2010. Present were Jeff Desjarlis, Environmental Protection Specialist, Ft. Berthold Agency, BIA; John Schultz, Bill Suess, and Sara Simmers, Wenck Associates; Kimball Banks and Ed Stine, Metcalf Archaeological Consultants, Inc; and Marvin and Ted Danks of TJD Consulting. The participants discussed the site selection, project plans, and environmental compliance requirements.

To initiate communication and coordination, scoping letters were sent to tribal, federal, state, and local agencies and other interested parties on December 7, 2010. This scoping package included a brief description of the proposed project, as well as a location map. Pursuant to Section 102(2) (D) (IV) of the National Environmental Policy Act of 1969, a solicitation of views was requested to ensure that social, economic, and environmental effects were considered in the development of this project. Appendix F lists the recipients of these scoping letters.

At the conclusion of the 30-day comment period, which ended January 15, 2011, ten responses were received. These comments provide valuable insight into the evaluation of potential environmental impacts. The comments were referenced and incorporated where appropriate within the environmental impact categories addressed in this document. Appendix F contains the *Agency Scoping Responses* and is summarized in Table 11 in Appendix F.

4.4 PUBLIC INVOLVEMENT

Provided the BIA approves this document and determines that no significant impacts are anticipated to result from the proposed project, a FONSI will be issued. The FONSI is followed by a 30-day public appeal period. BIA will advertise the FONSI and public appeal period by posting notices in public locations throughout the Reservation. No construction activities may commence until the 30-day public appeal period has expired.

5.0 References and Acronyms

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5.2 ACRONYMS

| | |
|------------------|-------------------------------------------------|
| AAQM | Ambient Air Quality Monitoring |
| BIA | Bureau of Indian Affairs |
| BLM | Bureau of Land Management |
| BMP | Best Management Practices |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| CO | Carbon Monoxide |
| EA | Environmental Assessment |
| EIS | Environmental Impact Statement |
| EPA | Environmental Protection Agency |
| ESA | Endangered Species Act |
| F | Fahrenheit |
| FONSI | Finding of No Significant Impact |
| GPM | Gallons Per Minute |
| H ₂ S | Hydrogen Sulfide |
| MAC | Metcalf Archaeological Consultants, Inc. |
| NAAQS | National Ambient Air Quality Standards |
| ND | North Dakota |
| NDAAQ | North Dakota Ambient Air Quality |
| NDDA | North Dakota Department of Agriculture |
| NDDH | North Dakota Department of Health |
| NDIC | North Dakota Industrial Commission |
| NDSWC | North Dakota State Water Commission |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NO | Nitrogen Dioxide |
| NOAA | National Oceanic and Atmospheric Administration |
| NRCS | Natural Resource Conservation Service |

| | |
|-------|--------------------------------------------------|
| NRHP | National Register of Historic Places |
| O | Ozone |
| Pb | Lead |
| PEMC | Palustrine Emergent Seasonal Wetland |
| PM | Particulate Matter |
| ROW | Right-Of-Way |
| SO | Sulfur Dioxide |
| SPCC | Spill Prevention Containment and Countermeasures |
| SWPPP | Storm Water Pollution Prevention Plan |
| THPO | Tribal Historic Preservation Officer |
| USACE | United States Army Corps of Engineers |
| USFWS | United States Fish and Wildlife Service |



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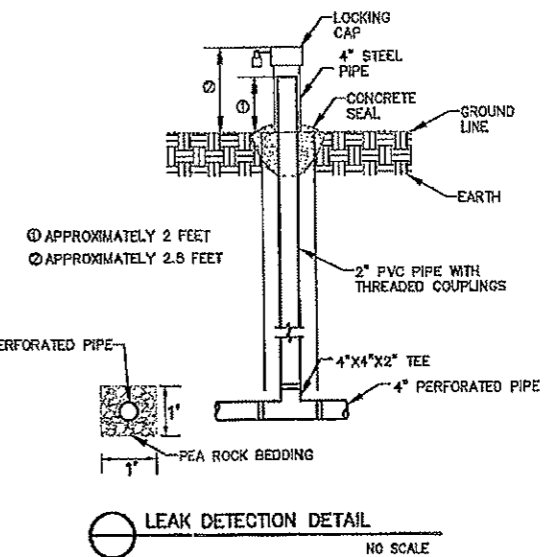
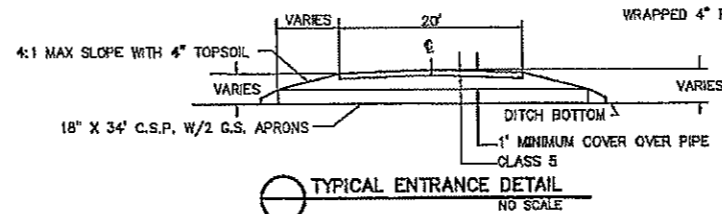
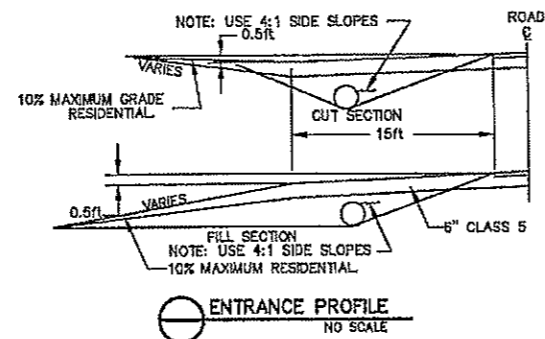
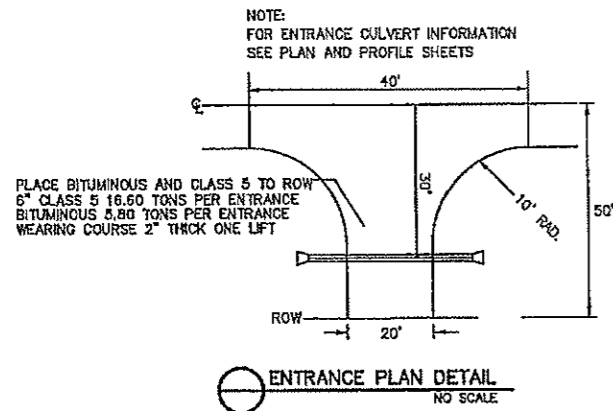
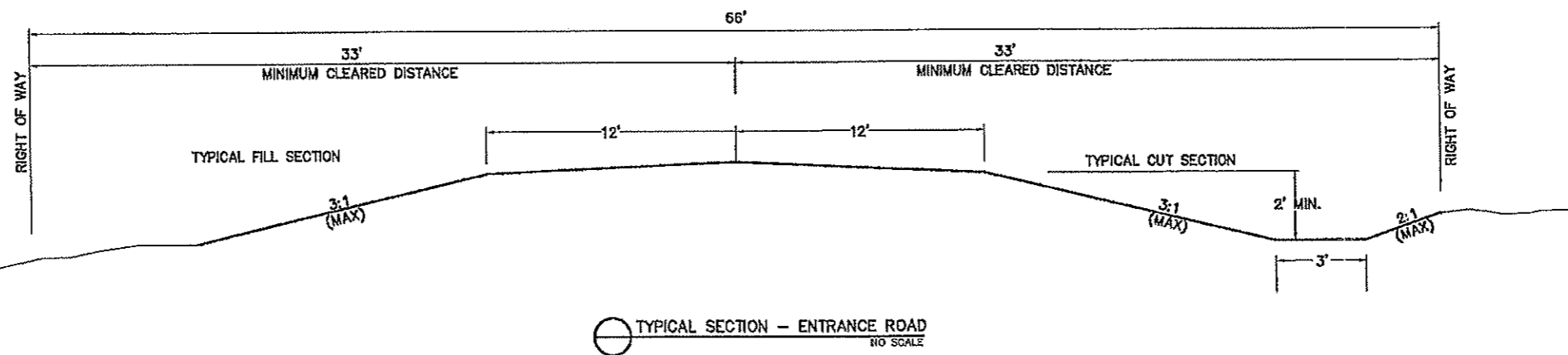
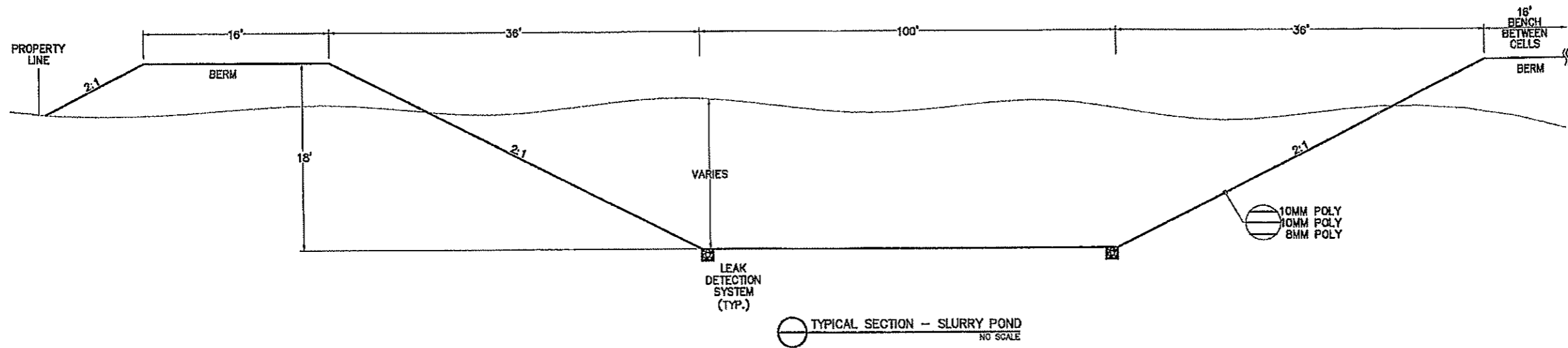
IN WITNESS WHEREOF, THE ENGINEER HAS HEREBY SET HIS HAND AND SEAL AT SIOUX FALLS, SOUTH DAKOTA, THIS 10TH DAY OF MAY, 2011.

John A. Ellick
JOHN A. ELICK
D.C. 151, 1502

PROFESSIONAL ENGINEERING
S. CONSULTING, INC.
207 4th Street NW, Bemisville, MN, 56007
Phone: 218-444-4860, Fax: 218-444-6042
Web: www.sconline.com

TED DANKS PROPERTY
ROAD ALIGNMENT
NORTH DAKOTA

JOB NO. 10-166
DATE 05-10-2011
SHEET NO.
1 OF 4



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THESE SHEETS THAT THIS PLAN, SPECIFICATION OR REPORT
WAS PREPARED BY AND OR UNDER MY DIRECT SUPERVISION
AND THAT I AM A LICENSED PROFESSIONAL ENGINEER
UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

John A. Kluwe

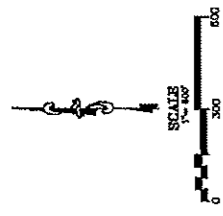
JOHN A. KLUWE
LIC. NO. 858

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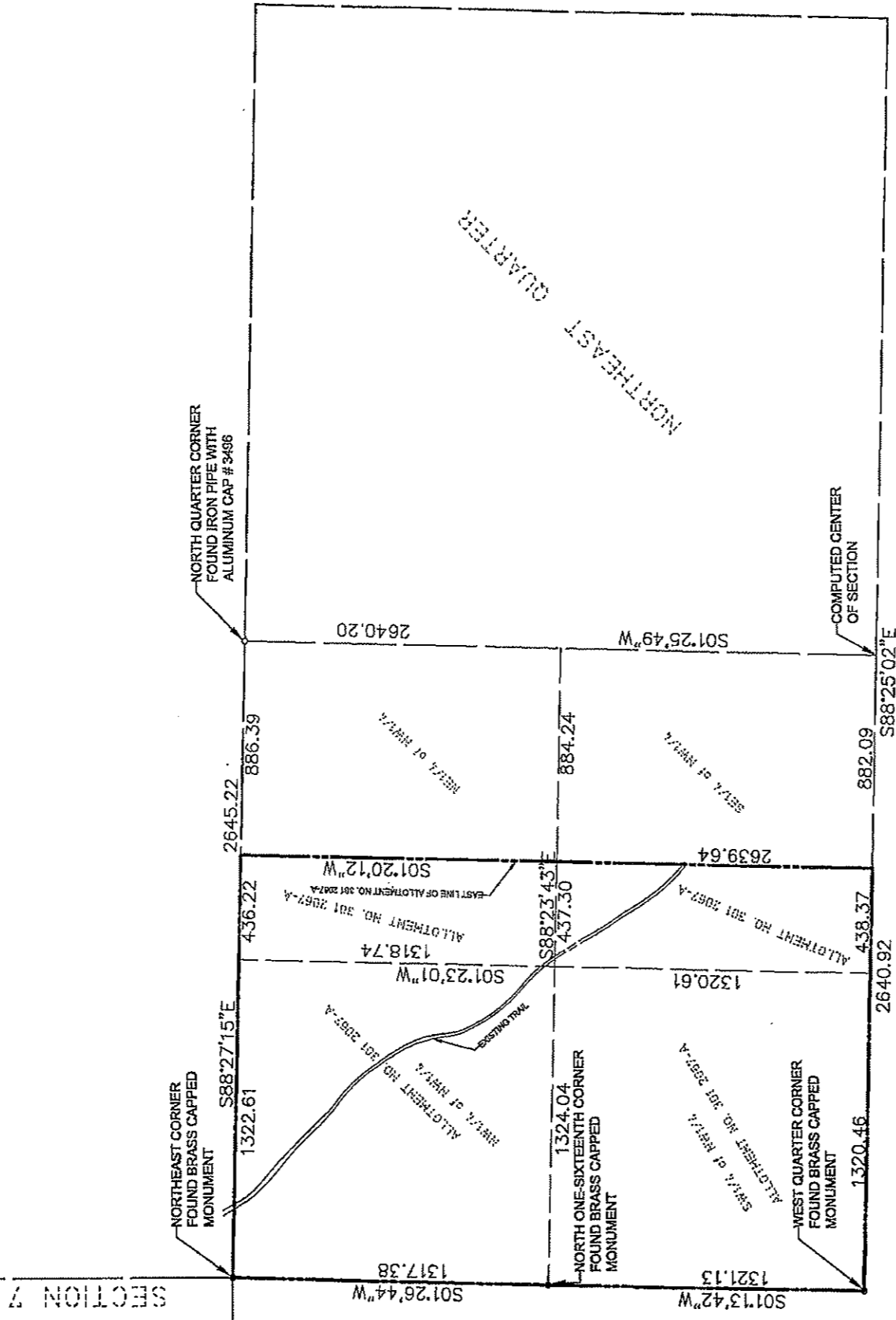
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THEODORE J. DANKS
ALLOTMENT NUMBER 301 2067-A
DUNN COUNTY, NORTH DAKOTA

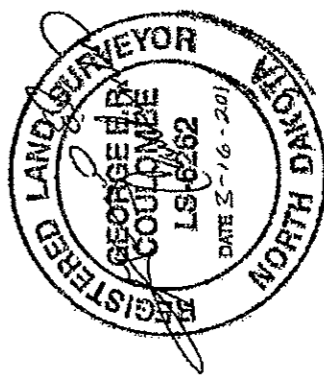


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SECTION 17, TOWNSHIP 149 NORTH, RANGE 92 WEST OF
THE 5TH PRINCIPAL MERIDIAN, DUNN COUNTY, NORTH DAKOTA.



BASIS OF BEARING:
NORTH DAKOTA STATE PLANE, NORTH ZONE
SCALE FACTOR = 1.0001373480



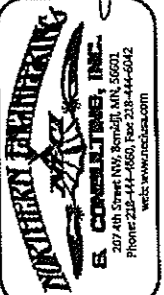
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- SIXTEENTH LINE
 - ===== PROPERTY LINE
 - SECTION LINE
 - QUARTER LINE

NOTE: All land corners are assumed unless otherwise noted.

Certificate of Authorization No. 28,263,900

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DATE: 05-16-2011
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1 OF 1

RESERVE PIT LOCATION PLAT
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SEC. 17, T149N, R92W
DUNN COUNTY, NORTH DAKOTA

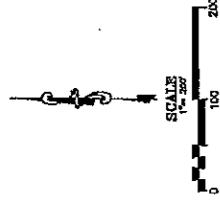


I, George H. Coulombe, Professional Land Surveyor, N.D. No. 6262, do hereby certify that this survey was shown hereon was made by me, or under my direct supervision and to the best of my knowledge and belief the same are true and correct to the best of my knowledge.
George H. Coulombe
GEORGE H. COULOMBE
D.C. REG. SURV.

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RESERVE PIT LAYOUT ONE

THEODORE J. DANKS
 ALLOTMENT NUMBER 301 2067-A
 DUNN COUNTY, NORTH DAKOTA



BASIS OF BEARING:
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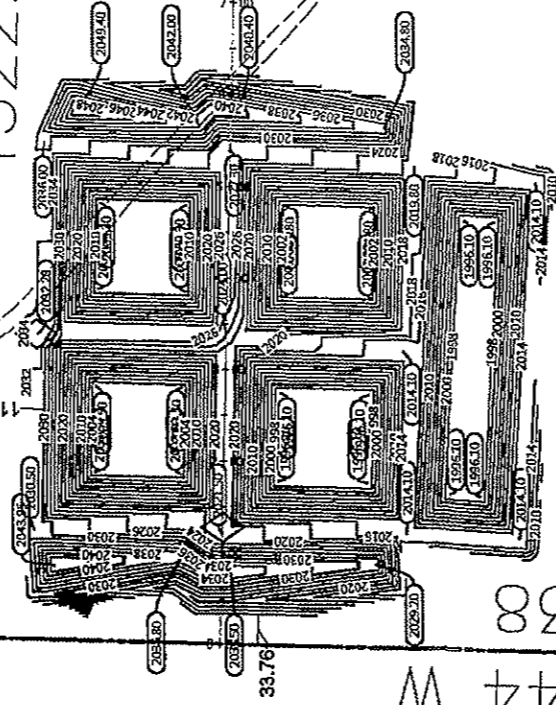
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NORTHEAST CORNER
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 MONUMENT

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1322.61

436.22



S01°26'44"W

1317.38

ALLOTMENT NO. 301 2067-A

S01°23'01"W

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ALLOTMENT NO. 301 2067-A
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 S01°20'12"W

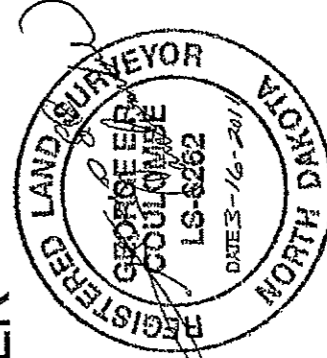
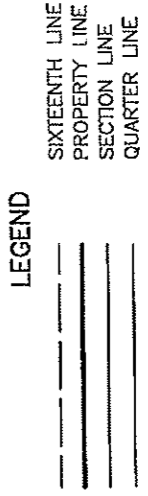
EXISTING TRAIL

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437.30

NORTH ONE-SIXTEENTH CORNER
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1324.04



NOTE: All land corners are assumed unless otherwise noted.

RESERVE PIT LOCATION PLAT
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 SEC. 17, T149N, R92W
 DUNN COUNTY, NORTH DAKOTA

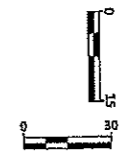
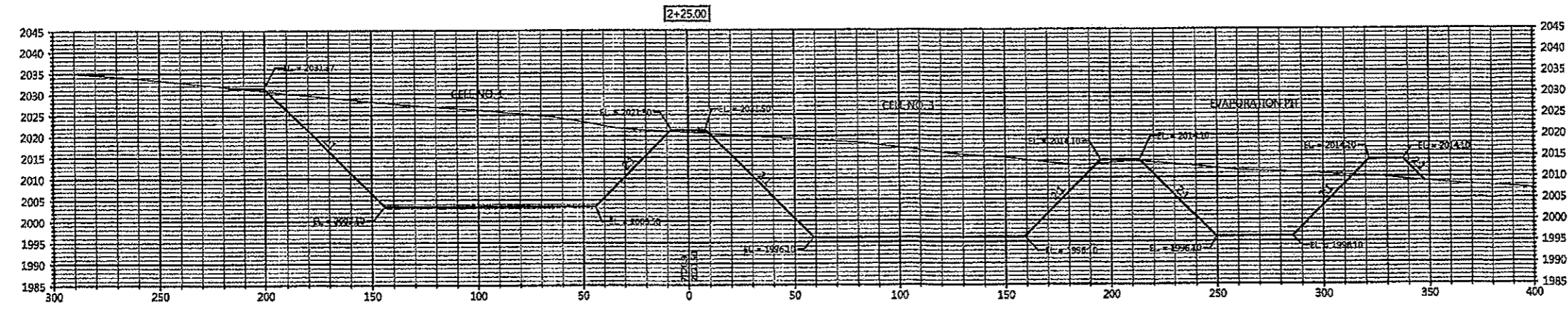
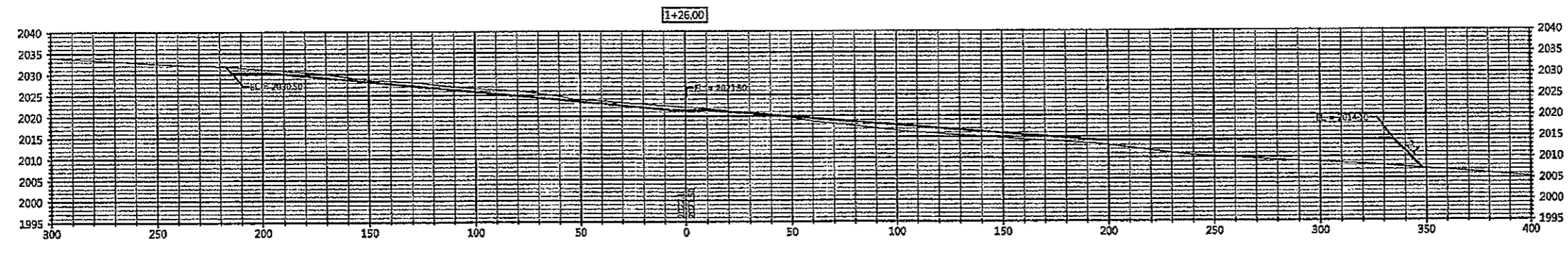
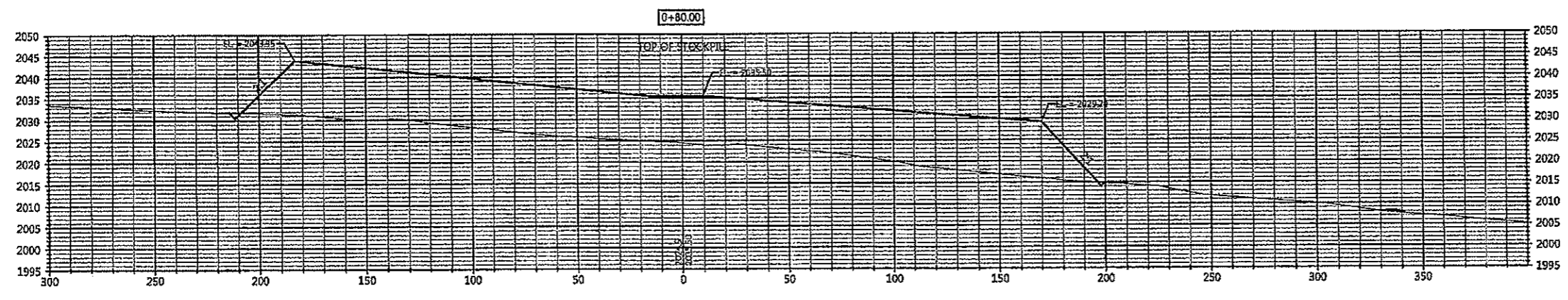
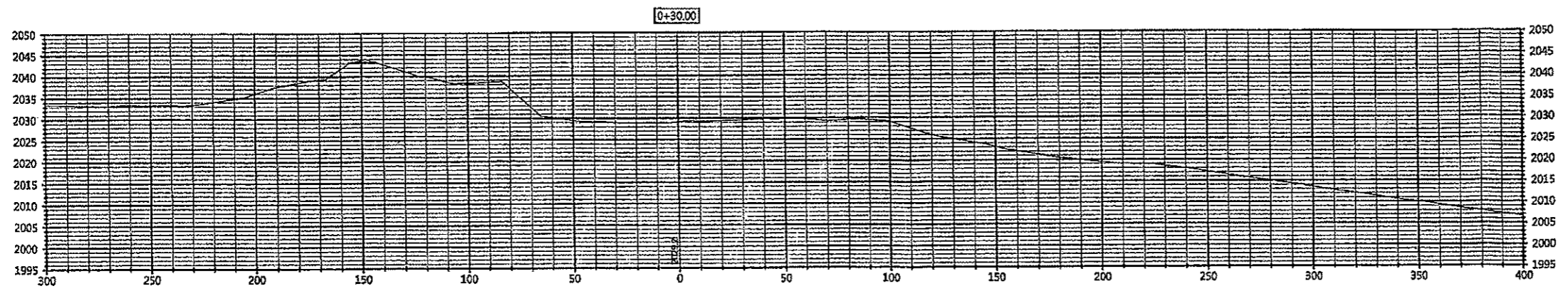
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SHEET NO.
 1 OF 1



I, George E. Coulombe, Professional Land Surveyor, N.D. No. LS-8262, do hereby certify that the survey plat shown herein was made by me or under my direct supervision and that I am a duly licensed and qualified surveyor in the State of North Dakota and that I am duly qualified to perform the same in accordance with the laws and regulations of the State of North Dakota and that I am duly qualified to perform the same in accordance with the laws and regulations of the State of North Dakota.

