

## APPENDIX F. MITIGATION AND SPECIES CONSERVATION MEASURES

### Mitigation Measures

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The following measures are required when implementing weed management projects. These measures should be printed and checked off when implementing a project.

#### 1. General Measures

##### Project Planning

Complete all necessary permits and authorizations prior to implementing a project (see Section 7.0 and Appendix C of the IWMP).

If treatments are planned for allotment lands, the project sponsor must contact the landowner(s) and obtain permission for the project before proceeding. Woody invasive treatments require consent of the majority Indian interest of the beneficial Indian owner(s), documented by their signature(s) on a Power of Attorney for the Sale of Allotment Timber, contract, or permit.

Conduct surveys for cultural resources by a qualified cultural resource specialist before treatments in coordination with the Navajo Nation Historic Preservation Department (NNHPD).

Surveys and clearance for paleontological resources are required before any surface disturbing activities, mechanical treatments, or chemical treatments in coordination with the Navajo Nation Minerals Department.

Conduct ethnographic inquiries with local community members to identify plant gathering sites and other traditional cultural properties (TCPs) that may be affected by weed treatments. If TCPs and gathering sites are identified, the project sponsor will work with the community to identify alternative sites, treatment options, or other mitigation measures.

Complete and submit two copies of the Archaeological Inventory Report and all site forms to the NNHPD Cultural Resource Compliance Section for review. The BIA NRO Regional Director will approve the CRCF to provide Section 106.

Avoidance of all cultural resources is the preferred mitigation measure to avoid adverse effects, as well as identifying alternative gathering areas. All work must be coordinated with NNHPD to ensure compliance with Section 106 and NHPA.

Develop a Safety and Communications Plan that identify specific safety measures for all treatment methods used in the project, including equipment handling, required Personal Protection Equipment (PPE), and emergency response communication.

Woody invasive treatments require a forest product harvesting permit or contract and may require a silvicultural prescription to authorize a treatment in forestlands. The special provision associated with the harvest document(s) should be reviewed and modified when appropriate to address unforeseen resource issues associated with the harvesting activities.

All weed treatment personnel will be trained on the use of Personal Protection Equipment (PPE), equipment handling, and safety protocols. Personnel will be required to use PPEs during herbicide and mechanical (chainsaw, control burn, etc.) applications.

Complete and submit a Data Request Form for the project area to NNDFW NNHPD (<https://www.nndfw.org/nnhp/drs2012.pdf>) and obtain a Biological Resource Compliance Form (BRCF) from NNHPD.

If potential habitat for endangered or threatened species is present, conduct a habitat assessment by a qualified biologist. If potential habitat is found, protection measures, including species buffers will be applied or additional surveys for species presence will be conducted by a qualified biologist. If the species is present at the site, species protection measures will be employed, NNDFW will be notified, and a biological monitor will be present during all phases of project implementation (Appendix F of the IWMP).

### **Prior to Project Implementation**

Designate staging areas and/or equipment wash stations for cleaning and prep work before and after treatments. These sites will be used for mixing herbicides, refueling equipment and vehicles, and storage for the duration of the treatment. Equipment wash stations may be temporary and will have a filter system, for example at least 6 inches of large cinder or gravel spread over an area 10ft x 30ft. Filter cloth may be used for temporary stations. The area will be a perched drainage to allow excess moisture to drain after being filtered and will be located at least 300ft away from surface water, natural drainages or wellheads.

Notify adjacent landowners, authorized land users, local authorities, and/or the public of treatments, treatment duration, and post-treatment measures before implementation to prevent exposure and limit re-infestations through education and outreach with the local grazing official, posting public notices, radio announcements, and/or chapter meeting announcements.

To reduce the risk of weed spread, access routes will avoid heavy infestation areas. Access routes will be closed when the project is completed.

Clearly mark boundaries of treatment sites (such as posting visible flags or signs) before and during treatments.

Sites will be inspected, and potential hazards will be removed to ensure safety prior to treatments.

### **During Project Implementation**

Vehicles will use only established roads for accessing project sites. Vehicles will be parked at designated parking spots near established roadways during treatments.

If camping, project personnel will use designated and established campsites, with approval from NNHPD or a qualified archeologist.

On-site safety briefings will be given prior to any treatments to review required PPE, safety and emergency response measures, and what to do in the case of an injury or emergency.

Inspect and clean equipment, heavy machinery, and clothing after treatments for mud, dirt, and plant parts to prevent spread to other project sites by the field crew.

Minimize soil disturbance to the extent practical.

No mechanical treatments or use of heavy mechanized equipment will be used in archeological sites or traditional cultural property boundaries.

If potential habitat for an endangered or threatened species is present a qualified biological monitor will be on site during all phases of project implementation.

### **Post Project Implementation**

Post-treatment monitoring will evaluate treatment effectiveness, potential re-infestations or new introductions, and impacts to resources (Appendix D of the IWMP)

Limit the number of people and trips to sensitive areas for follow-up treatments and/or monitoring.