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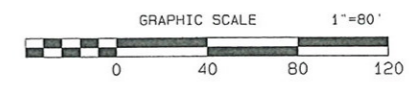
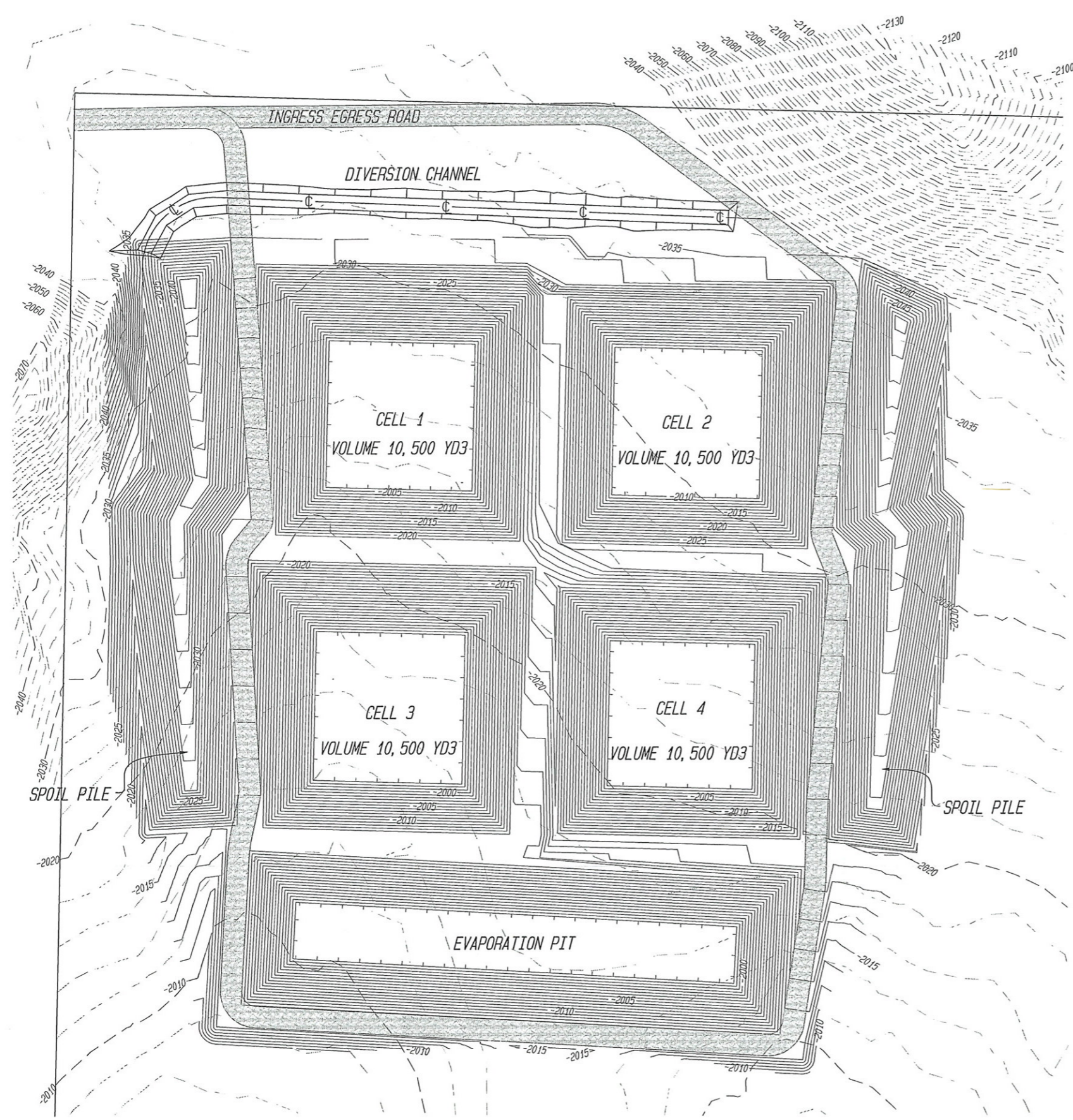
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

[Signature]
 JOHN A. SULLOCK
 LIC. NO. 988

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**TED DANKS PROPERTY
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 SHEET NO. 4 OF 4



NOTES
 SLURRY AND EVAPORATION PONDS 2:1 SIDE SLOPE
 POND FREE BOARD: SLURRY POND 2 FT EVAPORATION POND 3 FT
 DIVERSION CHANNEL DESIGN CAPACITY : 100 YEAR STORM EVENT
 16 FT TOP WIDTH ON ALL BERMS

DANKS OILFIELD DISPOSAL
PLAN VIEW

| | |
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| Date | _____ |
| Designed By: | DEW PECKES |
| Drawn By: | _____ |
| Checked By: | _____ |
| Approved By: | RYAN MATERS |



File No. _____
 Drawing No. _____
 Sheet 1 OF 1

OPERATION AND MAINTENANCE PLAN



Prepared For:

**Danks Non-Hazardous
Oil Field Waste Disposal Facility**

Prepared By:

BARTLETT & WEST

SERVICE. THE BARTLETT & WEST WAY.

September 2011

Operation and Maintenance Plan

Danks Non-Hazardous Oil Field Waste Disposal Facility

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1.0 Introduction/Facility Description

This Operation and Maintenance Plan describes the operational procedures and the administrative controls required for efficient, environmentally sound operation of the Danks Non-Hazardous Oil Field Waste Disposal Facility, hereby referred to as the Facility. This manual has been prepared in response to a request from the Bureau of Indian Affairs (BIA) that an operation and maintenance plan be included with the environmental assessment. The Three Affiliated Tribes EPA will permit the construction, operation, and maintenance of the facility.

The Facility is owned and operated by TDJ Consulting, LLC doing business as Danks Non-Hazardous Oil Field Waste Disposal Facility. The Facility is located on approximately 106.6 acres in the northwest quarter of Section 17, Township 149N, Range 92W, in Dunn County, North Dakota.

1.1 Site Description

1.1.1 Receiving Facilities

The receiving facility will consist a small building and gated entrance where each delivery will be logged and inspected by the traffic clerk. The receiving facility will provide instruction to drivers as to the location the material is to be temporarily unloaded prior to being placed in the slurry ponds.

Basic Components

The receiving facility shall consist of a scale, small building with climate control, outdoor lighting for inspecting deliveries, and a dock for ease of inspection. The facility will utilize commercial software to record and maintain data of delivered material.

Purpose

The purpose of this feature is to log and inspect material delivery, supply instruction to transporters and provide security for the facility site.

1.1.2 Slurry Ponds and Evaporation Ponds

The facility consists of four (4) slurry ponds equal in size with the dimensions of 172 feet by 172 feet by 18 feet in depth. The holding capacity of each slurry pond is approximately 6.57 acre-feet or 10,527 cubic yards assuming a fill depth of 16 feet and two feet of free board. Each slurry pond features a leachate collection system and sampling manhole to monitor the groundwater quality at the site.

The facility consists of one (1) evaporation pond with the dimension of 375 feet by 110 feet by 18 feet in depth. The holding capacity of the pond is approximately 7.95 acre-feet assuming 3 feet of freeboard. Outer dike slopes shall be sloped 2:1 (horizontal to vertical). The outer dike slopes shall prevent surface runoff from entering the pond. Inner dike slopes shall be sloped 2:1 (horizontal to vertical). The minimum top dike width shall be 16 feet to allow access to maintenance vehicles and to assure structural stability. The evaporation pond is fed by excess waste water that gravity flows via PVC piping from each of the slurry ponds and is designed for 100 percent retention.

Basic Components

Soil used to construct pond embankments shall provide an adequate foundation for the geomembrane liner. The soil shall be compacted at a water content that shall ensure structural stability, reduce hydraulic seepage, and reduce settling. Soils used in constructing pond bottom and dike cores will be relatively incompressible, have low permeability, and be free from organic material or trash. Outer dike slopes shall be sloped 2:1 (horizontal to vertical). The outer dike slopes shall prevent surface runoff from entering the ponds. Inner dike

slopes shall be sloped 2:1 (horizontal to vertical). The minimum top dike width shall be 16 feet to allow access to maintenance vehicles and to assure structural stability.

The primary liner will be a polyvinyl chloride or polypropylene 60 mils thick geomembrane liner. The outer edges of the geomembrane line will be extended 10 feet past the upper edge of the slurry ponds. A 30 inch deep trench will be constructed 5 feet beyond the outer perimeter of the slurry pond and the geomembrane will be placed in the trench, backfilled and compacted. This procedure will anchor the geomembrane on the sloped embankments of the slurry pond. A minimum of 18 inches of clay soil will be placed over the geomembrane to prevent damage. Secondary containment for the geomembrane liner shall consist of the following:

- The specifications for compacted clay liners shall be based upon the results of a preliminary testing and shall contain the type of material, optimum and acceptable range in water content, acceptable range for compaction, and maximum allowable particle size. Compacted clay liners used to protect groundwater quality shall meet the following criteria:
 - A 36-inch compacted clay liner with a maximum permeability of 1×10^{-7} cm/sec.
 - The tests for water content and density shall be taken during the placement of each lift of the liner. The soil shall be compacted at a water content that shall ensure structural stability, reduce hydraulic seepage, and reduce settling. Optimum moisture conditions will be maintained during construction of the clay liner. A total minimum liner thickness of three (3) feet shall be provided and shall be constructed with maximum lifts of one-half (0.5) foot. Permeability testing of undisturbed core samples from the in-place seal shall be conducted. One (1) test shall be conducted per acre per lift. For core sampling of the in-place liner, one (1) core of the completed liner will be tested per acre.

1.1.3 Monitoring Wells

Monitoring wells will be placed upstream and downstream of the facility to monitor ground water levels and quality. The monitoring wells will be a 3 inches in diameter, screened and gravel packed well with locking lids to prevent tampering. Monitoring well construction and monitoring activities will meet or exceed the standards in Groundwater Monitoring Well Construction Requirements, North Dakota Administrative Code Chapter 33-18-02 or any standards or requirements specified by TAT EPA.

1.1.4 Leachate Collection System

Basic Components

The leachate collection system is an integral component of the sludge ponds operation to determine the effectiveness of the slurry ponds to contain the disposed material. The system will provide a conduit for leakage through the geomembrane, if any, to be collected, tested and determine a rate of leakage. By determining these factors, the facility can determine if repair to the geomembrane is required. The leachate collection system design criteria are as follows:

- The drainage layer between the primary and secondary liners will have a minimum hydraulic transmissivity of one (1) gpm/foot. A durable granular filter blanket will be used with a minimum thickness of four (4) inches. The drainage layer shall have a minimum grade of 0.4 percent.
- A wrapped 4" perforated or slotted collection line will be installed and extended parallel along the toe of the embankment. No portion of the drainage layer will be more than 100 feet from a collection line.
- The collection lines shall drain to a sump enclosed by the secondary liner. The sump shall be designed so that the maximum high liquid level during operating conditions is below the invert of any collection line discharging to the sump. The sump will be large enough to allow the pump

installed to operate with a minimum pumping time of two (2) minutes between the automatic start and stop levels. A high level alarm will also be installed.

- The recovery pump in the sump will be self-priming and capable of pumping a volume at least four (4) times the failure rate of flow designated in the permit for the lagoon. The pump shall have a totalizing hour meter that records total time of operation. Monitoring requirements are as follows:
 - High level alarms shall be continuously monitored. The totalizing hour meters shall be read weekly.
 - If the calculated recovery rate exceeds the allowable for the slurry pond reporting and required repair actions are as follows:
 - If the recovery rate exceeds 400 gpd/acre for any slurry pond as delineated by the recovery system, the permittee shall notify the regulatory agency within seven (7) days. Repair of the primary liner will be scheduled within 12 months.
 - If the recovery rate exceeds 800 gpd/acre for any slurry pond as delineated by the recovery system, the regulatory agency shall be notified within 48 hours. Repair of the primary liner will be scheduled within 60 days.
 - If the high alarm level is reached, the regulatory agency will be notified immediately. Repairs will be initiated immediately.

Purpose

The primary purpose of the monitor wells and leachate collection system is to monitor water quality and determine rate of leakage, if any, from the slurry ponds.

1.1.5 Miscellaneous Site Components

The facility grounds shall be surfaced with gravel and/or scoria and maintained to prevent the growth of unwanted vegetation. Access to the facility is provided by an approximate 1.15 mile entrance road with a crowned road top. The typical cross section of the entrance road consists of a top width of 24 feet top, 3:1 side slope and a 3 foot bottom width ditch section. The roads shall be designed to accommodate access of tractor trailer units and sloped to promote positive drainage.

The following sign(s) shall be posted at the entrance of the Facility:

- The sign will be 36" X 52", with red lettering and a white background.
- The name of the facility, permit number, and the name and telephone number of a local contact person.
- The days and hours the facility is open for access.
- The types of waste **not** allowed to be received or handled in the facility.
- Any restrictions against trespassing, vandalism, littering, burning, or disposal of unsuitable or unacceptable wastes. (Local ordinances are often beneficial in enforcing appropriate restrictions and such ordinances should be posted on the sign along with any fines for such improper conduct.)
- The following statement, or some similar statement:
 - **"All loads of waste brought to this special waste facility shall be properly loaded, contained, and, if necessary, covered to prevent any scattering, spillage, or leakage of waste during transport. Where spillage does occur, the material shall be picked up immediately by the collector or transporter and returned to the vehicle or container and the area cleaned.**

1.2 Objective

The objective of the Operation and Maintenance Plan is to establish guidelines for use by Facility personnel in daily operation, routine inspection, maintenance, and sampling/monitoring. A Closure/Post-Closure Care Plan and Contingency Action Plan (see Sections 8 and 7 respectively) have been prepared for this site, which identify and closure and post-closure care procedures and a range of possible emergencies or noncompliance issues that could occur and the procedures to be followed in response.

Copies of the this Operation and Maintenance Plan will be kept in the Facility supervisor's office at all times for reference by on-site and other operation personnel and local and state inspection personnel. Reporting activities are summarized in subsequent sections of this report.

2.0 Facility Development Timetable

The timetable for Facility development is based upon the projected rate of waste acceptance and disposal and the volume capacity of each disposal cell. The rate of disposal is dependent upon the level of activity of oil and gas exploration. The development of the Bakken Oil Field continues to grow and is at a pace to break all-time permitting and drilling records in the State of North Dakota. The Facility is expecting the demand for disposal capacity to grow as development continues.

3.0 Facility Operating Procedures

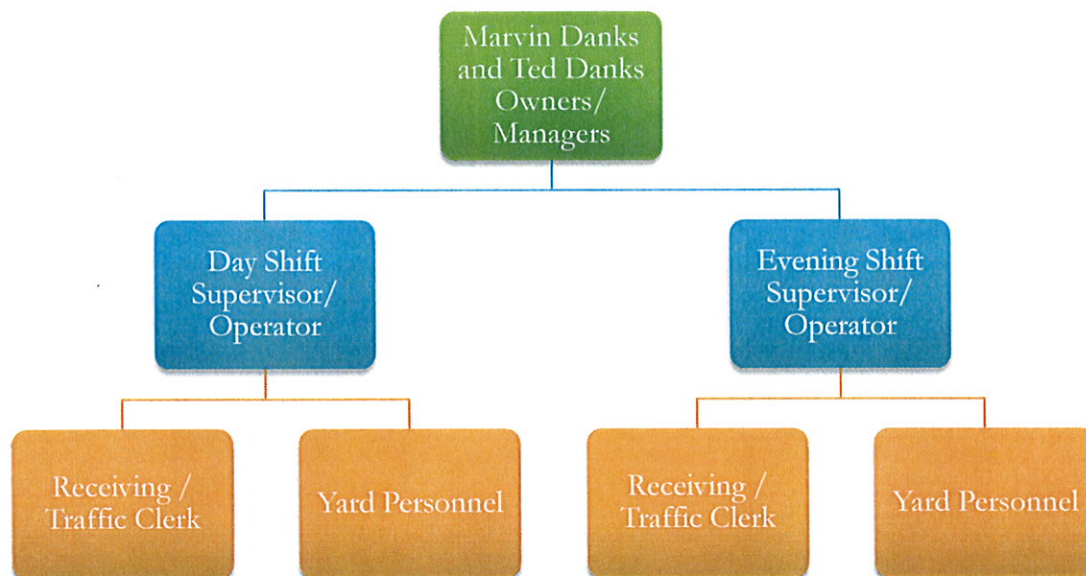
This chapter describes the operation procedures required for controlled filling of disposal areas of the Facility. A separate Contingency Action Plan has been prepared which lists corrective actions that should be implemented in the event of emergency; inspection; or monitoring-triggered contingencies, or non-compliances.

3.1 Operator

The on-shift supervisor/operator is responsible for all routine tasks required to ensure compliance with established regulations and functional operation of the disposal facility.

3.1.1 Organizational Structure

The organizational structure of the Oil Field Waste Disposal Facility is as follows:



3.1.2 Staffing

The facility will be open for acceptance of approved waste material for sixteen (16) hours per day, six (6) per week. The work schedule will consist of two (2) eight (8) hour shifts with the day shift beginning a 6:00AM to 2:00 PM and the evening shift beginning at 2:00 PM until 10:00 PM.

Staffing of the facility during business hours will consist of a one (1) Shift Supervisor/Operator, one (1) Receiving/Traffic Clerk, and one (1) yard worker.

3.1.3 Qualifications and Training

During operation of the facility, a certified operator will be on site at all times. The North Dakota Department of Health Landfill Operator Certification program and requirements will be utilized and provide the guidelines for certification.

All staff will be required to maintain the minimum continuing education credits required to keep their licenses current.

All Facility personnel should be trained to operate the Facility properly and to deal effectively with problems at the Facility including:

- Using, inspecting, repairing and replacing Facility emergency and monitoring equipment.
- Activating communications and alarm systems.
- Responding to emergencies.

- Progression of the landfill development

The Facility supervisor on an annual basis should review the adequacy of personnel training and familiarity with the Facility Emergency Response and Contingency Action Plans, with training updated as the Facility is modified.

3.2 Filing System

3.2.1 Location and Access

The owner or operator will maintain records of demonstrations, inspections, monitoring results, design documents, plans, operational procedures, notices, cost estimates and financial assurance documentation in a central location. In addition, the owners or operators will maintain records on the categories and weights or volumes of solid waste received at the facility.

The regulatory agency will have access to review and inspect facility logs and records upon request.

3.2.2 Records

Incoming Waste Sampling

The owner will rigorously test delivered waste material by new customers for unauthorized constituents until such a time the owner feels confident the customer is fully aware of allowable wastes accepted. The owner will randomly test delivered waste material of reoccurring customers that have demonstrated the ability to comply with the facility material acceptance rules. All emergency and random deliveries of waste material will be tested. Inspection reports will include:

- Date and time wastes were received during the inspection
- Names of the transporter and the driver
- Source of the wastes vehicle identification numbers, and
- All observations made by the inspector

Facility Sampling and Testing

The results of any monitoring activity shall be sampled, recorded, and maintained for a period of not less than three (3) years. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the regulatory agency. Any records of monitoring activities and results shall include for all samples:

- Date, exact place, and time of sampling.
- Date analyses were performed.
- Who performed the analyses.
- Analytical techniques or methods utilized.
- Results of such analysis.

3.3 Report System

3.3.1 Operator (internal)

The traffic clerk will submit the delivery log of accepted material at the end of each shift. The Shift Supervisor/Operator will review the delivery log for QA/QC and sign each submittal. The Shift Supervisors/Operators will also submit a weekly report of all maintenance activities performed.

All reports and logs will be routed to the owners for review and preparation of billings. The facility will prepare and enter into contracts with its customers for acceptance of disposal material.

3.3.2 Regulatory Agencies

The owner will submit lab results of disposal material tested and water quality analysis results on a quarterly basis.

3.4 Operating Equipment

The Facility will own and operate equipment adequate for the waste handling and processing needed. The Facility will be responsible for adequately training personnel to operate the equipment. Available equipment includes front-end loaders, scrapers, and bulldozers. Equipment may be rented on an as-needed basis.

3.5 Facility Access

The facility will be open for business 6:00 A.M. to 10:00 P.M., Monday through Saturday. Facility staff and customers on site to delivery approved waste material will be authorized to be within the confined boundaries of the facility. During the event of a closure, only facility staff will be allowed to enter the facility until such a time the disposal site is deemed safe to resume business as usual. The shift supervisor and managers will be the only facility staff that has access to the log books.

3.6 Waste Types Accepted

Authorized oil and gas exploration and production (E&P) wastes include but are not limited to the following (for complete list see Appendix A: Exempt and Non-Exempt Wastes):

- Produced water
- Drilling fluids
- Drill cuttings
- Well completion and stimulation products
- Wastes from production separators
- Gas plant dehydration wastes and
- Gas plant sweetening wastes

Unauthorized wastes include but are not limited to the following:

- Hazardous wastes, i.e., ignitable solvents, paints, fuels, corrosives (acids and alkalies), reactives and listed wastes.

3.7 Inclement Weather Operation

Facility operation should be adjusted as necessary to account for variable weather conditions anticipated at the Facility. This provides some flexibility in Facility operation during wet and inclement weather conditions. Short-term storage of uncompacted waste can occur in the Facility.

3.7.1 Wet Weather

Temporary berms and ditches will be provided to divert run-off from the working faces and from areas where vehicular traffic will be operated. Temporary access roads to the working face will be maintained to keep them passable to minimize operation disruptions due to periods of wet weather.

Waste haul trucks should not enter the lined cell if surface conditions cannot support the weight of the trucks. The site manager has the option to stop operation if weather conditions make normal operation impossible.

3.7.2 Cold Weather

The main difficulty encountered during cold weather is adequate Facility access. Winter operation will require snow removal on access roads and ramps, and on the active portion of the Facility. This should be provided by Facility equipment as required. Placement and compaction of the waste should be performed in a timely manner to avoid freezing of unloaded material. Snow removal will be required on the working face of the cell to avoid waste placement on top of snow. Any snow, which has come in contact with waste, will be kept within the lined area. The exothermic reaction of waste and water will aid in the placement and compaction of waste in cold weather. Placement of the waste during cold weather should be in thin layers of approximately 6 inches to allow for rapid compaction of the material.

In the fall of each year, Facility operators are to ensure that roadways, culverts, monitoring wells or other structures that could be hidden by snow are properly staked or otherwise identified.

3.7.3 Windy Weather

In windy conditions, the Facility shall be prepared to implement dust control measures to prevent dust generation. Such measures include applying water, operating at lower elevations in the active cell, and orienting operation to minimize the exposure of waste to the wind. The site manager has the option to stop operation if weather conditions so dictate.

3.8 Nuisance Control

General nuisance control procedures are described below.

3.8.1 Dust Control

Dust will be controlled by watering the surface and access roads when necessary, and by prompt establishment of vegetation over filled and covered cells. A water truck is available for watering access roads, active fill areas, and other area where dust may be generated. Gravel surfacing on Facility access roads may also control dust. Periodic sweeping should be performed on paved roads.

3.9 Emergency Services

An emergency shall be defined as a fire, explosion, or any release to air, land, or water of pollutants that threaten human health or the environment. When an emergency occurs at the Facility, TJD Consulting, LLC supervisory staff must be notified immediately, who will followup with proper notification to the BIA. Procedures and time schedules for notification and remedial action are described in the Emergency Response Plan.

The facility site is within a "911" service area, but will also have limited first aid and emergency equipment available for use during an emergency. The emergency equipment consists mainly of the first aid supplies, communication devices, and a vehicle. The facility operator will specify a safety officer to act as coordinator during an emergency.

Procedures to be followed during an emergency are as follows:

- Evaluate extent of emergency.
- Call 911 (if necessary)
- Call TJD Consulting, LLC personnel identified in Section 3.1.
- Close off area of emergency.
- Utilize on-site equipment to address emergency.
- TJD Consulting, LLC staff will notify BIA.
- Work with emergency services as required.
- Evaluate impact of emergency on facility integrity.

| Notification References | | | |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------|
| Facility | Address | Phone | Alternate |
| National Response Center | c/o United States Coast Guard (CG-3RPF-2) Room 211-B, 2100 2 nd Street SW Washington, DC | (800) 424-8802 | Direct: (202) 267-2180 Fax: (202) 267-1332 |
| Environmental Protection Agency – Region VIII | 1595 Wynkoop Street Denver, CO 80202-1129 | (303) 312-6312 | (800) 227-8917 (Region 8 States Only) |
| American Association of Poison Control | Hennepin Regional Poison Center Hennepin County Medical Center 701 Park Avenue MC-RL Minneapolis, MN 55415 | (800) 222-1222 | |
| Marvin Danks (owner) Ted Danks (owner) | TDJ Consulting LLC 8997 BIA Rte 10 Mandaree, ND 58757 | (701) 421-9163 (701) 214-7396 | |
| Three Affiliated Tribes | Attn: Cliff Whitman 404 Frontage Road New Town, ND 58763 | (701) 627-4805 | |
| ND Department of Health (NDDH) | 918 East Divide Avenue Bismarck, ND 58501 | (701) 328-5210 | (701) 328-5150 |
| ND Department of Emergency Services | Fraine Barracks Lane – Building 35 Bismarck, ND 58501 | (701) 328-8100 | (701) 328-9921 |
| ND State Radio Center | Bismarck, ND 58501 | (800) 472-2121 | (701) 328-9921 |
| Dunn County Sheriff | 205 Owens Street Manning, ND 58642 | (701) 573-4449 | Fax: (701) 573-4311 |
| Dunn County Emergency Services | Attn: Denise Brew 205 Owens Street Manning, ND 58642 | (701) 573-4612 | |

Table 1- Emergency Contact Information

3.10 Worker Safety

Facility personnel will be trained in equipment safety and waste handling. Training for use of leachate handling facilities will be provided as well.

3.11 Security

The Facility gate will be closed and locked unless authorized personnel are present. A permanent sign identifying the facility and TAT permit number, as well as any other pertinent information, is posted at the site entrance.

3.12 Maintenance Requirements

TJD Consulting, LLC is required to maintain the facility during operation. The maintenance requirements for the site are as follows:

| Item | Schedule |
|--------------------------|-----------|
| Mowing | As Needed |
| Ditch Cleaning | Once/year |
| Sedimentation Pond | Once/year |
| Leachate Collection Pipe | Once/year |

Other facility maintenance requirements will be done as necessary. Specific inspections outlined in the following section will determine the maintenance required.

4.0 Component Operational Procedures

4.1 Receiving Facility

4.1.1 Unloading

The procedure will require the use of 20 yard roll-off containers or side dump trailer. Trucks that enter the facility will be provided instruction as to which slurry pond to deliver the material. The disposal facility staff will be responsible for removing the material from the containers and placing all material in the slurry pond to ensure the integrity of the slurry pond geomembrane is not compromised.

Roll-off Containers

- The roll-off containers will be removed from truck at which point the truck will proceed to a site to load an unfilled roll-off pod.
- The roll-off pod will be placed at the edge of the slurry pond and the material removed with an excavator and pushed into place by a dozer.

Side Dump Trailers

Side dump trailer will unload the material into a small impervious concrete holding cell.

Material from the small concrete holding cell will be transported to the edge of the sludge ponds with the use of a payloader. Material will be pushed into place by a dozer. A twelve (12) inch clay soil cap will be placed over the liner for protection prior to the use of the dozer. The operator will log the placement of the material of each roll-off pod within the cell so origination can be determined if needed.

4.1.2 Waste Acceptance Procedures

Facility staff will visually inspect and randomly collect samples of delivered material to ensure prohibited constituents are not being brought on site. All emergency deliveries will be sampled and stored in a separate holding cell until it is deemed that the material meets the facility requirements for allowable material. Material delivered will be tested for moisture content; any material that exceeds 60% in moisture content will be assessed additional process fees to handle and dispose.

4.1.3 Pipe System

The piping system configuration will allow the facility to isolate each slurry pond if sampling results indicate a prohibited substance has been delivered on site.

- Inspections (by operator) – The operator will perform random inspection, on a quality assurance/quality control (QA/QC) basis; to ensure the staff on-shift are performing duties properly.
- Record Keeping Requirements- The results of any monitoring activity shall be recorded and maintained for a period of not less than three (3) years.

4.2 Evaporation Pond

A minimum of three feet of free board above the high water level shall be provided to protect embankments and dikes from overtopping from wave action. Inlet and intra-cell structures for discharging treatment systems are designed to prevent short circuiting, and shall not erode or disturb the liner, seal or dike. Outlet structures from a discharging treatment system shall have an overflow device, prevent short circuiting, prevent floating debris from discharging, and keep outlet velocities to a minimum so as not to erode or disturb the receiving channel. Erosion control material shall be implemented based on flow velocities and quantities. Ice formation shall neither stop the overflow nor damage the outlet structure. A manhole or vented cleanout we shall be installed prior to the entrance of the influent pipe into the evaporation pond and shall be located as close to the dike as topography permits. The influent pipe invert shall be at least six inches above the maximum operating level of the pond.

4.3 Monitor Wells and Leachate Collection System

Samples shall be drawn and tested monthly from the monitoring wells and leachate collection system. If testing results in levels exceeding regulatory limits, the impacted sources shall be retested to confirm previous results.

4.3.1 Testing

The groundwater data will be evaluated to determine whether a constituent has exceeded a regulatory limit (e.g., an MCL), a confidence interval approach based on the distribution of the data shall be used. The confidence interval is designed to contain the true mean of the data with a specified level of confidence (90 percent at the lower limit). The lower limit will then be compared to the regulatory value and if the lower limit is larger, it will be considered evidence that the regulatory level has been exceeded.

The monitoring features shall be inspected weekly to ensure proper function and integrity.

5.0 Maintenance and Monitoring

5.1 Maintenance Operation

The following sections describe the maintenance operation required to ensure proper operation of all Facility systems.

5.1.1 Drainage and Erosion Control

The final cover slopes have been designed to a maximum of 50 percent. A series of berms, ditches, and evaporation ponds are used to control surface water and erosion. The series of berms and ditches will route surface runoff to established evaporation ponds. The evaporation ponds are designed to trap sediments while accommodating the run-off from a 25-year 24-hour storm. This function will work in conjunction with the evaporation ponds' main function of collection waste water from the slurry ponds. The ponds will be maintained as needed to remove sediments. All ditches with grades steeper than 5 percent will be riprapped.

Run-on to the disposal areas will be prevented with perimeter berms and drainage swales. Culvert inlets and outlets are designed to dissipate flow velocity. Slopes will include erosion control matting where needed.

Upon closure of waste fill areas, the top and side slopes of the Facility are to be graded, sloped to drain, covered and vegetated to provide long-term erosion control. Short-term erosion control (e.g., mulch, silt fence, straw bales, etc.) should be provided to prevent erosion of topsoil until adequate vegetation has been established.

5.1.2 Turf Maintenance

In general, turf maintenance and inspections should include the following:

- a. Mow grassed waterways and ditches as needed to maintain the required flow capacity. Other critical areas will be mowed as needed to maintain vegetation and to prevent the establishment of trees and other deep-rooted plants in the final cover soil.
- b. Visual inspections will be used to assess the condition of vegetative cover. If warranted, a soil test will be performed to determine fertilizer needs.
- c. Areas with high erosion potential due to concentrated flow will be inspected after the Facility receives a more than approximately 1-inch of rain in a 24-hour period. Needed repairs and reseeding of eroded areas will be completed promptly. Fiber blankets, mulch, or other appropriate material may be used to limit erosion until turf is re-established.
- d. Where erosion has left soils unprotected and where turf cannot immediately be reestablished, temporary silt fences will be placed if needed to intercept and detain sediment.

5.1.3 Ditch Maintenance

Perimeter and side slope ditches will be constructed as part of the final cap. Before vegetation on the ditches becomes established, it will be inspected after significant rainfall. Sediment will be removed from ditches and repairs made as necessary. Seeded areas, which fail to establish dense cover, will be reseeded. If vegetation stabilization has been used, regular maintenance such as mowing and weed control will be performed as needed. Any damaged portion of ditches or associated drainage structures will be reconstructed.

5.1.4 Riprap Maintenance

Areas protected by riprap will be inspected after heavy storm events. Areas where damage to the riprap has occurred will be repaired as soon as possible after the storm.

5.1.5 Inlet Structure Maintenance

Inlet control structures will be inspected after heavy storm events or daily during prolonged rainfall to check for any clogging. Clogs will be cleaned as soon as possible, with the debris placed in the lined cell.

5.1.6 Leachate Collection System

The Facility's cells will have a composite liner. A granular drainage layer overlies the liner and leachate collection pipes within the granular drainage layer collect the leachate. Leachate will be pumped to an evaporation pond via forcemain as depicted on the Permit Application drawings. The leachate level within the Facility will be monitored and operated so as to not exceed 12 inches of head on the liner. Design of the leachate collection system and evaporation pond is discussed in greater detail in the Engineering Report of this application.

Collection System Maintenance

Leachate collection system piping will be cleaned annually, or on an alternate schedule approved by the BIA. Liquid collected during cleaning will be treated as leachate. If a pipe cleaning contractor is used, they will

submit to TJD the pipe cleaning records and will include a description of any difficulties encountered during cleaning operation. Leachate pumps will be routinely cleaned and serviced

Collection System Inspection

If deemed necessary, a camera can be run through the leachate collection lines to assess their condition. Leachate pumps will be inspected on an annual basis.

5.2 Monitoring Operation

The environmental monitoring program for the Facility shall consist of the collection and analysis of leachate samples and of groundwater samples as described below.

5.2.1 Leachate Monitoring

Leachate monitoring will be performed at the frequency specified for groundwater monitoring and consists of leachate sample collection and leachate head monitoring. Leachate head monitoring is performed by recording the digital readout of the pressure transducer located at the leachate pump control panel.

5.2.2 Groundwater Monitoring

The operation manager shall periodically inspect well locations to see that wells are not at risk of being buried or damaged by daily operation and that they are properly protected and labeled. Any damage to monitoring wells should be reported to the BIA and repaired following consultation with the design consultant and/or the BIA.

Initial groundwater conditions will be found in order to provide a baseline for groundwater monitoring. The monitoring of groundwater parameters will be measured from this initial baseline values. For the entire list of groundwater parameters see Appendix B for a List of Parameters for Assessing Ground Water Quality.

6.0 Inspection and Reporting Requirements

Records of operation, monitoring, and inspections will be kept at the Facility. These records will be summarized and submitted to the BIA on an annual basis. The reporting requirements are summarized below. Records will be retained for a minimum of five years after Facility closure.

6.1 Daily Operating Records

The Facility supervisor will record and maintain a daily Facility operating record. The operating records will include the following:

- Daily record of volume or weight of waste received and general information on the condition of the waste.
- Summary reports and details of incidents that require the implementation of the Contingency Action Plan.
- Monitoring, testing, and analytical data.
- Records and results of inspections.
- Volume of leachate generated.

- Details of incidents that require the implementation of the Emergency Response and Contingency Action Plans.

6.2 General Inspection Requirements and Records

Facility inspection schedule for inspecting monitoring points, safety and security equipment, survey monuments, drainage systems, and sedimentation basins is contained in Table 1.

An inspection log will be maintained and records retained at least five years after the date of inspection. All records involving enforcement actions must be retained until the action is resolved. Maintenance schedules and trouble-shooting procedures for on-site equipment can be found in the owner's manual for each item.

The inspection and maintenance records shall be kept at the Facility office. Inspection logs shall include the date and time of inspection, name of inspector, and a list of observations made, including items such as:

- Uncontrolled vegetative growth
- Erosion on sideslopes
- Vandalism
- Damage by rodents
- Malfunctions of the leachate collection or pumping system
- Excessive settlement
- Damage to or improper operation of surface water controls
- Evidence of damage to liner or cover system
- Date and nature of any repairs or other actions taken.

6.3 Weekly Inspections

Weekly inspections of the Facility are completed by the site manager. Inspection findings and any corrective actions taken are recorded on the weekly report forms, and are kept on file at the Facility office.

6.4 Monthly Inspections

Monthly inspections are completed by the site manager. Inspection findings and any corrective actions taken are recorded on the weekly report forms, and are kept on file at the Facility office.

6.5 Monthly Operating Report

A monthly operating report is completed by the site manager. The report summarizes the activities at the Facility during the month, including the total weight of waste hauled to the site, the volume of leachate pumped from the cell and how the leachate was managed, results of inspections, status of sampling and monitoring, and any other pertinent activities. Monthly reports will be kept on file at the Facility office.

6.6 Annual Report

An annual report will be prepared and submitted to the BIA for the preceding calendar year. The annual report will cover all Facility activities during the previous calendar year and include the following:

- The permit number, name, and address of the solid waste management facility.
- The year covered by the report.

- The quantity of waste handled at the solid waste management facility (from daily records), and a topographic survey to document existing conditions.
- The remaining capacity for storage or disposal of waste at the facility based on the amount of waste received and the permitted Facility capacity.
- Revised closure, postclosure, and contingency action cost estimates.
- All previously unreported laboratory and field reports.
- An assessment of the adequacy of the closure, post closure, and contingency action plans.
- The summary evaluation of the environmental monitoring program.
- Personnel training information.
- A certification of the Annual Report by the owner or operator of the Facility.

6.7 Emergency Reporting Requirements

When an emergency occurs at the Facility, TJD Consulting, LLC supervisory staff must be notified immediately, who will follow-up with proper notification to the appropriate agency. Procedures and time schedules for notification and remedial action are described in the Emergency Response Plan (Section 3.9).

7.0 Contingency Plan

7.1 Procedures

7.1.1 *Corrective Measures Assessment*

- The permittee shall within ninety (90) days of finding that any of the constituents in the permittee's Groundwater Monitoring Plan have been detected indicating a significant increase, initiate an assessment of corrective measures
- This assessment will be completed within a reasonable period of time.
- The assessment shall characterize the nature and extent of the contamination.
- As part of characterizing the nature and extent of the release, additional wells shall be installed, if necessary. At least one well, however, shall be installed at the facility boundary in the direction of contaminant migration to determine whether or not the contaminants have migrated past the facility boundary.
- Analysis of groundwater must initially consider all parameters of NDAC Ch. 33-16.
- The regulatory agency shall be notified of assessment findings.
- If contamination has migrated offsite, the individuals who own land or reside on land overlying the plume must be notified.
- The assessment monitoring shall be continued through the remedy selection phase.
- All sampling and analysis shall be conducted using appropriate Quality Assurance/ Quality Control (QA/QC) procedures. All monitoring wells shall be installed in accordance with established guidelines.
- The assessment shall include an analysis of the effectiveness of potential corrective measures in meeting all of the requirements and objectives established in the remedy selection phase.

7.1.2 Remedy Selection

Based on data obtained in the Corrective Measures Assessment, the permittee shall evaluate alternative corrective measures and select the appropriate remedy. The permittee will provide the regulatory agency within fourteen (14) days of selecting the remedy, a report describing the selected remedy. The remedy selected will:

- Manage all solid wastes at the facility in a manner that is protective of human health and the environment and that complies with applicable federal regulations;
- Control the source(s) of releases so as to reduce or eliminate to the maximum extent practicable, further releases of contaminants into the environment that may pose a threat to human health or the environment; and
- Attain the surface waste and groundwater standards approved by the regulatory agency.
- In selecting a remedy, the permittee shall consider the following:
 - The long and short-term effectiveness and protectiveness and degree of certainty that the remedy will be successful;
 - The effectiveness of the remedy in controlling the source to reduce further releases;
 - The ease or difficulty in implementing the remedy;
 - Technical and economic capability of the permittee; and
 - The degree to which the community concerns are addressed.
- The permittee shall specify, as part of the remedy, a schedule for initiating and completing the remedial activities
- The permittee may be required to initiate measures to eliminate or minimize further releases or to remediate the groundwater to concentrations that are technically practicable and significantly reduce threats to human health or the environment
- During the remedy selection phase, the permittee shall conduct semiannual (or more frequent where necessary) groundwater monitoring for all constituents.

7.1.3 Remedy Implementation

After the Corrective Measures Remedy is selected and approved by the regulatory agency, the permittee is shall implement the corrective measures, establish a corrective action groundwater monitoring program, and take any necessary interim measures. If, for some reason, a requirement for the remedy cannot be achieved, the permittee should notify the regulatory agency and obtain approval to implement an alternative measure. All solid wastes that are managed pursuant to the remedial activity shall be managed in a manner protective of human health and environmental resources and in accordance with all federal rules. Once implemented, corrective action must continue until compliance with the established groundwater standards is demonstrated within the plumes of contamination that lie beyond the compliance boundary. Upon completion of the remedy, the permittee shall notify the regulatory agency within thirty (30) days that the remedy has been completed as required.

The owner will provide a complete report of the incident and remedy implementation and results. This will report will be provided to the regulatory agency within 30 days after the results of the procedure are verified.

8.0 Follow-up

The owner will continue monitoring the impacted features of the facility to ensure the remedy implemented contains the wastes as designed.

8.1 Permanent Closure of the Disposal Waste Facility

The two basic goals of the Owners are to: (1) minimizing the need for continual maintenance of the oil field waste disposal site; and (2) placing the waste disposal site in a condition that will minimize future environmental impacts.

8.1.1 *Disposal Site Closure Procedure*

After closing the site the facility, the surrounding area shall be cleaned up so that any waste piles or piles of metallic materials, burnable materials, debris, and windblown paper are consolidated and placed in a final disposal cell for final covering. The final cover finished slopes of filled portions of the waste disposal site shall be at least 2 percent in grade and will not exceed 8 percent in grade to promote surface water runoff without causing ponding or severe erosion. In addition the proposed finished slopes promote surface water drainage from the waste disposal site areas in order to keep surface water from filtering into and through the oilfield waste, thus creating a hazard of ground water and surface water degradation. Terraces, waterways, diversions or other measures will be used as appropriate to minimize soil erosion.

8.1.2 *Final Cover*

After the disposal areas have been sloped and all waste buried, compacted, and covered, the disposal cells shall be covered with a minimum of at least 48 inches of clay-rich soil. The final cover of clay-rich soil shall be placed in layers with the first or deepest being about 24 inches. The clay layer shall be carefully compacted in six-inch lifts to minimize surface water infiltration. Compaction testing of this "barrier layer" will be performed to ensure the soil material is properly placed. An additional 24 inches of soil material will be placed over the compacted clay layer to help protect it from damage due to erosion, plant roots, vehicular traffic, freezing and thawing, etc. This "buffer layer" will also provides a rooting depth for the final vegetative cover.

8.1.3 *Site Revegetation and Long Term Management*

The site will be revegetated when practicable to a mixture of adapted grasses. The local Soil Conservation Service office will be consulted to determine an appropriate native grass mixture. To protect the clay barrier layer, deep-rooted plants such as alfalfa or clover will not be planted on the disposal site as the roots may increase water infiltration. For at least two years after site closure, the disposal site facility shall be checked monthly to observe monitoring wells, ensure vegetation reestablishment and to monitor any erosion or settling of the final cover. Monitoring of the closed facility will continue on a less frequent basis for up to thirty years after site closure. If necessary, the oil field waste disposal site may need additional covering applied, additional erosion control structures installed, and/or reseeded of the vegetative cover.