## **2. Chemical Treatments**

### **Project Planning**

The on-site Pesticide Applicator will develop a Spill Contingency Plan that meets the minimum requirements specified by the BIA to eliminate contamination of water or soil resources in the case of accidental spills.

If using herbicide, notify NNEPA Pesticide Enforcement of project, including location, herbicides used, and treatment dates.

### **Prior to Project Implementation**

All herbicides must be USEPA approved and mixed and applied according to label instructions.

Treatment sites will be closed according to label specifications when limiting exposure to humans, livestock, and pets is recommended.

### **During Project Implementation**

All herbicides will be used according to the USEPA approved label.

Certified Pesticide Applicators must be on site to supervise projects during herbicide treatments. Pesticide Applicators must be certified by the Navajo Nation.

Use dye markers with herbicides to identify the physical spray location on weeds.

An emergency spill kit must be present when herbicides are used to contain, absorb, and dispose of spill materials.

Material Safety Data Sheets (MSDS) for herbicides and adjuvants must be accessible in the event of accidental exposure or spill.

Avoid applying chemicals during times of high wind speeds, high temperature, and low humidity to prevent chemical drift to areas off site. Read the herbicide label for specific conditions.

Use Water Quality Protection Zones (WQPZ) set by the NNEPA for mechanical treatments and aerial and vehicle-based herbicide applications within riparian and wetland areas. The buffer distance for the WQPZ is 200 ft unless a greater buffer is needed for a sensitive species or if indicated on the herbicide label.

*Near riparian areas*, only aquatic formulations of 2,4-D, glyphosate, triclopyr, and imazapyr will be used within 25 ft of the daily high-water mark.

Herbicides that are practically non-toxic to fish and mollusks (White 2007) require a 25 ft (7.6 m) buffer from the daily high-water mark, including: aminopyralid, chlorsulfuron methyl, clopyralid, diflufenzopyr, imazapic, and thifensulfuron-methyl.

Non-aquatic approved and moderate to high aquatic toxicity herbicides (White 2007) require a 300 ft (91 m) buffer from the daily high-water mark.

Only aquatic approved herbicides are used for aerial applications by either fixed wing or rotary aircraft applications.

Water for mixing herbicide and cleaning herbicide equipment will be potable water obtained off-site or through a Water Use Permit. For remote sites, there is a possibility of a Water Use Permit with the local water code. An anti-siphon and back flow preventer device are required to prevent contamination of the water source.

Store equipment and materials away from riparian areas in safe and secure upland sites in close proximity of the project site. Herbicide containers and equipment must be stabilized with straw bales, filter cloth, or other appropriate means to prevent reentry into the waterway or wetlands.

Herbicides will be stored in a secondary containment storage unit with impermeable materials such as concrete or metal so leaks and spills do not reach soils. Storage containers will be coordinated with BIA Safety Officer and Environmental Services.

## **Post Project Implementation**

Herbicide containers and application equipment will be triple rinsed at designated washing stations to minimize chemical residues left as per the MSDS and herbicide labels. Do not pour rinse water from empty containers or sprayer cleaning onto ground or any drainage system. Dispose as hazardous waste.

Properly dispose of pesticide waste and containers according to federal, state, and tribal regulations.

### **3. Mechanical**

#### **Prior to Project Implementation**

If mechanical treatments increase the risk of erosion near waterways, erosion control measures will be implemented to stabilize and limit erosion.

Establish and implement a burn plan if prescribed burning is used as a control method.

Prescribed burning will not be conducted during migratory bird breeding season.

#### **During Project Implementation**

Keep areas without vegetation wet to prevent fugitive dust. This can be accomplished with a sprayer mounted to a water truck.

Use lightest/smallest off-road vehicle, utility vehicle, or tractors will be a priority for treatments. No such equipment will be used on wet soils or cryptobiotic soil crusts.

### **4. Cultural**

#### **During Project Implementation**

Targeted grazing must use fencing around the perimeter of the treatment area to contain livestock.

Use targeted grazing only in sites where weeds are palatable and non-toxic and where desired native species will not be damaged.

After targeted grazing is implemented, livestock will be placed in a separate fenced location for 48 hours to collect animal waste. Animal waste will be burned to destroy plant parts and seeds.

Targeted grazing will not exceed more than 10 days on a range and/or wildland project site or 365 days on a cropland site.

Passive restoration is preferred when native vegetation comprises >75% of the treated area. If natural re-vegetation fails, then active restoration is necessary. Active restoration includes planting of native species poles, root stocks, and seeds.

Reseeding will be timed with precipitation events and at least 7 days after herbicide treatments are completed. Reseed disturbed areas with native vegetation to minimize opportunities for weed establishment and soil erosion.

Only native vegetation, certified weed-free and preferably locally sourced, will be used for restoration activities.

**Post Project Implementation**

Livestock grazing will be deferred during the growing season or until seeding has established.