Appendix A: Exempt and Non-Exempt Wastes

Exempt Exploration and Production Wastes

- Produced Water
- Drilling Fluids
- Drill Cuttings
- Rigwash
- Drilling fluids and cuttings from offshore operations disposed of onshore
- Geothermal production fluids
- Hydrogen sulfide abatement wastes from geothermal energy production
- Well completion, treatment, and stimulation fluids
- Basic sediment, water, and other tank bottoms from storage facilities that hold product and exempt waste
- Accumulate materials such as hydrocarbons, solids, sands, and emulsion from production separators, fluid treating vessels, and production impoundments
- Pit sludges and contaminated bottoms from storage or disposal of exempt wastes
- Gas plant dehydration wastes, including glycol-based compounds, glycol filters, and filter media, backwash, and molecular sieves
- Workover wastes
- Cooling tower blowdown
- Gas plant sweetening wastes for sulfur removal, including amines, amine filters, amine filter media, backwash, precipitated amine sludge, iron sponge, and hydrogen sulfide scrubber liquid and sludge
- Spent filters, filter media, and backwash (assuming the filter itself is not hazardous and the residue in it is from an exempt waster stream)
- Pipe scale, hydrocarbon solids, hydrates and other deposits removed from piping and equipment prior to transportation
- Produced sand
- Packing fluids hydrocarbon-bearing soil
- Pigging wastes from gathering lines
- Wastes from subsurface gas storage and retrieval, except for the non-exempt wastes
- Liquid hydrocarbons removed from the production stream but not from oil refining
- Gases from the production stream, such as hydrogen sulfide and carbon dioxide, and volatilized hydrocarbons
- Materials ejected from a producing well during blowdown
- Waste crude oil from primary field operations
- Light organics volatilized from exempt wastes in reserve pits, impoundments, or production equipment

Non-Exempt Exploration and Production Wastes

- Unused fracturing fluids or acids
- Gas plant cooling tower cleaning wastes
- Painting wastes
- Waste solvents
- Oil and gas service company wastes such as empty drums, drum rinsate, sandblast media, painting wastes, spent solvents, spilled chemicals, and waste acids
- Vacuum truck and drum rinsate from trucks and drums transporting or containing non-exempt waste
- Refinery wastes
- Liquid and solid wastes generated by crude oil and tank bottom reclaimers
- Used equipment lubricating oils
- Waste compressor oil, filters, and blowdown
- Used hydraulic fluids
- Waste in transportation pipeline related pits
- Caustic or acid cleaners
- Boiler cleaning wastes
- Boiler refractory bricks
- Boiler scrubber fluids, sludges, and ash
- Incinerator ash
- Laboratory wastes
- Sanitary wastes
- Pesticide wastes
- Radioactive tracer wastes
- Drums, insulation, and miscellaneous solids

Appendix B for a List of Parameters for Assessing Ground Water Quality

a. Parameters measured in the field:

- Appearance (including color, foaming, and odor)
- pH
- Specific conductance²
- Temperature
- Water elevation

b. General geochemical parameters:

- Amonia nitrogen
- Chloride
- Total hardness
- Floride
- Iron
- Nitrate + Nitrite, as N
- Calcium
- Total phosphorus
- Magnesium
- Sulfate
- Manganese
- Sodium
- Potassium
- Total dissolved solids (TDS)
- Total alkalinity (18) Total suspended solids (TSS)
- Bicarbonate
- Cation/anion balance
- Carbonate

c. Heavy metals:

Group A

- Arsenic
- Barium
- Cadmium
- Chromium
- Lead
- Mercury
- Selenium
- Silver

Group B

- Antimony
- Beryllium
- Cobalt
- Copper
- Nickel
- Thallium
- Vanadium
- Zinc

d.Total organic carbon (TOC)

e.Chemical oxygen demand (COD)

f. Naturally occurring radionuclides:

- Radon
- Radium
- Uranium

g.Volatile organic compounds, both halogenated and nonhalogenated:

Halogenated:

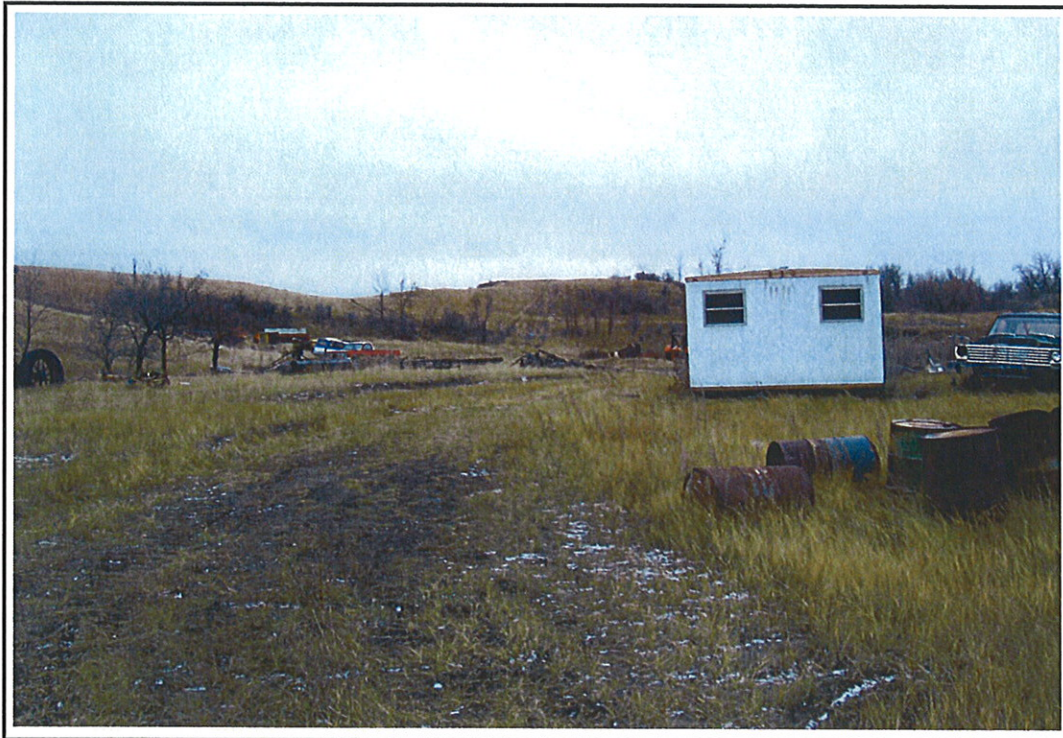
- Acrylonitrile
- 1,1-Dichloroethylene
- Allyl chloride
- 1,2-Dichloropropane
- Bromochloromethane
- cis-1,3-Dichloropropene
- Bromodichloromethane
- cis-1,2-Dichloroethylene
- Bromoform
- trans-1,2-Dichloroethylene
- Bromomethane
- trans-1,3-Dichloropropene
- Carbon disulfide
- trans-1,4-Dichloro-2-butene
- Carbon tetrachloride
- Dichlorofluoromethane
- Chlorobenzene (monochlorobenzene)

- Dichloromethane (methylene chloride)
- 1,3-Dichloropropene
- Chlorodibromomethane
- 2,3-Dichloro-1-propene
- Chloroethane
- Pentachloroethane
- Chloroform
- 1,1,1,2-Tetrachloroethane
- Chloromethane
- 1,1,2,2-Tetrachloroethane
- Dibromomethane
- Tetrachloroethylene
- 1,2-Dibromo-3-chloropropane
- 1,1,1-Trichloroethane
- 1,2-Dibromoethane
- 1,1,2-Trichloroethane
- Dichloroacetonitrile
- Trichloroethylene
- 1,2-Dichlorobenzene
- Trichlorofluoromethane
- 1,3-Dichlorobenzene
- 1,2,3-Trichloropropane
- 1,4-Dichlorobenzene
- 1,1,2-Trichlorotrifluoroethane
- Dichlorodifluoromethane
- Vinyl acetate
- 1,1-Dichloroethane
- Vinyl chloride
- 1,2-Dichloroethane

Nonhalogenated:

- Acetone
- Methyl isobutyl ketone
- Benzene
- Pyrene
- Cumene
- Styrene
- Ethylbenzene
- Tetrahydrofuran
- Ethyl ether

- Toluene
- Methyl butyl ketone
- m-Xylene
- Methyl ethyl ketone
- o-Xylene
- Methyl iodide
- p-Xylene



Photograph # 1

Date: November 15, 2010

Direction: South

Subject: Start of proposed new access road.



Photograph # 2

Date: November 15, 2010

Direction: South

Subject: Proposed new access road.





Photograph # 3
Date: November 15, 2010
Direction: South
Subject: Proposed new access road.



Photograph # 4
Date: November 15, 2010
Direction: North
Subject: Proposed new access road.





Photograph # 5
Date: November 15, 2010
Direction: North
Subject: Proposed new access road.

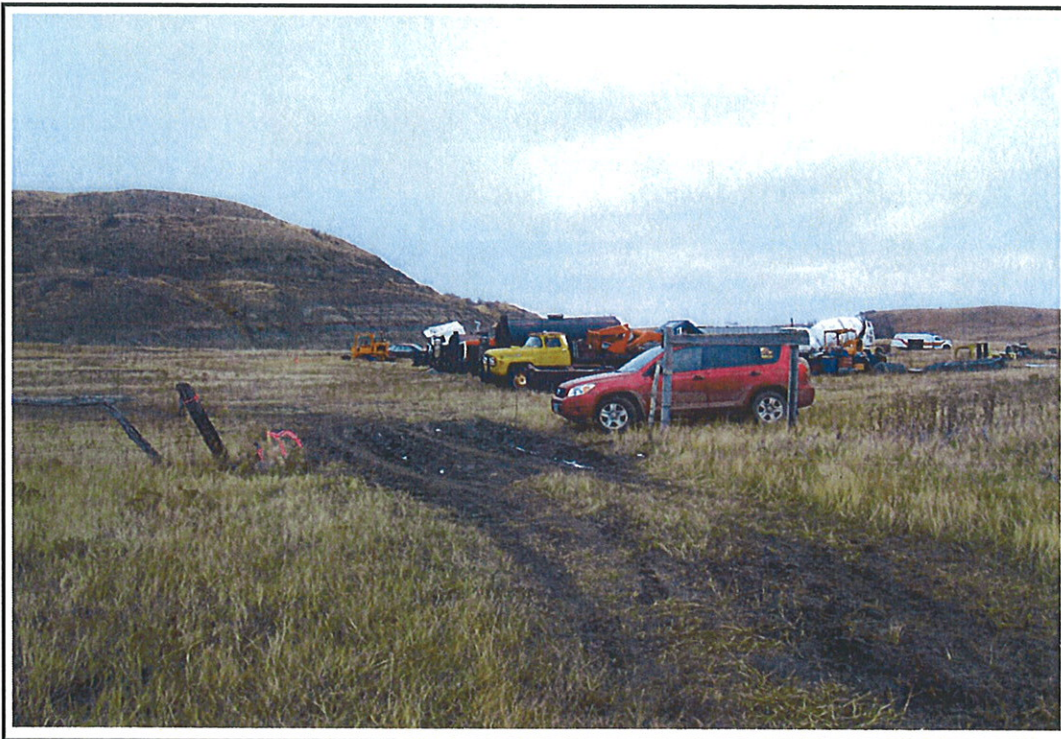


Photograph # 6
Date: November 15, 2010
Direction: South
Subject: Proposed new access road.





Photograph # 7
Date: November 15, 2010
Direction: North
Subject: End of proposed new access road.



Photograph # 8
Date: November 15, 2010
Direction: East
Subject: End of proposed access road and NW corner of Site.





Photograph #9
Date: November 15, 2010
Direction: South
Subject: From north central property line.



Photograph # 10
Date: November 15, 2010
Direction: West
Subject: From East property line.





Photograph # 11
Date: November 15, 2010
Direction: East
Subject: From west property line.



Photograph # 12
Date: November 15, 2010
Direction: South
Subject: From center of site.





Photograph # 13
Date: November 15, 2010
Direction: Southwest
Subject: From west property line.



Photograph # 14
Date: November 15, 2010
Direction: North
Subject: From SW property corner.



Environmental Assessment

Proposed Oil Field Waste Disposal Site – Soil Survey

Wenck File #2552-01

Prepared for:

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April 2011



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A Introduction

TJD Consulting has proposed to construct a disposal pit for oil company refuse within the Fort Berthold Indian Reservation (The Reservation). As part of the Environmental Assessment (EA) conducted for the proposed oil field waste disposal site, Wenck Associates, Inc. (Wenck) performed a soil survey of the proposed access road and pits to confirm the results of the Dunn County soil index assessment.

The Dunn County Soils Index identified five (5) different soil types in the survey area. Two (2) of these, Cohagen-Vebar and Zahl-Williams, are present in less than four (4) percent of the survey area. These two soil types were not identified during the sampling event. The other three (3) soil types, Cabba, Cabba-Badlands, and Dogtooth-Cabba, make up over 94% of the survey area. Less than two (2) percent of the survey area is water.

The Cabba soil type makes up over 43% of the soils in the survey area. This is typically a grayish-brown loam about 3 inches thick. Below that is a light brownish-grey silt loam about 5 inches thick. The substratum is generally a grayish-brown silt loam. In some areas the Cabba is a silty clay loam. This variation was typical in the survey area.

The Cabba-Badlands soil type makes up a little over 23% of the survey area. Like the Cabba, the Cabba-Badlands is typically a grayish-brown loam about 3 inches thick. Below that is a light brownish-grey silt loam about 5 inches thick. The substratum is generally a grayish-brown silt loam. In some areas the Cabba is a silty clay loam. This variation was typical in the survey area.

The Dogtooth-Cabba soil type (also known as the Rhodes-Cabba) makes up a little less than 28% of the survey area. This is also typically a grayish-brown loam about 3 inches thick. Below that is a light brownish-grey silt loam about 7 inches thick. The substratum is generally a grayish-brown silty clay.

B Sampling Methods

Hand auger probes were advanced to an approximate depth of 18 inches along the proposed roadway and across the pit area. The soils were visually assessed for color and soil type. The information was recorded and the auger samples photographed. The photos are attached.

The first half of the proposed access road is existing structure. The soils survey began at the start of the new section of proposed access road. Hand auger samples were taken at approximately 600-foot intervals along the centerline of the proposed road. Samples were also collected at the corners of the proposed pit area as well as two (2) additional samples in the middle of the pit area.

C Findings

The shallow soils in the survey area appear to confirm the Dunn County Soils Index.

| Survey Area Samples | | | | | County Soils Index | | |
|---------------------|-----------------|---------------|-------------|-------------------|--------------------|---------------|------|
| Photograph Number | Sample Location | Sample Color | Sample Type | Topsoil Thickness | Name | Color | Type |
| 1 | Roadway | Grayish-Brown | Loamy Clay | 3 Inch | 9E | Grayish-Brown | Loam |
| 2 | Roadway | Grayish-Brown | Loam | 4 Inches | 9E | Grayish-Brown | Loam |
| 3 | Roadway | Grayish-Brown | Loam | 3 Inches | 11F | Grayish-Brown | Loam |
| 4 | Roadway | Grayish-Brown | Loam | 5 Inches | 11F | Grayish-Brown | Loam |
| 5 | Pit Area | Grayish-Brown | Loamy Clay | 3 Inch | 62D | Grayish-Brown | Loam |
| 6 | Pit Area | Grayish-Brown | Loamy Clay | 3 Inch | 9E | Grayish-Brown | Loam |
| 7 | Pit Area | Grayish-Brown | Loam | 9 inches | 9E | Grayish-Brown | Loam |
| 8 | Pit Area | Grayish-Brown | Loam | 6 Inches | 11F | Grayish-Brown | Loam |
| 9 | Pit Area | Grayish-Brown | Loam | 4 Inches | 9E | Grayish-Brown | Loam |
| 10 | Pit Area | Grayish-Brown | Loamy Clay | 3 Inch | 62D | Grayish-Brown | Loam |

Top soils were generally a grayish-brown loam ranging in thickness from three (3) to nine (9) inches. Below this the soils tended to consist of a grayish brown silty clay loam.



Photograph # 1

Date: November 15, 2010

Location: Start of proposed new access road.

Soil Type:



Photograph # 2

Date: November 15, 2010

Location: 600 feet south on proposed new access road.

Soil Type:





Photograph # 3

Date: November 15, 2010

Location: 1,200 feet south on proposed new access road.

Soil Type:



Photograph # 4

Date: November 15, 2010

Location: 1,800 feet south on proposed new access road.

Soil Type:





Photograph # 5

Date: November 15, 2010

Location: End of proposed new access road and NW site corner.

Soil Type:



Photograph # 6

Date: November 15, 2010

Location: SW corner of site.

Soil Type:





Photograph # 7
Date: November 15, 2010
Location: East center of site.
Soil Type:



Photograph # 8
Date: November 15, 2010
Location: NE corner of site.
Soil Type:





Photograph # 9

Date: November 15, 2010

Location: SE corner of site.

Soil Type:



Photograph # 10

Date: November 15, 2010

Location: West center of site.

Soil Type:



**Botany Survey Report
Danks Disposal Site
November 15, 2010
Sections 7 and 17, T149N, R92W
Dunn County, North Dakota**

Methods

The *Site* was visually inspected by Carolyn Godfread, Botanist, on November 15, 2010 for sensitive plants and their potential habitat via a general walking survey including a minimum 200 feet on either side of the proposed access road, across the entire 18-acre proposed disposal pit pad, and including the entire 80-acre parcel owned by Mr. Danks. A focused survey was used in areas of potential suitable habitat for sensitive plants. All observed plant species were recorded (**Table 1**). Nomenclature follows Great Plains Flora Association (1986).

During the course of the survey only the most conspicuous forbs were noted. No special attempt was made to search for vegetative or remnant parts that might still be present from early flowering species. Consequently, late flowering species were the primary species noted. This obviously resulted in a bias regarding the forb diversity. Many forbs that undoubtedly grow in the area were not observed.

Proposed Access Road

The proposed access road for the proposed Danks Disposal Site began at BIA Road 10 in the north-central part of Section 7 and followed an existing road through a farmstead. South of the farmstead it continued along the east side of Section 7 (**Figure 1**). Near the start of the access road the primary species on both sides of the road was crested wheatgrass (*Agropyron cristatum*) (**Appendix B, Photo 1**). Curly-top gumweed (*Grindelia squarrosa*) was common near the edge of the road. At the base of the ditch on the west there was a large patch of weeds that included kochia (*Kochia scoparia*), pigweed (*Amaranthus retroflexus*), marsh elder (*Iva xanthifolia*) and pennycress (*Thlaspi arvense*). Beyond the weedy area the primary grasses were western wheatgrass (*Agropyron smithii*) and little bluestem (*Andropogon scoparius*). In addition, on the east side there were small amounts of switchgrass (*Panicum virgatum*) and tall wheatgrass (*Agropyron elongatum*).

A shallow woody draw approached the road on the east with mostly green ash (*Fraxinus pennsylvanica*) but also some American elm (*Ulmus americana*). Smooth brome (*Bromus inermis*) and crested wheatgrass (*Agropyron cristatum*) grew under the trees. There was also a large patch of giant ragweed (*Ambrosia trifida*) and marsh elder (*Iva xanthifolia*) in the area. The road curved to the east around the woody area. The vegetation was much the same near the road except that Russian thistle (*Salsola iberica*), Kentucky bluegrass (*Poa pratensis*) and curly-top gumweed (*Grindelia squarrosa*) were more abundant. Also, Japanese brome (*Bromus japonicus*) was present.

A low crest on the west had western wheatgrass (*Agropyron smithii*), blue grama (*Bouteloua gracilis*), prairie Junegrass (*Koeleria pyramidata*) and sideoats grama (*Bouteloua curtipendula*). Down the slope there was a small amount of big bluestem (*Andropogon gerardii*) and Canada wildrye (*Elymus canadensis*). The primary forbs were white sagewort (*Artemisia ludoviciana*), fringed sage (*Artemisia frigida*), yellow coneflower (*Ratibida columnifera*), purple coneflower (*Echinacea angustifolia*), silky wormwood (*Artemisia dracuncululus*) and black medic (*Medicago lupulina*). There were a few buffaloberry shrubs (*Shepherdia argentea*) on the slope to the west.

A man-made dam was present on the west side of the road (**Appendix B, Photo 2**). The plants on the grassy hillside above the water were similar to those just described. There were a few woody species on the lower slope: green ash (*Fraxinus pennsylvanica*), buffalo berry (*Shepherdia argentea*) and western snowberry (*Symphoricarpos occidentalis*). On the muddy bank sloping to the water, inland saltgrass (*Distichlis spicata*) was abundant. There was also some wild licorice (*Glycyrrhiza lepidota*) on the lower slope. Species on the edge of the water included prairie cordgrass (*Spartina pectinata*), American sloughgrass (*Beckmannia syzigachne*), spikerush (*Eleocharis* sp.) and broad-leaved cat-tail (*Typha latifolia*).

On the east side of the road from the reservoir there was seepage under the road into an existing ravine (**Appendix B, Photo 3**). Prairie cordgrass (*Spartina pectinata*) was abundant near the base of the road embankment. Further away foxtail barley (*Hordeum jubatum*) was common. Inland saltgrass (*Distichlis spicata*) grew mostly near the sides of the wet area. On the lower slope there was also giant ragweed (*Ambrosia trifida*), prickly lettuce (*Lactuca serriola*) and cocklebur (*Xanthium strumarium*). Smooth brome (*Bromus inermis*) was abundant on the north slope. On the slope south of the wet ravine there was buffalo berry (*Shepherdia argentea*), green ash (*Fraxinus pennsylvanica*) and creeping juniper (*Juniperus horizontalis*). Over the hill to the south there was another ravine with seepage. Many of the same species were present, however, in addition, this area had wide-leaved cattail (*Typha latifolia*), softstem bulrush (*Scirpus validus*), and common evening primrose (*Oenothera biennis*). Up the slope there was Canada goldenrod (*Solidago canadensis*) and then stiff goldenrod (*Solidago rigida*).

The road entered a farmyard and passed between a variety of buildings. The farm was located at the base of a wooded slope with green ash (*Fraxinus pennsylvanica*), buffaloberry (*Shepherdia argentea*), Rocky Mountain juniper (*Juniperus scopulorum*), dwarf juniper (*Juniperus communis*) and creeping juniper (*Juniperus horizontalis*). Near the woods there was some little bluestem (*Andropogon scoparius*), western wheatgrass (*Agropyron smithii*) and smooth brome (*Bromus inermis*). Within the area of the farmstead there were many weedy species. The most abundant species in the farmstead were foxtail barley (*Hordeum jubatum*), inland saltgrass (*Distichlis spicata*), Japanese brome (*Bromus inermis*), curly-top gumweed (*Grindelia squarrosa*), marsh elder (*Iva xanthifolia*) and kochia (*Kochia scoparia*). There were also many large clumps of absinthe sage (*Artemisia absinthium*), which is on the state of North Dakota's list of noxious weeds. There were a couple of wet/seepage areas. One in the northeast part of the farm had spikerush (*Eleocharis* sp.), alkali grass (*Puccinellia nuttalliana*) and prairie cordgrass (*Spartina pectinata*). Another in the southwest had sloughgrass (*Beckmannia syzigachne*) and dock (*Rumex stenophyllus*). Bordering that area there was Maximilian

sunflower (*Helianthus maximilianii*), burdock (*Arctium minus*) and yellow sweet clover (*Melilotus officinalis*).

Past the farm the proposed route skirted a barren clay slope and turned southwest up a slope. The incline was gradual near the base where the primary species were Kentucky bluegrass (*Poa pratensis*) along with inland saltgrass (*Distichlis spicata*) and alkali grass (*Puccinellia nuttalliana*) on patches with heavier clay soils. Further up the slope there was Sandberg bluegrass (*Poa sandbergii*) and green needlegrass (*Stipa viridula*). Near the middle of the slope and toward the crest there was mostly little bluestem (*Andropogon scoparius*). Stiff goldenrod (*Solidago rigida*) was the most abundant forb on the hillside.

On the top of the hill needle-and-thread (*Stipa comata*), plains muhly (*Muhlenbergia cuspidata*) and blue grama (*Bouteloua gracilis*) were the most common grasses (**Appendix B, Photo 4**). Silky wormwood (*Artemisia dracunculus*) was the most conspicuous forb, but several others were present, including; aromatic aster (*Aster oblongifolia*), blazing star (*Liatis punctata*), stiff sunflower (*Helianthus rigidus*), prairie rose (*Rosa arkansana*), yellow coneflower (*Ratibida columnifera*), cut-leaf goldenweed (*Haplopappus spinulosus*) and broom snakeweed (*Gutierrezia sarothrae*). Down the slope to the south little bluestem (*Andropogon scoparius*) sideoats grama (*Bouteloua curtipendula*) and plains muhly (*Muhlenbergia cuspidata*) were common along with some clumps of prairie sandreed (*Calamovilfa longifolia*).

The route skirted a clump of buffaloberry (*Shepherdia argentea*) with a few green ash (*Fraxinus pennsylvanica*) (**Appendix B, Photo 5**). Midway down the slope there was some big bluestem (*Andropogon gerardii*), green needlegrass (*Stipa viridula*) and some Kentucky bluegrass (*Poa pratensis*). Additional forbs noted in this area were white sage (*Artemisia ludoviciana*), soft goldenrod (*Solidago mollis*), candle anemone (*Anemone cylindrica*), fleabane (*Erigeron strigosus*) and yellow sweetclover (*Melilotus officinalis*). South of the crest with buffaloberry, the proposed route went down a hill past an area of silty clay outwash that had winterfat (*Ceratoides lanata*), inland saltgrass (*Distichlis spicata*) and alkali grass (*Puccinellia nuttalliana*) near its base. Further out there was rough dropseed (*Sporobolus asper*). Down the slope plains muhly (*Muhlenbergia cuspidata*) was abundant along with some needlegrasses (*Stipa comata* and *S. viridula*), western wheatgrass (*Agropyron smithii*) and three-awn (*Aristida purpurea*).

The route went up a north facing slope with abundant little bluestem. The associated vegetation was similar to that described on the previous hill crest except that a few additional species were observed to be more abundant, including creeping juniper (*Juniperus horizontalis*), white aster (*Aster ericoides*), purple locoweed (*Oxytropis lambertii*), Indian breadroot (*Psoralea esculenta*), yarrow (*Achillea millefolium*) and sweet clover (*Melilotus officinalis*).

From the crest of the south facing slope the proposed access continued down until it joined the area of the disposal site at the southeast corner of Section 7 (**Appendix B, Photo 6**). On the slope there were grassy areas with plains muhly (*Muhlenbergia cuspidata*), western wheatgrass (*Agropyron smithii*), needlegrasses (*Stipa viridula* & *S. comata*) and a few clumps of prairie sandreed (*Calamovilfa longifolia*). The areas with these grass species were separated by clay slicks with inland salt grass (*Distichlis spicata*), alkali grass (*Puccinellia nuttalliana*), slender

wheatgrass (*Agropyron caninum*), curly-top gumweed (*Grindelia squarrosa*), winterfat (*Ceratoides lanata*) and snakeweed (*Gutierrezia sarothrae*). White sage (*Artemisia ludoviciana*) and dwarf sage (*Artemisia cana*) were also present on the hillside. Below the slope there were extensive areas with thin clayey soils. Species that grew on the clay slicks were also present here. These areas were interspersed with areas of western wheatgrass (*Agropyron smithii*) and blue grama (*Bouteloua gracilis*). Yarrow (*Achillea millefolium*) was more abundant in this area.

Proposed Disposal Site Pad

The disposal site encompassed approximately 18 acres in the northwest corner of Section 17 (**Figure 1**). The survey area extended to the east, south, and southeast of the proposed disposal site to include the entire 80-acre parcel owned by Mr. Danks (**Figure 1**). The north boundary followed a ridge of badland hills along the north section line. Upper Skunk Creek and an unnamed creek flowed along the south and east boundaries, respectively, of the survey area (**Figures 1 and 4**). On the west the boundary followed the west section line fence that was located in a secondary drainage that connects with Upper Skunk Creek. Three high grassy ridges separated by grassy ravines were present across the center of the survey area. The ridge to the east extended the entire length of the area from north to south. The two other ridges extended from just north of the center of the survey area to the south (**Figure 1**).

East of the point at which the access road entered the proposed disposal site there was an area of clayey soils that sloped to the south out from the base of a barren clay butte on the north boundary. Blue grama (*Bouteloua gracilis*) and broom snakeweed (*Gutierrezia sarothrae*) were the most abundant species (**Appendix B, Photo 7**). Close to the base of the butte there were areas of outwash with wild buckwheat (*Eriogonum pauciflorum*), curly-top gumweed (*Grindelia squarrosa*), saltbush (*Atriplex nuttallii*), slender wheatgrass (*Agropyron caninum*) and alkali grass (*Puccinellia nuttalliana*). Beyond the barren outwash areas there were large areas of thin claypan where the primary grasses were western wheatgrass (*Agropyron smithii*) and blue grama (*Bouteloua gracilis*). Further away from the base of the butte these areas of clay soil were interspersed with somewhat more loamy areas that included needlegrasses (*Stipa viridula* and *S. comata*) and low rises with little bluestem (*Andropogon scoparius*). There were also scattered thickets of buffaloberry (*Shepherdia argentea*) and western snowberry (*Symphoricarpos occidentalis*) across this slope.

Up the side of the clay butte along the north boundary there was rabbitbrush (*Chrysothamnus nauseosus*), greasewood (*Sarcobatus vermiculatus*) and seepweed (*Suaeda moquinii*). Further to the east there were terraces with dwarf sagebrush (*Artemisia cana*), winterfat (*Ceratoides lanata*), inland saltgrass (*Distichlis spicata*), plains prickly pear (*Opuntia polyacantha*) and yellow buckwheat (*Eriogonum flavum*). On the clay bank above the ledge there was sillscale (*Atriplex dioica*).

To the east of the barren portion of the butte there was a steep grassy slope that connected on the east with a long north/south ridge that followed the east side of the proposed site (**Appendix B, Photo 8**). The scattered woody species included buffaloberry (*Shepherdia argentea*), green ash (*Fraxinus pennsylvanica*), creeping juniper (*Juniperus horizontalis*) and

western snowberry (*Symphoricarpos occidentalis*). The primary grass species were little bluestem (*Andropogon scoparius*), sideoats grama (*Bouteloua curtipendula*), plains muhly (*Muhlenbergia cuspidata*) and some patches of prairie sandreed (*Calamovilfa longifolia*). Common forbs included plains orophaca (*Astragalus gilviflorus*), Missouri milkvetch (*Astragalus missouriensis*), Hood's phlox (*Phlox hoodii*) and aromatic aster (*Aster oblongifolia*).

On the crest of the ridge to the south (**Appendix B, Photo 9**) the primary species were blue grama (*Bouteloua gracilis*), needle-and-thread (*Stipa comata*), western wheatgrass (*Agropyron smithii*) and threadleaf sedge (*Carex filifolia*). The most noticeable forbs were fringed sage (*Artemisia frigida*), silky wormwood (*Artemisia dracunculus*) and woolly plantain (*Plantago patagonica*).

The east side of this ridge dropped down to an unnamed creek outside the survey area. The primary species on the upper east-facing slope included little bluestem (*Andropogon scoparius*), western snowberry (*Symphoricarpos occidentalis*), buffaloberry (*Shepherdia argentea*) and creeping juniper (*Juniperus horizontalis*). The most noticeable forbs were blue flax (*Linum perenne*), aromatic aster (*Aster oblongifolia*), smooth blue aster (*Aster laevis*), American vetch (*Vicia americana*) and northern bedstraw (*Galium boreale*).

The west side of the ridge sloped down toward the center of the proposed site (**Appendix B, Photo 10**). Along the middle of the slope there were scattered buffaloberry shrubs (*Shepherdia argentea*) along with little bluestem (*Andropogon scoparius*) and plains muhly (*Muhlenbergia cuspidata*). Western wheatgrass (*Agropyron smithii*) and needlegrasses (*Stipa viridula* and *S. comata*) grew at the base of the slope and across the valley which formed the central part of the survey area. Toward the west side scattered thickets of buffaloberry were conspicuous. The vegetation at the south end of the ridge was similar to that on the west facing slope, however, plains orophaca (*Astragalus gilviflorus*), stiff goldenrod (*Solidago rigida*) and purple coneflower (*Echinacea angustifolia*) were more abundant on the south facing slope.

To the south, at the base of the ridge, there was a woodland with green ash (*Fraxinus americana*), American elm (*Ulmus americana*), northern hawthorn (*Crataegus rotundifolia*), chokecherry (*Prunus virginiana*) and Juneberry (*Amelanchier alnifolia*). Western snowberry (*Symphoricarpos occidentalis*) grew primarily around the margins of the woods but raspberry (*Rubus idaeus*) and western rose (*Rosa woodsii*) were common in the understory. Bittersweet (*Celastrus scandens*) and carrion-flower (*Smilax herbacea*) were observed climbing on the woody species. Wild bergamot (*Monarda fistulosa*) was common. Other species included Virginia wild rye (*Elymus virginicus*), sedge (*Carex sprengelii*) and prairie cordgrass (*Spartina pectinata*), the latter in a wet, open area. Toward the west end of the woods burdock (*Arctium minus*) was abundant. On the south side of the woods at the base of a north facing slope there was some big bluestem (*Andropogon gerardii*).

The vegetation on the top and sides of the ridge to the south was similar to the ridge previously described except that several forbs seemed more abundant. These included prairie goldenrod (*Solidago missouriensis*), broom snakeweed (*Gutierrezia sarothrae*), pussytoes (*Antennaria parvifolia*), yellow coneflower (*Ratibida columnifera*), fleabane (*Erigeron strigosus*) and yellow sweetclover (*Melilotus officinalis*).

Further to the south the ridgetop sloped down to a somewhat lower area that was flat to gently rolling. There was a dump area in this location that was accessed by the trail that crossed the proposed site from the northwest to southeast (**Appendix B, Photo 11**). The primary grasses around the dump area were western wheatgrass (*Agropyron smithii*) and blue grama (*Bouteloua gracilis*). In the area of the dump there were primarily weedy species. The most noticeable species included absinthe wormwood (*Artemisia absinthium*), marsh elder (*Iva xanthifolia*), yellow sweetclover (*Melilotus officinalis*), dandelion (*Taraxacum officinale*) and Flodman's thistle (*Cirsium flodmanii*). Curly-top gunweed (*Grindelia squarrosa*), broom snakeweed (*Gutierrezia sarothrae*) and fringed sage (*Artemisia frigida*) were also abundant. South of the dump there was a slight depression with some woody species, mostly western snowberry (*Symphoricarpos occidentalis*) and dwarf juniper (*Juniperus communis*). Green ash trees (*Fraxinus pennsylvanica*) were in the deeper part of the draw. The grassy vegetation on the hill to the south of the draw was sparse; the primary species on the top were western wheatgrass (*Agropyron smithii*), needle-and-thread (*Stipa comata*), broom snakeweed (*Gutierrezia sarothrae*), curly-top gunweed (*Grindelia squarrosa*), dandelion (*Taraxacum officinale*), sweet clover (*Melilotus officinalis*) and bracted vervain (*Verbena bracteata*). There was an old trailer near the end of the ridge with absinthe sage (*Artemisia absinthium*), foxtail barley (*Hordeum jubatum*), kochia (*Kochia scoparia*), flixweed (*Descurainia sophia*) and horseweed (*Conyza canadensis*) around it.

To the south the hill sloped steeply down to Upper Skunk Creek (**Appendix B, Photo 12**). Yucca (*Yucca glauca*) was rather abundant at the top of the crest along with fringed sage (*Artemisia frigida*), dwarf sage (*Artemisia cana*), prairie goldenrod (*Solidago missouriensis*), Missouri milk-vetch (*Astragalus missouriensis*) and Canada thistle (*Cirsium arvense*). Needlegrasses (*Stipa viridula* and *S. comata*) were common along with prairie sandreed (*Calamovilfa longifolia*). Woody species were common on the upper slope, including: chokecherry (*Prunus virginiana*), Juneberry (*Amelanchier alnifolia*), fragrant sumac (*Rhus aromatica*), buffaloberry (*Shepherdia argentea*) and green ash (*Fraxinus pennsylvanica*). Wooded areas on this slope were interrupted with open grassy areas to the west followed with more wooded areas in the low spots. The primary species in the grassy areas were western wheatgrass (*Agropyron smithii*), blue grama (*Bouteloua gracilis*), fringed sage (*Artemisia frigida*) and sweet clover (*Melilotus officinalis*).

Near the bottom of the hill there was a gently sloping shelf with little bluestem (*Andropogon scoparius*) and stiff goldenrod (*Solidago rigida*). To the west there was an area of alkaline seepage with clayey soils. The primary species were inland salt grass (*Distichlis spicata*), alkali grass (*Puccinellia nuttalliana*), fowl bluegrass (*Poa palustris*) and foxtail barley (*Hordeum jubatum*).

Along the sides of the creek the primary species were prairie cordgrass (*Spartina pectinata*) and three-square bullrush (*Scirpus americanus*). There was also a large patch of common reed (*Phragmites australis*). The most noticeable forbs near the creek included Canada goldenrod (*Solidago canadensis*), Maximilian sunflower (*Helianthus maximilianii*), white sage (*Artemisia ludoviciana*) and white aster (*Aster ericoides*). On the far shore of the creek there was a clump of buffaloberry (*Shepherdia argentea*).

The channel of Upper Skunk Creek turned to the north before the west boundary of the survey area (**Figure 1**). The hillside above the creek both before and after the bend had areas of sparse vegetation and eroded clay slopes (**Appendix B, Photo 13**). The primary grasses on the shelves were little bluestem (*Andropogon scoparius*), sideoats grama (*Bouteloua curtipendula*), plains muhly (*Muhlenbergia cuspidata*), blue grama (*Bouteloua gracilis*) and prairie sandreed (*Calamovilfa longifolia*). Dwarf sage (*Artemisia cana*), rabbit brush (*Chrysothamnus nauseosus*) and fragrant sumac (*Rhus aromatica*) were also present on the slopes. The noticeable forbs in the grassy areas were prairie goldenrod (*Solidago missouriensis*), sneezewort aster (*Solidago ptarmicoides*), toad flax (*Comandra umbellata*) and winterfat (*Ceratoides lanata*). Plains oraphaca (*Astragalus gilviflorus*), curly-top gumweed (*Grindelia squarrosa*), Hood's phlox (*Phlox hoodii*), broom snakeweed (*Gutierrezia sarothrae*) and yellow buckwheat (*Eriogonum flavum*) were more abundant in areas of sparse vegetation. They also were present on the outwash at the base of the butte along with inland saltgrass (*Distichlis spicata*), slender wheatgrass (*Agropyron caninum*) and wild buckwheat (*Eriogonum pauciflorum*).

The ridge that continued to the north of Upper Skunk Creek had fewer shrubs. In the middle of the crest, to the east, there was more western wheatgrass (*Agropyron smithii*), blue grama (*Bouteloua gracilis*) and needle-and-thread (*Stipa comata*). Little bluestem (*Andropogon scoparius*) was dominant on the upper west facing slope and on the east facing slope (**Appendix B, Photo 14**). Near the middle of the slope there was some sand bluestem (*Andropogon hallii*). There was also more breadroot (*Psoralea esculenta*) than had been noted elsewhere. On the mid slope there were thickets of buffaloberry (*Shepherdia argentea*).

In the draw below the buffaloberry (**Appendix B, Photo 15**) the primary grasses were western wheatgrass (*Agropyron smithii*) and green needle (*Stipa viridula*). White sage (*Artemisia ludoviciana*) was abundant and soft goldenrod (*Solidago mollis*) and purple prairie clover (*Dalea purpurea*) were also quite common. Near the base of the draw, in the deeper part of the drainage, there were several thickets of northern hawthorn (*Crataegus rotundifolia*) surrounded by big bluestem (*Andropogon gerardii*) and wild bergamot (*Monarda fistulosa*). In a few disturbed areas burdock (*Arctium minus*) was present. Up the draw to the north there were areas with smooth brome (*Bromus inermis*) and Canada wildrye (*Elymus canadensis*). Prairie cordgrass (*Spartina pectinata*) was abundant in some areas that appeared to be wetter. Further up the draw western snowberry (*Symphoricarpos occidentalis*) was abundant as was stiff goldenrod (*Solidago rigida*). There was also some Maximilian sunflower (*Helianthus maximiliani*) and bearded wheatgrass (*Agropyron caninum* var. *unilaterale*).

Back toward the west, at the top of the hill, was the area that has been designated for the proposed disposal pit (**Appendix B, Photo 16**), located at the north end of a long ridge (**Figure 1**). Blue grama (*Bouteloua gracilis*) was the most abundant grass on the crest of the hill but there was also western wheatgrass (*Agropyron smithii*) and needlegrasses (*Stipa comata* and *S. viridula*). The most noticeable forbs were silky wormwood (*Artemisia dracuncululus*), fringed sage (*Artemisia frigida*) and wooly plantain (*Plantago patagonica*). Over the sides of the hill little bluestem (*Agropyron smithii*) was the primary grass. Further down the slope there was some big bluestem (*Andropogon gerardii*). The most noticeable forbs on the slope were wavy-leaved thistle (*Cirsium undulatum*), purple coneflower (*Echinacea angustifolia*), wild blue flax (*Linum perenne*) and stiff sunflower (*Helianthus rigidus*).

The west boundary of the survey area followed a wide drainage area west of the long ridge where the disposal pit is to be built (**Appendix B, Photo 17**). The west facing slope had creeping juniper (*Juniperus horizontalis*) near the crest. On the slope there was little bluestem (*Andropogon scoparius*), sideoats grama (*Bouteloua curtipendula*), plains muhly (*Muhlenbergia cuspidata*) and western wheatgrass (*Agropyron smithii*). The most abundant forbs were gray goldenrod (*Solidago nemoralis*), prairie goldenrod (*Solidago missouriensis*), sneezewort aster (*Solidago ptarmicoides*) and broom snakeweed (*Gutierrezia sarothrae*).

At the bottom of the hill there was a stand of green ash (*Fraxinus pennsylvanica*), western snowberry (*Symphoricarpos occidentalis*) and western rose (*Rosa woodsii*). Burdock (*Arctium minus*) was present in some disturbed areas. Prairie cordgrass (*Spartina pectinata*) grew along a wet area which had mostly foxtail barley (*Hordeum jubatum*) up the slope to the north. Further north along the west boundary of the survey area there were thickets of hawthorn (*Crataegus rotundifolia*) with bittersweet (*Celastrus scandens*), Canada goldenrod (*Solidago canadensis*), wild bergamot (*Monarda fistulosa*), Canada thistle (*Cirsium arvense*) and absinthe sage (*Artemisia absinthium*). Further north there were clumps of buffaloberry (*Shepherdia argentea*) and a large area of clayey soil on which rough dropseed (*Sporobolus asper*) was abundant. Near the northwest corner of the area there were more clay slicks (**Appendix B, Photo 18**) with abundant broom snakeweed (*Gutierrezia sarothrae*), winterfat (*Ceratoides lanata*) and blue grama (*Bouteloua gracilis*). These continued to the northwest corner of the site where the survey began.

Summary

The proposed area for the Danks Disposal Site and the proposed access road was located in an area of rough country in eastern Dunn County, North Dakota, to the east of the town of Mandaree. The topography was comprised of a series of ridges separated by draws that drained east or south into Upper Skunk Creek and its tributaries. The composition of the vegetation in the survey area was highly dependent on soil and slope as well as the direction of the slope. The following are the predominant plant communities in the area.

One of the most conspicuous grassland communities at the time of the survey was the one dominated by little bluestem (*Andropogon scoparius*) because of the reddish autumn coloration of this grass. It is present on the loamy convex shoulder slopes and side slopes of the hills. Other primary grasses in this community included plains muhly (*Muhlenbergia cuspidata*) and needlegrasses (*Stipa viridula* and *S. comata*). Within this community on sandier locations, especially near the crests of hills, there were patches of prairie sandreed (*Calamovilfa longifolia*).

The crests of the hills had primarily blue grama (*Bouteloua gracilis*), western wheatgrass (*Agropyron smithii*), needle-and thread (*Stipa comata*) and thread leaf sedge (*Carex filifolia*).

Convex footslopes below the little bluestem and on slightly sloping areas with silty to sandy loams that fan out from the base of the ridges had communities dominated by western wheatgrass (*Agropyron smithii*), blue grama (*Bouteloua gracilis*) and needlegrasses (*Stipa viridula* and *S. comata*).

Gently sloping or nearly level areas with silty clay soil, frequently alkaline (common in the northwest corner or the disposal site and near the end of the proposed access road) were dominated by western wheatgrass (*Agropyron smithii*), blue grama (*Bouteloua gracilis*) and inland saltgrass (*Distichlis spicata*). Inland saltgrass was not present in areas with less alkalinity or salinity.

North of this area there were steep, south facing barren slopes of exposed eroded clay and sparse vegetation with its own typical complement of species. The typical shrubs or sub-shrubs included rabbit brush (*Chrysothamnus nauseosus*), greasewood (*Sarcobatus vermiculatus*), saltbrush (*Atriplex nuttallii*) and seepweed (*Suaeda moquinii*) on the steep slopes. Species common to the outwash at the base were slender wheatgrass (*Agropyron caninum*), alkali grass (*Puccinellia nuttalliana*), wild buckwheat (*Eriogonum pauciflorum*), gumweed (*Grindelia squarrosa*) and broom snakeweed (*Gutierrezia sarothrae*).

Along the creek that followed the south boundary there was a saline lowland community with alkali grass (*Puccinellia nuttalliana*), inland salt grass (*Distichlis spicata*), and western wheatgrass (*Agropyron smithii*) along with some fowl bluegrass (*Poa palustris*) and foxtail barley (*Hordeum jubatum*).

Wooded communities were most prevalent on the north and east facing slopes. Communities on the north slopes had as their primary woody species green ash (*Fraxinus pennsylvanica*), Rocky Mountain juniper (*Juniperus scopulorum*), creeping juniper (*Juniper horizontalis*) and buffalo berry (*Shepherdia argentea*). On some of the more gently sloping grassy hills buffaloberry was abundant but was the only woody species.

Wooded areas along drainage channels had both green ash (*Fraxinus pennsylvanica*) and American elm (*Ulmus americana*) with deciduous shrubs including chokecherry (*Prunus virginiana*), Juneberry (*Amelanchier alnifolia*) and hawthorn (*Crataegus rotundifolia*) in the understory. Western snowberry (*Symphoricarpos occidentalis*) was common around the edges. Hawthorn also grew in thickets along the bottom of the drainage area between the two western north/south ridges in the disposal area.

Conclusions

The area surveyed was being used for grazing and was in good to excellent condition. There were no rare or sensitive species observed. There were, however, problematic weedy species present in the survey area. Two species, absinthe sage and Canada thistle, are on the noxious weed list for the state of North Dakota. Absinthe sage (*Artemisia absinthium*) was abundant in the farmstead and the existing dump area on the east side of the proposed disposal area. Smaller amounts appeared in some of the drainage areas as well. There was a small amount of Canada thistle (*Cirsium arvense*) along the west boundary of the proposed disposal area.

Five species listed on the US Forest Service list of invasive species were present in the survey area. These were yellow sweet clover (*Melilotus officinalis*), Kentucky bluegrass (*Poa*

pratensis), crested wheatgrass (*Agropyron cristatum*), smooth brome (*Bromus inermis*) and Japanese brome (*Bromus japonicus*). Two additional species are problematic, burdock and giant ragweed. Large patches of giant ragweed (*Ambrosia trifida*) were present east of the road to the farmstead. This species is not common in this part of the state. Burdock (*Arctium minus*) was also rather abundant in several woodlands with areas where there had disturbance from cattle. The seeds of this biennial species are readily spread by cattle.

Table 1. Observed Plant Species within Project Area

| Species | Colloquial Name |
|---------------------------------------------------------------------------------------------------------------|----------------------------|
| <i>Achillea millefolium</i> L. | yarrow |
| <i>Agropyron caninum</i> (L.) Beauv. subsp. <i>majus</i> (Vasey) C.L.Hitchc. | slender wheatgrass |
| <i>Agropyron caninum</i> (L.) Beauv. subsp. <i>majus</i> (Vasey) C.L.Hitchc. var. <i>unilaterale</i> Vasey | bearded slender wheatgrass |
| <i>Agropyron cristatum</i> (L.) Gaertn. | crested wheatgrass |
| <i>Agropyron elongatum</i> (Host) Beauv. | tall wheatgrass |
| <i>Agropyron smithii</i> Rydb. | western wheatgrass |
| <i>Amaranthus retroflexus</i> L. | rough pigweed |
| <i>Ambrosia trifida</i> L. | giant ragweed |
| <i>Amelanchier alnifolia</i> Nutt. | Saskatoon serviceberry |
| <i>Andropogon gerardii</i> Vitman | big bluestem |
| <i>Andropogon hallii</i> Hack. | sand bluestem |
| <i>Andropogon scoparius</i> Michx. | little bluestem |
| <i>Anemone cylindrica</i> A. Gray | candle anemone |
| <i>Antennaria parviflora</i> Nutt. | pussy-toes |
| <i>Arctium minus</i> Bernh. | burdock |
| <i>Aristida purpurea</i> Nutt. | three-awn |
| <i>Artemisia absinthium</i> L. | absinthe wormwood |
| <i>Artemisia cana</i> Pursh | dwarf sagebrush |
| <i>Artemisia dracunculus</i> L. | silky wormwood |
| <i>Artemisia frigida</i> Willd. | fringed sage |
| <i>Artemisia ludoviciana</i> Nutt. | white sage |
| <i>Aster ericoides</i> L. | heath aster |
| <i>Aster laevis</i> L. | smooth blue aster |
| <i>Aster oblongifolius</i> Nutt. | aromatic aster |
| <i>Astragalus gilviflorus</i> Sheld. | plains orophaca |
| <i>Atriplex argentea</i> Nutt. | silver-scale saltbush |
| <i>Atriplex dioica</i> (Nutt.) Macbr. | sillscale |
| <i>Atriplex nuttallii</i> S. Wats. | Nuttall saltbush |
| <i>Beckmannia syzigachne</i> (Steud.) Fern. | American sloughgrass |
| <i>Bouteloua curtipendula</i> (Michx.) Torr. | sideoats grama |
| <i>Bouteloua gracilis</i> (H.B.K.) Lag. ex. Griffiths | blue grama |
| <i>Bromus inermis</i> Leyss. | smooth brome |
| <i>Bromus japonicus</i> Thunb. ex Murr. | Japanese brome |
| <i>Calamagrostis montanensis</i> (Scribn.) Scribn. | plains reedgrass |
| <i>Calamovilfa longifolia</i> (Hook.) Scribn. | prairie sandreed |
| <i>Calylophus serrulatus</i> (Nutt.) Raven | plains yellow primrose |
| <i>Carex filifolia</i> Nutt. | threadleaf sedge |
| <i>Carex sprengei</i> Dew. ex Spreng. | Sprengel's sedge |
| <i>Celastrus scandens</i> L. | American bittersweet |
| <i>Ceratoides lanata</i> (Pursh) Howell | winterfat |
| <i>Chrysothamnus nauseosus</i> (Pall.) Britt. | rubber rabbit brush |
| <i>Cirsium arvense</i> (L.) Scop. | Canada thistle |

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|--------------------------------------------------------------------------|--------------------------|
| <i>Cirsium flodmanii</i> (Rydb.) Arthur | Flodman's thistle |
| <i>Cirsium undulatum</i> (Nutt.) Spreng. | wavy-leaf thistle |
| <i>Comandra umbellata</i> (L.) Nutt. | bastard toadflax |
| <i>Conyza canadensis</i> (L.) Cronq. | horseweed |
| <i>Crataegus rotundifolia</i> Moench | northern hawthorn |
| <i>Cryptantha celosioides</i> (Eastw.) | butte candle |
| <i>Dalea purpurea</i> Vent. | purple prairie clover |
| <i>Descurainia sophia</i> (L.) Webb ex Prantl. | flixweed |
| <i>Distichlis spicata</i> (L.) Greene var. <i>stricta</i> (Torr.) Beetle | inland saltgrass |
| <i>Echinacea angustifolia</i> DC. | purple coneflower |
| <i>Eleocharis</i> sp. | spikerush |
| <i>Elymus canadensis</i> L. | Canada wild rye |
| <i>Elymus virginicus</i> L. | Virginia wild rye |
| <i>Erigeron strigosus</i> Muhl. Ex Willd. | daisy fleabane |
| <i>Eriogonum flavum</i> Nutt. | yellow wild buckwheat |
| <i>Eriogonum pauciflorum</i> Pursh | fewflower wild buckwheat |
| <i>Fraxinus pennsylvanica</i> Marsh. | green ash |
| <i>Galium boreale</i> L. | northern bedstraw |
| <i>Glycyrrhiza lepidota</i> Pursh. | wild licorice |
| <i>Grindelia squarrosa</i> (Pursh) Dun. | curly-top gumweed |
| <i>Gutierrezia sarothrae</i> (Pursh) Britt. & Rusby | broom snakeweed |
| <i>Haplopappus spinulosus</i> (Pursh) DC. | cutleaf ironplant |
| <i>Helianthus maximiliani</i> Schrad. | Maximilian sunflower |
| <i>Helianthus rigidus</i> (Cass.) Desf. | stiff sunflower |
| <i>Hordeum jubatum</i> L. | foxtail barley |
| <i>Iva axillaris</i> Pursh | poverty weed |
| <i>Iva xanthifolia</i> Nutt. | marsh elder |
| <i>Juniperus communis</i> L. | common juniper |
| <i>Juniperus horizontalis</i> Moench. | creeping juniper |
| <i>Juniperus scopulorum</i> Sarg. | Rocky Mountain juniper |
| <i>Kochia scoparia</i> (L.) Schrad. | kochia |
| <i>Koeleria pyramidata</i> (Lam.) Beauv. | Junegrass |
| <i>Lactuca oblongifolia</i> Nutt. | blue lettuce |
| <i>Lactuca serriola</i> L. | prickly lettuce |
| <i>Liatris punctata</i> Hook. | dotted blazing star |
| <i>Linum perenne</i> L. var. <i>lewisii</i> (Pursh) Eat. & Wright | blue flax |
| <i>Linum rigidum</i> Pursh. | stiffstem flax |
| <i>Lygodesmia juncea</i> (Pursh) Hook. | skeleton weed |
| <i>Medicago lupulina</i> L. | black medic |
| <i>Melilotus officinalis</i> (L.) Pall. | yellow sweet clover |
| <i>Monarda fistulosa</i> L. | wild bergamot |
| <i>Muhlenbergia cuspidata</i> (Torr.) Rydb. | plains muhly |
| <i>Oenothera biennis</i> L. | common evening primrose |
| <i>Opuntia polyacantha</i> Haw. | plains prickly pear |
| <i>Orthocarpus luteus</i> Nutt. | owl clover |
| <i>Oxytropis lambertii</i> Pursh | purple locoweed |
| <i>Panicum virgatum</i> L. | switchgrass |
| <i>Penstemon albidus</i> Nutt. | white beardtongue |
| <i>Phlox hoodii</i> Rich. | Hood's phlox |
| <i>Phragmites australis</i> (Cav.) Trin. ex. Steud. | common reed |
| <i>Plantago patagonica</i> Jacq. | wooly plantain |
| <i>Poa compressa</i> L. | Canada bluegrass |
| <i>Poa palustris</i> L. | fowl bluegrass |
| <i>Poa pratensis</i> L. | Kentucky bluegrass |
| <i>Poa sandbergii</i> Vasey | Sandberg's bluegrass |
| <i>Polygala alba</i> Nutt. | white milkwort |

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| <i>Prunus virginiana</i> L. | chokecherry |
| <i>Psoralea argophylla</i> Pursh | silver-leaf scurf pea |
| <i>Psoralea esculenta</i> Pursh | breadroot scurf pea |
| <i>Puccinellia nuttalliana</i> (Schult.) A. Hitchc. | alkali grass |
| <i>Ratibida columnifera</i> (Nutt.) Woot. & Standl. | prairie coneflower |
| <i>Rhus aromatica</i> Ait. | fragrant sumac |
| <i>Rosa arkansana</i> Porter | prairie wildrose |
| <i>Rosa woodsii</i> Lindl. | western wild rose |
| <i>Rubus idaeus</i> L. | red raspberry |
| <i>Rumex stenophyllus</i> Ledeb. | dock |
| <i>Salsola iberica</i> Senn. & Pau. | Russian thistle |
| <i>Sarcobatus vermiculatus</i> (Hook.) Torr. | greasewood |
| <i>Scirpus americanus</i> Pers. | three-square bulrush |
| <i>Scirpus validus</i> Vahl. | softstem bullrush |
| <i>Schedonnardus paniculatus</i> (Nutt.) Trel. | tumblegrass |
| <i>Shepherdia argentea</i> (Pursh) Nutt. | buffaloberry |
| <i>Smilax herbacea</i> L. | carrion-flower |
| <i>Solidago canadensis</i> L. | Canada goldenrod |
| <i>Solidago missouriensis</i> Nutt. | prairie goldenrod |
| <i>Solidago mollis</i> Bartl. | soft goldenrod |
| <i>Solidago nemoralis</i> Ait. | gray goldenrod |
| <i>Solidago ptarmicoides</i> (Nees) Boivin | sneezewort aster |
| <i>Solidago rigida</i> L. | rigid goldenrod |
| <i>Spartina pectinata</i> Link | prairie cordgrass |
| <i>Sphaeralcea coccinea</i> (Pursh) Rydb. | red false mallow |
| <i>Sporobolus asper</i> (Michx.) Kunth | rough dropseed |
| <i>Stipa comata</i> Trin. & Rupr. | needle-and-thread |
| <i>Stipa viridula</i> Trin. | green needlegrass |
| <i>Suaeda moquinii</i> (Torr.) Greene | seepweed |
| <i>Symphoricarpos occidentalis</i> L. | western snowberry |
| <i>Taraxacum officinale</i> Weber | common dandelion |
| <i>Thlaspi arvense</i> L. | pennycress |
| <i>Tragopogon dubius</i> Scop. | goat's beard |
| <i>Typha latifolia</i> L. | broad-leaved cattail |
| <i>Ulmus americana</i> L. | American elm |
| <i>Verbena bracteata</i> Lag. & Rodr. | prostrate vervain |
| <i>Vicia americana</i> Muhl. ex Willd. | American vetch |
| <i>Xanthium strumarium</i> L. | cocklebur |

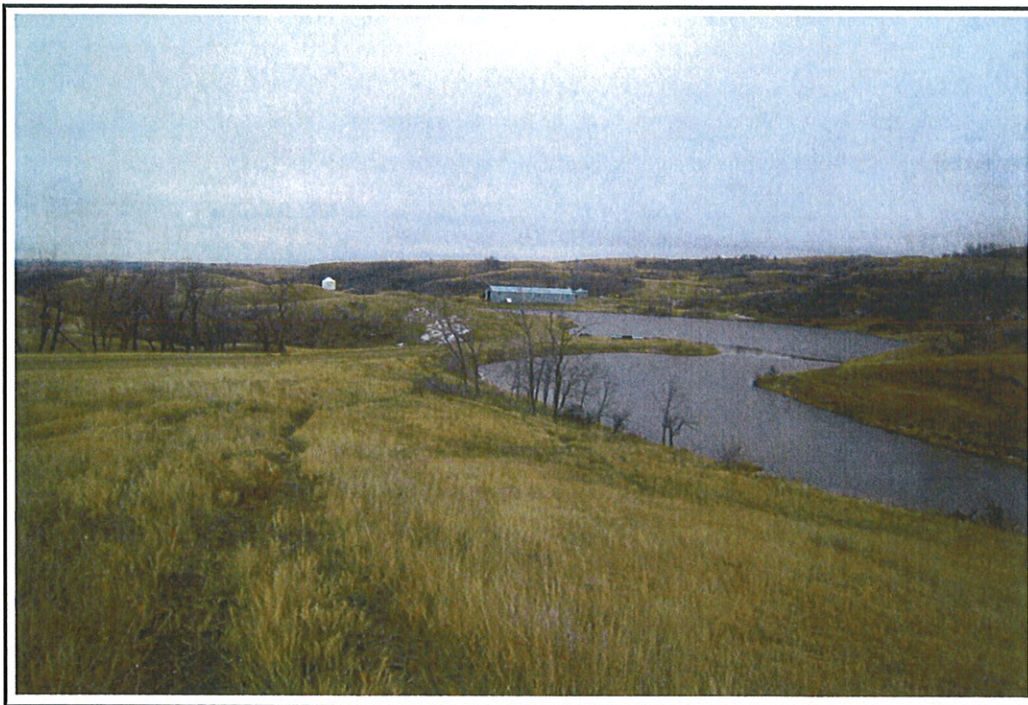


Photograph # 1

Date: November 15, 2010

Direction: South/Southeast

Subject: From BIA Road 10 at start of proposed access road. Note the farmstead in the distance and woody cover.



Photograph # 2

Date: November 15, 2010

Direction: South

Subject: Man-made dam west of existing gravel road along route of proposed access road. Farmstead visible in distance.





Photograph # 3

Date: November 15, 2010

Direction: East

Subject: Drainage on opposite side of man-made dam on east side of the existing gravel road along proposed access route.



Photograph # 4

Date: November 15, 2010

Direction: Southwest

Subject: Typical vegetation of upper slopes along the proposed access road.

Subject: Primarily native vegetation.





Photograph # 5

Date: November 15, 2010

Direction: South

Subject: Prairie slope and wooded ravines along proposed access route, which at this point follows an existing two-track trail.



Photograph # 6

Date: November 15, 2010

Direction: Southeast

Subject: Final segment of the access route. Equipment in distance is approximately in northwest corner of proposed disposal site.





Photograph # 7

Date: November 15, 2010

Direction: North

Subject: From hill along S edge of survey area toward NW corner of disposal site. Barren clay butte along N boundary visible.



Photograph # 8

Date: November 15, 2010

Direction: East/Southeast

Subject: N-S ridge along east side of disposal area. Note grassy south facing slopes and scattered woody cover.





Photograph # 9

Date: November 15, 2010

Direction: South

Subject: Crest of N-S ridge along east side of survey area. Interrupted by wooded draws.



Photograph # 10

Date: November 15, 2010

Direction: West

Subject: View from N-S ridge to the west showing low area that forms the north-central portion of survey area.





Photograph # 11

Date: November 15, 2010

Direction: South

Subject: South portion of survey area showing flat to rolling hills, dump area, and existing two-track road through the parcel.



Photograph # 12

Date: November 15, 2010

Direction: South

Subject: Upper Skunk Creek at the southernmost tip of the survey area.





Photograph # 13

Date: November 15, 2010

Direction: North

Subject: Eroded hillsides on east side of bend in Upper Skunk Creek in SW corner of survey area.



Photograph # 14

Date: November 15, 2010

Direction: East

Subject: From W ridge to E across center of survey area. Note shrubby draw and little bluestem.





Photograph # 15

Date: November 15, 2010

Direction: South/Southeast

Subject: Wooded draw with scattered little bluestem in west-central portion of survey area.



Photograph # 16

Date: November 15, 2010

Direction: North/Northwest

Subject: Ridge in the N/NW portion of survey area. Equipment in distance is approximate location of disposal site.





Photograph # 17

Date: November 15, 2010

Direction: West

Subject: Drainage area along west boundary of survey area.



Photograph # 18

Date: November 15, 2010

Direction: North

Subject: Mid-point of west boundary of disposal site. Past the equipment in the distance is the northwest corner where the access road enters the site.



December 19, 2010

Dear Interested Party:

The Bureau of Indian Affairs (BIA) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA), in cooperation with the Bureau of Land Management (BLM). BIA and BLM are considering approval of an 18-acre oil well waste disposal site (Area 1, Figure 1) where initially two or three 150' X 250" pits will be developed and a 75-acre site (Area 2, Figure 2) where pit development may occur in the future, with access road, on the Fort Berthold Reservation. The project will conform with the BLM Onshore Oil and Gas Order No. 7: Disposal of Produced Water (43 CFR Part 3160). This order includes design specifications to ensure the environment is protected. TJD Consulting proposes to develop an oil well waste disposal site at the following surface location, as shown on the enclosed map (Figure 1):

- NW1/4NW1/4 of Section 17, T149N R92W Dunn County, North Dakota.

To ensure that, social, economic, and environmental effects are analyzed accurately, we solicit your views and comments on the proposed action. We are interested in existing or proposed developments that should be considered in connection with the proposed project. We also ask your assistance in identifying any property or resources that you own, manage, oversee, or otherwise value that might be adversely impacted. Finally, we are interested in mitigation measures pertaining to any potential impacts.

Please send your replies and requests for additional project information to:

Wenck Associates, Inc.
ATTN: Bill Suess
301 1st Street NE
Mandan, ND 58554-3370

If we do not hear from you by **January 25, 2011** we will assume that you have no comment on this project. Questions for the BIA can be directed to Marilyn Bercier, Regional Environmental Scientist, Division of Environment, Safety and Cultural Resources Management, at (605) 226-7656.

Sincerely,

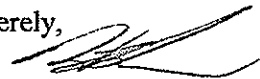

Bill Suess
Project Manager

Table 11 Scoping Contacts

| Addressee | Response |
|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MHA Nation | |
| Macus Wells, Chairman | No comments received |
| V. Jusy Brugh, Four Bears Representative | No comments received |
| Nathan Hale, Mandaree Representative | No comments received |
| Malcolm Wolf, New Town Representative | No comments received |
| Mervin Packineau, Parshall/Lucky Mound Representative | No comments received |
| Barry Benson, Twin Buttes Representative | No comments received |
| Frank Whitecalfe, White Shield Representative | No comments received |
| Perry Brady, THPO | No comments received |
| Fred Fox | No comments received |
| Todd Hall | No comments received |
| Fred Poitra | No comments received |
| Damon Williams | No comments received |
| NAGPRA Office | No comments received |
| Natural Resource Department | No comments received |
| Regional Native American Tribes | |
| Mike Selvage, Chairman, Sisseton-Wahpeton Sioux Tribe | No comments received |
| Carl Walking Eagle, Chairman, Spirit Lake Sioux Tribe | No comments received |
| Jesse Taken Alive, Chairman, Standing Rock Sioux Tribe | No comments received |
| Twila Martin-Kekabah, Chairperson, Turtle Mountain Band of Chippewa | No comments received |
| U.S. Department of Agriculture | |
| Natural Resource Conservation Service; Bismarck, ND | No comments received |
| Little Missouri National Grassland; Watford City, ND | No comments received |
| U.S. Department of Defense | |
| Minot Air Force Base, Environmental Department | Received Response – No Comments |
| U.S. Army Corps of Engineers; Bismarck, ND | No comments received |
| U.S. Army Corps of Engineers; Riverdale, ND | No comments received |
| U.S. Army Corps of Engineers; Omaha, NE | If construction activities involve work in waters of the U.S., a Section 404 permit may be required |
| U.S. Army Corps of Engineers; Garrison Project Office | Suggests a containment system to hold 110% of the pit volume be placed around the disposal site and an additional containment be placed in Skunck Creek. |
| U.S. Department of Energy | |
| Western Area Power Administration; Bismarck, ND | No comments received |
| U.S. Department of Homeland Security | |
| Federal Emergency Management Agency; Denver, CO | Project may be in a Special Flood Hazard Area. |
| U.S. Department of the Interior | |
| Bureau of Indian Affairs; Aberdeen, SD | No historic properties affected |
| Bureau of Land Management; Dickinson, ND | No comments received |
| Bureau of Reclamation; Bismarck, ND | Project could potentially affect water pipelines installed for Fort Berthold Rural Water System. Requested that work be coordinated with Lester Crows Heart.. |
| Fish and Wildlife Service; Bismarck, ND | Project could potentially affect migratory birds, habitat and Dakota Skipper. |
| National Park Service Midwest Regional Office; Omaha, NE | No comments received |
| U.S Environmental Protection Agency | |
| Enforcement, Compliance & Environmental Justice; Eddie Sierra, Denver, CO | No comments received |
| Region 8 NEPA Program; Larry Svoboda, Denver, CO | No comments received |
| Region 8 Water Quality Program; David Moon, Denver, CO | No comments received |
| U.S. Department of Transportation | |
| Federal Aviation Agency; Bismarck, ND | No comments received |
| North Dakota State Government | |
| Department of Health, Environmental Health Section | Construction standards should meet or exceed NDAC 31-29-07.1, minimize disturbance to soil, surface waters, and may require a NPDES permit. |
| Department of Transportation, Office of Special Development | No adverse effect. |

| | |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Game and Fish Department | No comments received |
| Indian Affairs Commission | No comments received |
| Parks and Recreation, Planning and Natural Resources Division | No comments received |
| State Water Commission | Dispose of all waste material properly and do not place in identified floodway areas. |
| State Historical Society of North Dakota | Requests a copy of cultural resource site forms and reports. |
| County Governments | |
| Elvis Kadrmas, Assistant Water Superintendent | No comments received |
| Reinhard Hauck, Dunn County | No comments received |
| Richard Cayko, Commissioner, McKenzie County | No comments received |
| Frances Olson, Auditor, McKenzie County | No comments received |
| Municipal Governments | |
| New Town Municipal Airport; John Satermo, APT Chairman | No comments received |
| New Town Municipal Airport; Harley Johnson, Manager | No comments received |
| Parshall-Hankins Field Airport; John Kuehn, Manager | No comments received |
| Private Individuals, Companies and/or Corporations | |
| Warren Hoffman; Killdeer, ND | No comments received |
| Excel Energy; Minneapolis, MN | No comments received |
| Utility Companies | |
| McKenzie Electric Cooperative | No comments received |
| McLean Electric Cooperative, Inc. | No comments received |
| Midcontinent Cable | No comments received |
| Montana-Dakota Utilities Co. | No comments received |
| Nodak Electric Cooperative, Inc. | No comments received |
| Northern Border Pipeline Co. | No comments received |
| Reservation Telephone Cooperative | No comments received |
| Southwest Water Authority | No comments received |
| West Plains Electric Cooperative, Inc. | No comments received |



NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov



December 28, 2010

Wenck Associates, Inc.
ATTN: Bill Sues
301 1st Street NE
Mandan, ND 58554-3370

Re: 18-acre Oil Well Waste Disposal Site and
75-acre Site for Future Pit Development
On the Fort Berthold Reservation, Dunn County

Dear Mr. Sues:

This department has reviewed the information concerning the above-referenced project submitted under date of December 19, 2010, with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction may be able to be controlled by proper construction methods, however, no construction standards or methods have been included. With respect to construction, we have the following comments:

1. Specific construction standards or proposals were not included with the request for comment. It is recommended that standards for the facility meet or exceed the standards required for special waste facilities under North Dakota Administrative Code Chapter 31-29-07.1 and for general site suitability standards and ground water protection requirements of other chapters in North Dakota Administrative Code Article 31-29, Solid Waste Management and Land Protection. See <http://www.legis.nd.gov/information/acdata/html/33-20.html> for details of standards for solid waste in North Dakota.
2. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.
3. The facility may be required to obtain NPDES permits to discharge storm water runoff for both construction and industrial activity from the U.S. Environmental Protection Agency. Further information on the storm water permit may be obtained from the U.S. EPA's website or by calling the U.S. EPA – Region 8 at 303-312-6312. Also, cities or counties

Environmental Health
Section Chief's Office
701.328.5150

Division of
Air Quality
701.328.5188

Division of
Municipal Facilities
701.328.5211

Division of
Waste Management
701.328.5166

Division of
Water Quality
701.328.5210

Mr. Bill Suess

2.

December 28, 2010

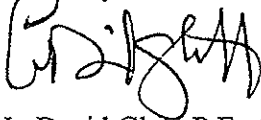
may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

These comments are based on the information provided about the project in the above-referenced submittal. The U.S. Army Corps of Engineers may require a water quality certification from this department for the project if the project is subject to their Section 404 permitting process. Any additional information which may be required by the U.S. Army Corps of Engineers under the process will be considered by this department in our determination regarding the issuance of such a certification.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

A handwritten signature in black ink, appearing to read "L. David Glatt", written over a horizontal line.

L. David Glatt, P.E., Chief
Environmental Health Section

LDG:cc
Attach.



Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501



MAR 9 2011

Mr. Bill Seuss, Project Manager
Wenck Associates, Inc.
301 1st Street NE, Suite 202
Mandan, North Dakota 58554-3370

Re: Scoping for Proposed 18-acre oil well
waste disposal site, Dunn County,
North Dakota

Dear Mr. Wenck:

This is in response to your December 19, 2010, scoping letter regarding the proposed construction of an 18 acre oil well waste disposal site and access road on the Fort Berthold Reservation, Dunn County, North Dakota. The proposal also includes a 75 acre site where pit development may occur in the future.

Your letter states in part: "If we do not hear from you by January 25, 2011, we will assume that you have no comment on this project." **You may not assume this.** Our office makes every effort to respond to such requests within 30 days of receipt. However, any party is responsible to ensure that their actions comply with the provisions of the Federal wildlife laws listed below.

We offer the following comments under the authority of and in accordance with the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.) (NEPA), the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) (MBTA), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) (BGEPA), the Endangered Species Act (16 U.S.C. 1531 et seq.) (ESA).

Threatened and Endangered Species

If an action that may affect a federally-listed threatened or endangered species is carried out, funded, permitted, or licensed by a Federal agency [in this case the Bureau of Indian Affairs (BIA)], then the Federal agency may designate a non-Federal representative to conduct informal consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the ESA. The Federal agency is responsible to ensure that its actions comply with the ESA and other relevant wildlife protection laws, including obtaining

concurrence from the Service for any action that may affect a threatened or endangered species or result in the destruction or adverse modification of designated critical habitat. The Federal agency is also responsible for making a determination of effects for federally listed species, and should consult with the Service as appropriate.

The Service recommends that Wenck Associates, Inc. (Wenck) coordinate with BIA on this project. Until such time as BIA designates Wenck as its agent for purposes of informal Section 7 consultation, these comments should be considered as preliminary to assist in project planning.

Threatened and Endangered Species

A list of federally endangered and threatened species that may be present within the proposed project's area of influence is enclosed. This list fulfills requirements of the Service under Section 7 of the ESA. This list remains valid for 90 days.

Known nesting sites for piping plovers and interior least terns exist near the project area along the Missouri River and Lake Sakakawea, and there is designated critical habitat for the piping plover in Dunn County. In North Dakota, piping plovers and least terns begin arriving on their breeding grounds in early to mid-April and early May, respectively, and are typically gone by September 1. Disturbance from construction activities during this timeframe is possible depending on proximity to birds. The Service recommends that construction activities in these areas take place from September 1 – April 1. Be advised that this timeframe may not coincide with appropriate conservation measures to avoid migratory bird impacts (see below). Considerations should be given to both ESA and MBTA recommendations.

In order to avoid disturbing these birds and their habitat, we recommend the following precautions when working in potential or known piping plover habitat:

- Total avoidance of the documented and potential nesting wetlands from April 1 – September 1;
- On wetlands with potential or documented plover nesting, use a one-half mile no entry buffer on all shorelines throughout the year;
- All vehicle use should be avoided on any wetland and lake shoreline in the project area.

If you are unable to positively identify piping plover nesting areas, or to maintain a one-half mile no-entry buffer on all nesting wetlands, we recommend that you retain the services of a qualified biologist to survey your project area for these resources. The project proponent is required to ensure that their activities do not result in take of piping plovers, their eggs or chicks, and do not destroy or adversely modify designated critical habitat.

The Aransas Wood Buffalo Population (AWBP) of endangered whooping cranes is the only self-sustaining migratory population of whooping cranes remaining in the wild.

These birds breed in the wetlands of Wood Buffalo National Park in Alberta and the Northwest Territories of northern Canada, and overwinter on the Texas coast. Whooping cranes in the AWBP annually migrate through North Dakota during their spring and fall migrations. They make numerous stops along their migration route to feed and roost before moving on.

Whooping cranes in the AWBP annually migrate through North Dakota during their spring and fall migrations. The proposed project lies within a 90-mile-wide corridor that includes approximately 75 percent of all reported whooping crane sightings in the State (enclosure). The presence of suitable roosting and feeding habitat for whooping cranes document the potential for whooping crane presence in the proposed project area. Whooping cranes are unlikely to spend more than a few days in any one spot during migration. The Service recommends that if a whooping crane is sighted within one mile of a pipeline or associated facilities while it is under construction, that all work cease within one mile of that part of the project and the Service be contacted immediately. In coordination with the Service, work may resume after the bird(s) leave the area.

The Dakota skipper is a small to medium-sized hesperine butterfly associated with high quality prairie ranging from wet-mesic tallgrass prairie to dry-mesic mixed grass prairie. The first type of habitat is relatively flat and moist native bluestem prairie. Three species of wildflowers are usually present: wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*), and smooth camas (*Zygadenus elegans*). The second habitat type is upland (dry) prairie that is often on ridges and hillsides. Bluestem grasses and needlegrasses dominate these habitats. On this habitat type, three wildflowers are typically present in high quality sites that are suitable for Dakota skipper: pale purple (*Echinacea pallida*) and upright (*E. angustifolia*) coneflowers and blanketflower (*Gaillardia sp.*). Because of the difficulty of surveying for Dakota skippers and a short survey window, we recommend that the project avoid any impacts to potential Dakota skipper habitat. If Dakota skipper habitat is present near the proposed project, and you intend to take precautions to avoid impacts to skipper habitat, please notify the Service for further direction.

In 2010, the Sprague's pipit was added to the candidate species list. Migratory bird species, such as the Sprague's pipit, that are candidates are still protected under the MBTA. Sprague's pipits require large patches of grassland habitat for breeding, with preferred grass height between 4 and 12 inches. The species prefers to breed in well-drained, open grasslands and avoids grasslands with excessive shrubs. They can be found in lightly to heavily grazed areas. They avoid intrusive human features on the landscape, so the impact of a development can be much larger than the actual footprint of the feature. If Sprague's pipit habitat is present within or adjacent to the proposed project area, the Service requests that you document any steps taken to avoid and minimize disturbance of this habitat.

The Dakota skipper and Sprague's pipit are candidate species for listing under the ESA; therefore, an effects determination is not necessary for these species. No legal requirement exists to protect candidate species; however, it is within the spirit of the ESA

to consider these species as having significant value and worth protecting. Although not required, Federal action agencies such as the BIA have the option of requesting a conference on any proposed action that may affect candidate species such as the Dakota skipper and Sprague's pipit.

Migratory Birds

The Migratory Bird Treaty Act prohibits the taking, killing, possession, and transportation, (among other actions) of migratory birds, their eggs, parts, and nests, except when specifically permitted by regulations. While the MBTA has no provision for allowing unauthorized take, the Service realizes that some birds may be killed during construction even if all known reasonable and effective measures to protect birds are used. The Service Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and industries that have taken effective steps to avoid take of migratory birds, and by encouraging others to implement measures to avoid take of migratory birds. It is not possible to absolve individuals, companies, or agencies from liability even if they implement bird mortality avoidance or other similar protective measures. However, the Office of Law Enforcement focuses its resources on investigating and prosecuting individuals and companies that take migratory birds without identifying and implementing all reasonable, prudent and effective measures to avoid that take. Companies are encouraged to work closely with Service biologists to identify available protective measures when developing project plans and/or avian protection plans, and to implement those measures prior to/during construction or similar activities.

The Service recommends that the project proponent implement the following measures to avoid/minimize take of migratory birds:

- Construction should be completed outside of the migratory bird nesting season (Feb. 1-July 15);
- If construction needs to take place within the breeding and nesting season, pre-construction surveys for migratory birds and their nests should be conducted within five days prior to the initiation of construction activities. If birds or nests are discovered, the Service should be contacted for additional information on how to proceed.

Bald and Golden Eagles

Bald and golden eagles may use the project area where the pipeline will be located. Golden eagles inhabit a wide variety of habitat types, including open grassland areas. They are known to nest on cliffs, in trees, manmade structures, and on the ground. While the bald eagle tends to be more closely associated with forested areas near water, they have been found nesting in single trees several miles from the nearest water body. Therefore, there may also be potential habitat for the bald eagle at the proposed project site. Especially early in the nesting season, eagles can be very sensitive to disturbance

near the nest site and may abandon their nest as a result of low disturbance levels, even from foot traffic. A buffer of at least 1/2 mile should be maintained for golden and bald eagle nests. A permit is required for any take of bald or golden eagles or their nests. Permits to take golden eagles or their nests are available only for legitimate emergencies and as part of a program to protect golden eagles.

High Value Habitat Avoidance

Construction activities should be conducted in a manner that will avoid/minimize impacts to the existing habitat in the project area. The following recommendations are intended to reduce construction related impacts:

- Make no stream channel alterations or changes in drainage patterns.
- Install and maintain appropriate erosion control measures to reduce sediment transport to adjacent wetlands and stream channels.
- Reseed disturbed areas with a mixture of native grass and forb species immediately after construction to reduce erosion. Parts of the proposed project area appear to be grassland habitat. If trenching is performed in these areas, post-construction reseeded of native prairie grasses, forbs and legumes should be completed. The Service suggests that the project proponent consider planting a diverse mix of native species to reclaim the grassland areas. Recent research indicates that a diverse native species mix, including numerous forb species, is not only ecologically beneficial, but is also more weed resistant. A diverse planting of native grasses and forbs allows for less intensive management and chemical use. The more species included in a mixture, the higher the probability of providing competition to resist invasion by non-native plants.

Thank you for the opportunity to comment on this project. If you require further information or the project plans change, please contact me or Heidi Riddle of my staff at (701) 250-4481 or at the letterhead address.

Sincerely,



Jeffrey K. Towner
Field Supervisor
North Dakota Field Office

Enclosures

cc: BIA, Aberdeen
(Attn: Marilyn Bercier)

FEDERAL THREATENED, ENDANGERED, AND CANDIDATE SPECIES
AND DESIGNATED CRITICAL HABITAT FOUND IN
DUNN COUNTY, NORTH DAKOTA
March 2011

ENDANGERED SPECIES

Birds

Interior least tern (*Sterna antillarum*): Nests along midstream sandbars of the Missouri and Yellowstone Rivers.

Whooping crane (*Grus Americana*): Aransas-Wood Buffalo Population (264 birds) occurs in North Dakota counties during spring and fall migration between breeding and wintering areas. Whooping cranes prefer to roost overnight in shallow open water wetland habitat with good visibility during migration stopovers.

Fish

Pallid sturgeon (*Scaphirhynchus albus*): Known only from the Missouri and Yellowstone Rivers. No reproduction has been documented in 15 years.

Mammals

Black-footed ferret (*Mustela nigripes*): Exclusively associated with prairie dog towns. No records of occurrence in recent years, although there is potential for reintroduction in the future.

Gray wolf (*Canis lupus*): Occasional visitor in North Dakota. Most frequently observed in the Turtle Mountains area.

THREATENED SPECIES

Birds

Piping plover (*Charadrius melodus*): Nests on midstream sandbars of the Missouri and Yellowstone Rivers and along shorelines of saline wetlands. More nest in North Dakota than any other state.

CANDIDATE SPECIES

Birds

Sprague's Pipit (*Anthus spragueii*): Endemic to the Northern Great Plains native short-to-mixed grass prairie. Sensitive to fragmentation and conversion of grassland habitat. Sprague's pipits prefer relatively large prairie patches of at least approximately 72 acres, with larger patches of at least 360 acres preferred.

Invertebrates

Dakota skipper (*Hesperia dacotae*): Found in native prairie containing a high diversity of wildflowers and grasses. Habitat includes two prairie types: 1) low (wet) prairie dominated by bluestem grasses, wood lily, harebell, and smooth camas; 2) upland (dry) prairie on ridges and hillsides dominated by bluestem grasses, needlegrass, pale purple and upright coneflowers and blanketflower.

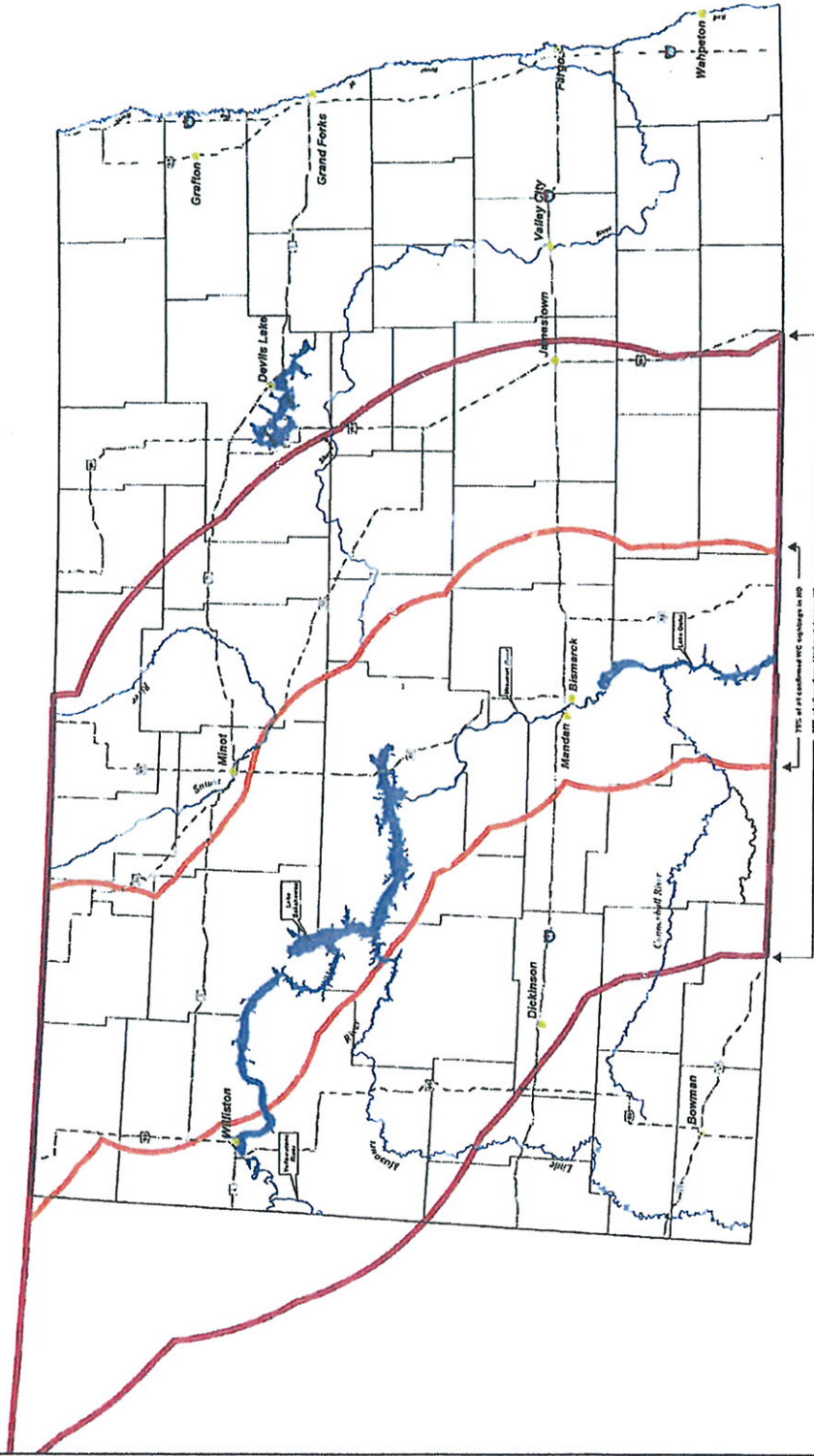
DESIGNATED CRITICAL HABITAT

Birds

Piping Plover - Lake Sakakawea - Critical habitat includes sparsely vegetated shoreline beaches, peninsulas, islands composed of sand, gravel, or shale, and their interface with the water bodies.



North Dakota Whooping Crane Migration Corridor



DISCLAIMER:
The USFWS makes no claim as to the accuracy or completeness of the displayed information. Species occurrence and habitat information is provided for illustrative purposes only. Federal action agencies and project proponents should contact the USFWS for more information. The Field Office provides technical assistance in evaluating potential project impacts to fish and wildlife resources.

Map produced 04/21/2010 by USFWS Ecological Services, Bismarck, ND.

-  75% Whooping Crane Migration Corridor
-  95% Whooping Crane Migration Corridor





United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501



JUN - 8 2011

Mr. John W. Schultz
Wenck Associates, Inc.
301 1st Street NE, Suite 202
Mandan, North Dakota 58554

Re: Proposed 18-Acre Oil Field Waste
Disposal Site, Dunn County, North Dakota

Dear Mr. Schultz:

This is in response to your April 26, 2011, letter and attached Environmental Assessment (EA) on the proposed construction of five exploratory oil and gas wells on four well pads, to be completed by TJD Consulting (TJD) on the Fort Berthold Reservation, Dunn County, North Dakota. The specific location of the proposed project is NWNW Section 17, T. 149 N., R. 92. W., with an access road to be constructed in Section 7, T. 149 N., R. 92 W..

Your letter states in part: "If we do not hear from you by May 9, 2011, we will assume that you have no comment on this project." **You may not assume this.** Our office makes every effort to respond to such requests within 30 days of receipt. However, any party is responsible for ensuring that their actions comply with the provisions of the Federal wildlife laws listed below.

We offer the following comments under the authority of and in accordance with the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.) (NEPA), Endangered Species Act (16 U.S.C. 1531 et seq.) (ESA), the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) (MBTA), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) (BGEPA), and Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds."

Threatened and Endangered Species

In an e-mail dated May 11, 2011, the Bureau of Indian Affairs (BIA) designated Wenck Associates, Inc., (Wenck) to represent the BIA for informal Section 7 consultation under the ESA. Therefore, the U.S. Fish and Wildlife Service (Service) is responding to you as

the designated non-Federal representative for the purposes of ESA, and under our other authorities as the entity preparing the NEPA document for adoption by the BIA.

The Service acknowledges the "no effect" determination for the interior least tern, pallid sturgeon, piping plover, and piping plover critical habitat. The disposal pits will be triple lined to prevent leaching of pit wastes and the pad constructed with a perimeter berm of 2 feet in height to ensure spilled materials do not escape containment at the disposal site. The proposed site drains south toward South Fork Creek, which empties into Lake Sakakawea for a total distance of approximately 2.25 miles to suitable habitat for these species.

The Service acknowledges the "no effect" determination for the black-footed ferret and gray wolf. Neither species is known to occur in the project area. If an evaluation shows a "no effect" determination on listed species, further consultation on those species is not necessary.

The Service concurs with your "may affect, is not likely to adversely affect" determination for the whooping crane. This concurrence is predicated on TJD's commitment to stop work on the proposed site if a whooping crane is sighted within 1 mile of the proposed project area and immediately contacting the Service. Work may resume in coordination with the Service once the bird(s) have left the area.

The Dakota skipper and Sprague's pipit are candidate species for listing under the ESA; therefore, an effects determination is not necessary for these species. No legal requirement exists to protect candidate species; however, it is within the spirit of the ESA to consider these species as having significant value and worth protecting. Although not required, Federal action agencies such as the BIA have the option of requesting a conference on any proposed action that may affect candidate species such as the Dakota skipper and Sprague's pipit.

Migratory Birds

The EA states that TJD will implement the following measures to avoid and minimize take of migratory birds:

- Construction at the disposal site will occur outside of the migratory bird nesting season (Feb. 1-July 15);
- If construction will occur during the migratory bird nesting period, pre-construction surveys will be conducted for migratory birds and their nests within 5 days prior to construction and any findings reported to the Service;
- Grassy areas will be mowed in the fall to reduce nesting potential the following spring where construction may occur;
- Construction activity will cease and the Service will be notified if any deceased migratory bird is discovered on-site during construction;
- The disposal pad will be fenced to exclude wildlife;
- Disposal pits will be covered with netting to exclude wildlife.

Bald and Golden Eagles

The EA states that the project area does not contain suitable perching or nesting habitat and that no eagle nests were observed within 0.5 mile of the project area during a walking survey on November 15, 2010. Service records do not indicate any eagle nests within 0.5 mile of the project area.

The Service believes that TJD's commitment to implement the aforementioned measures demonstrates that measures have been taken to protect migratory birds and bald and golden eagles to the extent practicable, pursuant to the MBTA and the BGEPA.

Thank you for the opportunity to comment on this project proposal. If you require further information or the project plans change, please contact me or Micah Reuber of my staff at (701) 250-4481 or at the letterhead address.

Sincerely,



Jeffrey K. Towner
Field Supervisor
North Dakota Field Office

cc: Bureau of Indian Affairs, Aberdeen
(Attn: Marilyn Bercier)
Bureau of Land Management, Dickinson
ND Game & Fish Department, Bismarck



United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Great Plains Regional Office
115 Fourth Avenue S.E.
Aberdeen, South Dakota 57401



IN REPLY REFER TO:
DESCRM
MC-208

DEC 16 2010

Elgin Crows Breast, THPO
Mandan, Hidatsa and Arikara Nation
404 Frontage Road
New Town, North Dakota 58763

Dear Mr. Crows Breast:

We have considered the potential effects on cultural resources of the proposed access road reroute to the Danks Disposal Site in Dunn County, North Dakota. Approximately 23.5 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the area depicted in the enclosed report. One archaeological site (32DU1542) was located that may possess the quality of integrity and meet at least one of the criteria (36 CFR 60.4) for inclusion on the National Register of Historic Places. No properties were located that appear to qualify for protection under the American Indian Religious Freedom Act (42 USC 1996).

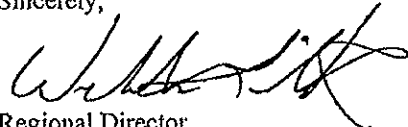
As the surface management agency, and as provided for in 36 CFR 800.5, we have therefore reached a determination of **no historic properties affected** for this undertaking, as the archaeological site is outside the Area of Potential Effect as the project is currently designed. Catalogued as **BIA Case Number AAO-1794/FB/10**, the proposed undertaking, location, and project dimensions are described in the following report:

Stine, Ed
(2010) Addendum to: Danks Disposal Site: A Class III Cultural Resource Inventory in Dunn County, North Dakota. Metcalf Archaeological Consultants, Inc. for TJD Consulting, New Town, ND.

If your office concurs with this determination, consultation will be completed under the National Historic Preservation Act and its implementing regulations. The Standard Conditions of Compliance will be adhered to.

If you have any questions, please contact Dr. Carson N. Murdy, Regional Archaeologist, at (605) 226-7656.

Sincerely,


Regional Director

Enclosure

cc: Chairman, Three Affiliated Tribes
Superintendent, Fort Berthold Agency



North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: <http://swc.nd.gov>

January 12, 2011

Bill Suess
Wenck Associates
301 1st Street NE
Mandan, ND 58554

Dear Mr. Suess:

This is in response to your request for review of environmental impacts associated with two or three 150' X 250' pits will be developed and a 75-acre site where pit development may occur in the future, with access road, on the Fort Berthold Reservation.

The proposed project has been reviewed by State Water Commission staff and the following comments are provided:

- The property is not located in an identified floodplain and it is believed the project will not affect an identified floodplain.
- It is the responsibility of the project sponsor to ensure that local, state and federal agencies are contacted for any required approvals, permits, and easements.
- All waste material associated with the project must be disposed of properly and not placed in identified floodway areas.
- No sole-source aquifers have been designated in ND.

There are no other concerns associated with this project that affect State Water Commission or State Engineer regulatory responsibilities.

Thank you for the opportunity to provide review comments. If you have any questions, please call me at 328-4969.

Sincerely,

Larry Knudtson
Research Analyst

LJK:dp/1570



STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA

Jack Dalrymple
Governor of North Dakota

North Dakota
State Historical Board

Chester E. Nelson, Jr.
Bismarck - President

Gerold Gerntholz
Valley City - Vice President

Richard Kloubec
Fargo - Secretary

Albert I. Berger
Grand Forks

Calvin Grinnell
New Town

Diane K. Larson
Bismarck

A. Ruric Todd III
Jamestown

Sara Otte Coleman
Director
Tourism Division

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Mark A. Zimmerman
Director
Parks and Recreation Department

Francis Ziegler
Director
Department of Transportation

Merlan E. Paaverud, Jr.
Director

Accredited by the
American Association
of Museums since 1986

December 22, 2010

Wenck Associates Inc.
Attn: Bill Suess
301 First Street NE
Mandan ND 58554-3370

NDSHPO REF. 11-0439 BIA/BLM/Mandan Hidatsa Arikara Nation Marvin Danks et. al. 18 acre and 75 acre oil well waste disposal sites and access road in portions of [T149N R92W Sections 7, 17, 18] Dunn County, North Dakota

Dear Mr. Suess,

We received your correspondence regarding NDSHPO REF. 11-0439 BIA/BLM/Mandan Hidatsa Arikara Nation Marvin Danks et. al. 18 acre and 75 acre oil well waste disposal sites and access road in portions of [T149N R92W Sections 7, 17, 18] Dunn County, North Dakota. We request that a copy of cultural resource site forms and reports be sent to this office so that the cultural resources archives can be kept current for researchers.

Thank you for your consideration. Consultation is with MHAN THPO. If you have any questions please contact Susan Quinnell, Review & Compliance Coordinator at (701)328-3576 or squinnell@nd.gov

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)
and Director, State Historical Society of North Dakota

c: Elgin Crows Breast, THPO MHAN
c: Brenda Shierts, Archaeologist, BLM, Belle Fourche, SD



North Dakota Department of Transportation

Francis G. Ziegler, P.E.
Director

Jack Dalrymple
Governor

January 3, 2011

Bill Sues
Wenck Associates, Inc.
301 1st Street N.E.
Mandan, ND 58554-3370

ENVIRONMENTAL ASSESSMENT (EA) FOR EIGHTEEN-ACRE OIL WELL WASTE
DISPOSAL SITE, DUNN COUNTY, NORTH DAKOTA

We have reviewed your December 19, 2010, letter.

This project should have no adverse effect on the North Dakota Department of Transportation highways.

However, if because of this project any work needs to be done on highway right-of-way, appropriate permits and risk management documents will need to be obtained from the Department of Transportation District Engineer, Larry Gangl at 701-227-6510.

RONALD J. HENKE, P.E., DIRECTOR – OFFICE OF PROJECT DEVELOPMENT

57/rjh/js

c: Larry Gangl, Dickinson District Engineer



United States Department of the Interior

BUREAU OF RECLAMATION

Dakotas Area Office
P.O. Box 1017
Bismarck, North Dakota 58502



DK-5000
ENV-6.00

JAN 18 2011

Mr. Bill Suess
Wenck Associates, Inc.
301 1st Street NE
Mandan, ND 58554-3370

Subject: Solicitation for an Environmental Assessment for the Proposed Construction, of an 75 Acre Oil Well Waste Disposal Site and Access Road by TJD Consulting on the Fort Berthold Indian Reservation in Dunn County, North Dakota

Dear Mr. Suess:

This letter is written to inform you that we received your letter of December 19, 2010, and the information and map have been reviewed by Bureau of Reclamation staff.

The proposed oil well waste disposal pit site located in Dunn County appears to be near Reclamation facilities, in this case the rural water pipelines of the Fort Berthold Rural Water System where the access road deflects from the existing road in section 7.

Waste Disposal Site: NW¼ of NW¼ of section 17, T149N, R92W Dunn County ND

Note that solid blue, orange, green, brown, and red lines represent Reclamation water lines.

We are providing an index map depicting water pipeline alignments in the vicinity of sections 7, 8, and 17, T. 149 N., R. 92 W., Dunn County, the proposed oil well disposal site and access road and surrounding area to aid you in identification of potential for adverse effect to or crossings of Federal facilities. Reclamation facilities appear to be very near your proposed access road work site. In addition, should you have need to cross a Fort Berthold Rural Water System pipeline, please refer to the enclosed sheet for pipeline crossing specifications and contact our engineer Ryan Waters, as below. Since Reclamation is the lead Federal agency for the Fort Berthold Rural Water System, we request that any work planned on the reservation be coordinated with Mr. Lester Crows Heart, Fort Berthold Rural Water Director, Three Affiliated Tribes, 308 4 Bears Complex, New Town, North Dakota 58763.

Thank you for providing the information and opportunity to comment. If you have any further environmental questions, please contact me at 701-221-1287 or for engineering questions Ryan Waters, General Engineer, at 701-221-1262.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kelly B. McPhillips". The signature is fluid and cursive, with the first name "Kelly" written in a larger, more prominent script than the last name.

Kelly B. McPhillips
Environmental Specialist

Enclosures - 3

cc: Bureau of Indian Affairs
Great Plains Regional Office
Attention: Ms. Marilyn Bercier
Regional Environmental Scientist
115 Fourth Avenue S.E.
Aberdeen, SD 57401

Mr. Lester Crows Heart
Fort Berthold Rural Water Director
Three Affiliated Tribes
308 4 Bears Complex
New Town, ND 58763
(w/encl)

Waste Disposal Site: NW¼ of NW¼ of section 17, T149N, R92W Dunn County ND

Note that solid blue, orange, green, brown, and red lines represent Reclamation water lines.





DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
GARRISON PROJECT OFFICE
201 1ST STREET, PO BOX 627
RIVERDALE, NORTH DAKOTA 58565-0527

January 4, 2011

Natural Resource Section

Wenck Associates
Attn. Bill Suess.
301 1st Street NE
Mandan, North Dakota 58554-3370

Dear Mr. Suess:

This is in response to your letter dated December 19, 2010 regarding a request for comments in regards to a proposed construction and operation of an eighteen (18) acre oil and natural gas well open pit waste disposal site located in the NW ¼ NW ¼, Section 17, Township 149 North, Range 92 West, Dunn County, North Dakota.

Due to the open pit design, and the closeness of the proposed project to Skunk Creek which feeds directly into Lake Sakakawea, the U.S. Army Corps of Engineers Garrison Dam/Lake Sakakawea Project has serious concerns with proposed project due to possibly contamination of Lake Sakakawea from a spill originating at disposal site.

If the proposed project becomes a reality, the U.S. Army Corps of Engineers Garrison Dam/Lake Sakakawea Project suggests that a containment system designed to hold 110% of the pits volume be constructed around the disposal site. In addition to the containment system at the site an additional containment system should be placed in Skunk Creek to further prevent the possibility of contamination of Lake Sakakawea should a spill occur.

If you have any questions regarding these comments or concerns, please call me at 701-654-7411, ext 232.

Sincerely,

A handwritten signature in blue ink that reads "Charles G. Sorensen".

Charles G. Sorensen
Natural Resource Specialist



REPLY TO
ATTENTION OF

North Dakota Regulatory Office

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640
December 23, 2010

Wenck Associates, Inc.
ATTN: Bill Sues
301 1st Street NE
Mandan, North Dakota 58554-3370

Dear Mr. Sues:

This is in response to a letter received December 22, 2010, on behalf of TJD Consulting requesting Department of the Army, U.S. Army Corps of Engineers (Corps) comments regarding the proposed construction of a 18 acre oil well waste disposal site in the NW1/4NW1/4 of Section 17, Township 149 North, Range 92 West, Dunn County, North Dakota. The proposed disposal site could be expanded to 75 acres in the future.

Corps regulatory offices administer Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Section 10 of the Rivers and Harbors Act regulates work impacting navigable waters. Work over, in, or under navigable waters is considered to have an impact. **Section 404 of the Clean Water Act regulates the discharge of dredge or fill material (temporarily or permanently) in waters of the United States.** Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material includes, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in the waters of the United States.

Please submit a location map and completed Corps permit application (copy enclosed) describing all proposed work and construction methodology, to the letterhead address if a Section 10/404 permit is required.

Do not hesitate to contact this office by letter or telephone (701-255-0015) if we can be of further assistance.

Sincerely,

Daniel E. Cimarosti
Regulatory Program Manager
North Dakota

Enclosure

18. Nature of Activity (Description of project, include all features)

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

| | | |
|-----------------------|-----------------------|-----------------------|
| Type | Type | Type |
| Amount in Cubic Yards | Amount in Cubic Yards | Amount in Cubic Yards |

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres
Or
Liner Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

24. Is Any Portion of the Work Already Complete? Yes No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

Address --
City -- State -- Zip --

| |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application. |
| AGENCY TYPE APPROVAL* IDENTIFICATION NUMBER DATE APPLIED DATE APPROVED DATE DENIED |

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT

DATE

SIGNATURE OF AGENT

DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

**Instructions for Preparing a
Department of the Army Permit Application**

Blocks 1 through 4. To be completed by Corps of Engineers.

Block 5. Applicant's Name. Enter the name and the E-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by applicant, if an agent is to be employed.

Block 12. Proposed Project Name or Title. Please provide name identifying the proposed project, e.g., Landmark Plaza, Burned Hills Subdivision, or Edsall Commercial Center.

Block 13. Name of Waterbody. Please provide the name of any stream, lake, marsh, or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Project Street Address. If the proposed project is located at a site having a street address (not a box number), please enter it here.

Block 15. Location of Proposed Project. Enter the latitude and longitude of where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality that the site is located in.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide description of the proposed project location, such as lot numbers, tract numbers, or you may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed project site if known

Block 18. Nature of Activity. Describe the overall activity or project. Give appropriate dimensions of structures such as wing walls, dikes (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles, or float-supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 18.

Block 19. Proposed Project Purpose. Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

Block 20. Reasons for Discharge. If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

Block 21. Types of Material Being Discharged and the Amount of Each Type in Cubic Yards. Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

Block 22. Surface Areas of Wetlands or Other Waters Filled. Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked Block 22.

Block 23. Description of Avoidance, Minimization, and Compensation. Provide a brief explanation describing how impacts to waters of the United States are being avoided and minimized on the project site. Also provide a brief description of how impacts to waters of the United States will be compensated for, or a brief statement explaining why compensatory mitigation should not be required for those impacts.

Block 24. Is Any Portion of the Work Already Complete? Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identify the authorization, if possible.

Block 25. Names and Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Project Site. List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked Block 24.

Information regarding adjacent landowners is usually available through the office of the tax assessor in the county or counties where the project is to be developed.

Block 26. Information about Approvals or Denials by Other Agencies. You may need the approval of other federal, state, or local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

Block 27. Signature of Applicant or Agent. The application must be signed by the owner or other authorized party (agent). This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on 8½ x11 inch plain white paper (electronic media may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS, 5TH MISSION SUPPORT GROUP (AFGSC)
Minot Air Force Base, North Dakota

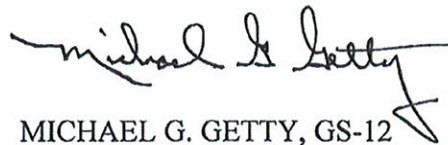
JAN 12 2011

MEMORANDUM FOR WENCK ASSOCIATES, INC.
ATTN: BILL SUESS
301 1ST STREET NE
MANDAN, NORTH DAKOTA 58554-3370

FROM: 5 CES/CEAN
320 PEACEKEEPER PLACE
MINOT AIR FORCE BASE, NORTH DAKOTA 58705-5006

SUBJECT: 18-Acre Oil Well Waste Disposal Site

1. Reference your letter of December 19, 2010.
2. It is our understanding from the information in the letter all work will be accomplished in the NW1/4NW1/4 of Section 17, T149N R92W in Dunn County, North Dakota. There are no properties under the purview of Minot Air Force Base in said county. Therefore we have no comments regarding the 18-acre oil well waste disposal site.
3. Thank you for your letter informing us of this upcoming project. Please direct questions to Mr. David Garcia at 701-723-4825.


MICHAEL G. GETTY, GS-12
Chief, Environmental Mgt Element

U.S. Department of Homeland Security
Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267



FEMA

R8-Div

January 20, 2011

Mr. Bill Sues, Project Manager
Wenck Associates, Inc.
301 1st Street NE
Mandan, ND 58554-3370

Dear Mr. Sues:

Thank you for your inquiry regarding your proposed project regarding the approval of an 18-acre oil well waste disposal site on the Fort Berthold Indian Reservation. FEMA's major concern is if the property is located within a mapped Special Flood Hazard Area any development in these areas requires further consideration.

We recommend you contact the local Floodplain Manager for the Fort Berthold Indian Reservation Mr. Cliff Whitman at (701) 627-4805 to receive further guidelines regarding the impact that the project might have to the regulations and policies of the National Flood Insurance Program. Considering that floods are the most devastating of all natural disasters in this country, any efforts to reduce the impacts of that hazard is worthwhile.

Let me know if I can be of assistance and please feel free to contact me at (303) 235-4721,

Sincerely,

A handwritten signature in black ink, appearing to read "Dave A. Kyner".

Dave A. Kyner
NFIP Program Specialist

Notice of Availability and Appeal Rights

Danks: Oil Field Waste Disposal Facility

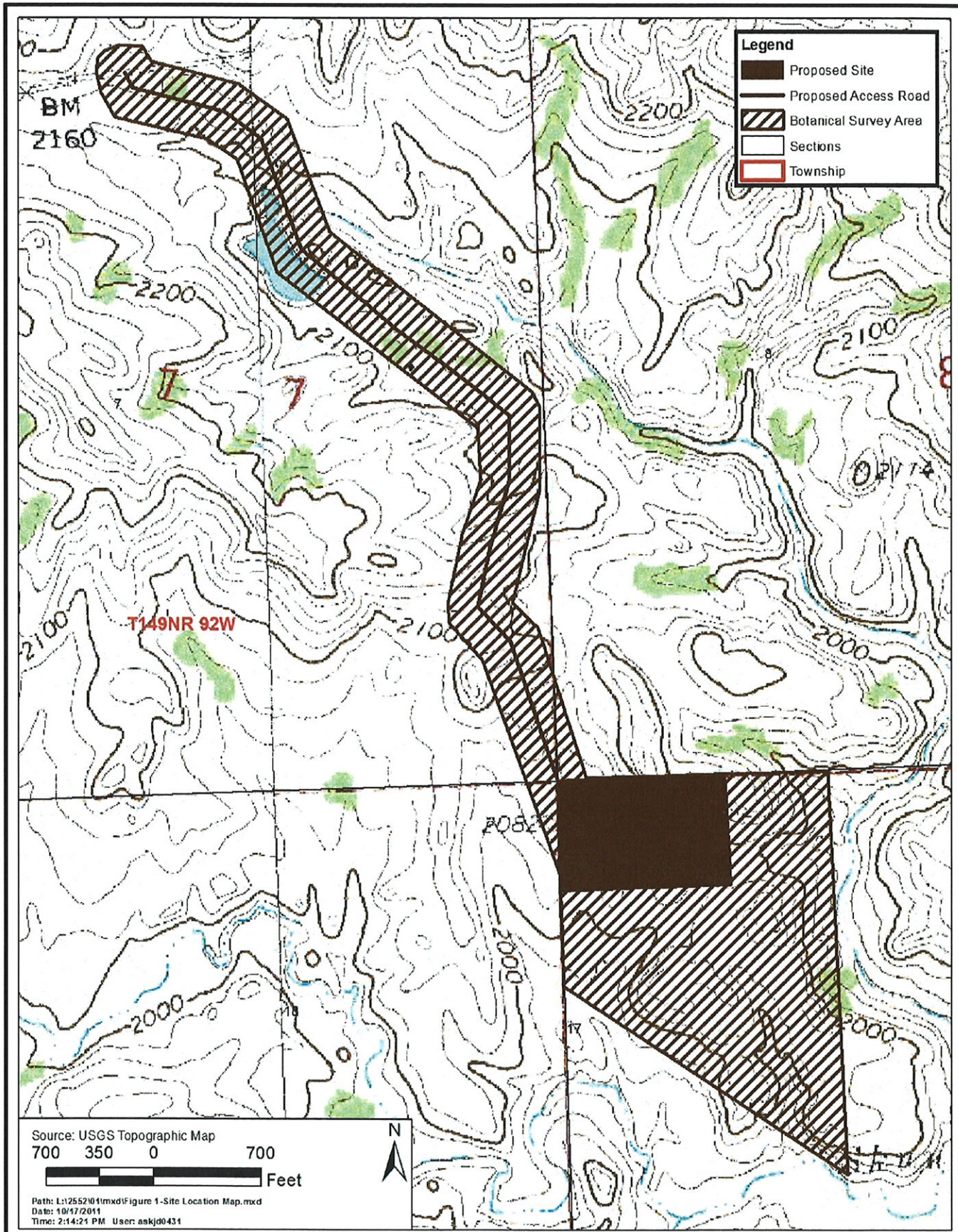
The Bureau of Indian Affairs (BIA) is planning to issue administrative approvals related to installation of the Danks Oil Field Waste Disposal Facility as shown on the attached map. Construction is expected to begin 2011.

An environmental assessment (EA) determined that proposed activities will not cause significant impacts to the human environment. An environmental impact statement is not required. Contact Earl Silk, Superintendent at 701-627-4707 for more information and/or copies of the EA and the Finding of No Significant Impact (FONSI).

The FONSI is only a finding on environmental impacts – it is not a decision to proceed with an action and *cannot* be appealed. BIA's decision to proceed with administrative actions *can* be appealed until November 17, 2011, by contacting:

**United States Department of the Interior
Office of Hearings and Appeals
Interior Board of Indian Appeals
801 N. Quincy Street, Suite 300, Arlington, Va 22203.**

Procedural details are available from the BIA Fort Berthold Agency at 701-627-4707.



TJD Consulting
 Proposed Oil Field Waste Disposal Site
 Section 17, T149N, R92W - Dunn County, ND

Wenck
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