## Species Conservation Measures

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The species conservation measures below are intended for the proposed action and serve as a guide for mitigating impacts to Navajo Endangered species (NESL) and Federally Threatened and Endangered species when conducting weed treatments on Navajo Nation. However, the Navajo Natural Heritage Program (NNHP) encourages treatment of noxious weeds within sensitive species populations as a tool to improve habitat for NESL species, with proper consultation with NNHP and USFWS, as applicable. Therefore, if the goal of the weed treatment project is to improve habitat for threatened and sensitive species, the conservation measures below can be modified for individual species through consultation with NNHP and USFWS on a project-specific basis. Buffers for mechanical, cultural, manual (low impact), and non-aerial herbicide use can be modified on a project-by-project basis with approval from NNHP but will require the presence of a qualified Biologist on-site during all stages of project implementation. Flagging and fencing around listed plant species will also be required.

### Species Conservation Measures (Project Design Features)

The Recommended Protection Measures for Pesticide Applications (RPR) in USFWS Region 2 (White 2007) and the Avoidance Measures listed in the Navajo Nation Endangered Species List, Species Accounts (NNDFW 2020) were used as a starting point for the conservation measures. The BIA requires the most conservative avoidance measures of the two documents be implemented for IWMP projects. BIA conducted nine informal discussions with the USFWS and the NNHP, NNDFW to help refine the conservation measures.

## Federally Listed Species

### General Project BMPs

1. Submit a Biological Consultant Data Request Form to the NNHP NNDFW to initiate the BRCF process prior to project implementation for background information on species habitat and occupancy (the form and instructions can be accessed here: <https://www.nndfw.org/nnhp/drs.htm>).
2. If preliminary analysis based on maps, aerial photos, and other knowledge of the project site indicates that potential habitat for listed species is present, a qualified biologist will conduct a habitat assessment and a qualified Biologist may be required on site during all stages of project implementation as determined by the BRCF process.
3. If suitable habitat is present, the project will apply the conservation measures, including buffers established for that species or a qualified biologist will conduct additional surveys for species' presence.
4. Obtain federally listed species permits from USFWS and Biological Investigations Permits from NNDFW prior to conducting species surveys on Navajo Nation land.

5. If the species is present at the site, the species-based protection measures will be employed. If protocol surveys do not detect the species, there will be no buffers.
6. Where specified, species breeding season timing restrictions and buffers apply to all treatment methods.
7. Where two or more species' habitats overlap, the more restrictive measures will take priority.

## **Navajo Nation Endangered Species List**

### **General Project Best Management Practices (BMPs)**

1. Include General Project BMPs species conservation measures listed above (2, 4-7).
2. If preliminary analysis based on maps, aerial photos, and other knowledge of the project site indicates that potential for habitat for Group 2 and 3 species is present, a qualified biologist will conduct species surveys.
3. Species surveys are preferred for Group 4 species but not required. A qualified biologist will conduct Group 4 species surveys concurrently with Group 2 and 3 species surveys.
4. Obtain Biological Investigation Permits from NNDFW prior to conducting species surveys.

**Table 1.** Required species conservation measures for federally listed endangered and threatened and Group 2 and 3 Navajo Nation listed plant species.

Plants (Federally Listed and NNHP G3) – Species Conservation Measures																					
USFWS Status	E			T				T	Group 3												
NNDFW Group	G2	G3	G2	G2	G3	G3	G2	G2													
Conservation Measure	Brady pincushion cactus ( <i>Pedio cactus bradyi</i> )	Fickeisen plains cactus ( <i>Pediocactus peeblesianus</i> ssp. <i>fickesieniae</i> )	Mancos milk-vetch ( <i>Astragalus humilimus</i> )	Zuni (Rhizome) fleabane ( <i>Erigeron rhizomatus</i> )	Welsh' s milkweed ( <i>Asclepias welshii</i> )	Navajo sedge ( <i>Carex specuicola</i> )	Cutler' s milk-vetch ( <i>Astragalus cutleri</i> )	Mesa Verde cactus ( <i>Sclerocactus mesae-verdae</i> )	Aztec gilia ( <i>Aliciella formosa</i> )	Gooding' s onion ( <i>Allium goodingii</i> )	Alcove death camas ( <i>Anticlea vaginatus</i> )	Marble Canyon milk-vetch ( <i>Astragalus crennophytax</i> var. <i>hevronii</i> )	Cronquist' s milk-vetch ( <i>Astragalus cronquistii</i> )	Naturita milk-vetch ( <i>Astragalus naturitensis</i> )	Acoma fleabane ( <i>Erigeron acomanus</i> )	Round dunebroom ( <i>Errazurizia rotundata</i> )	Navajo Penstemon ( <i>Penstemon navajoa</i> )	Alcove rock daisy ( <i>Perityle specuicola</i> )	Navajo bladderpod ( <i>Physaria navajoensis</i> )	Alcove bog-orchid ( <i>Platanthera zothecina</i> )	Brack' s hardwall cactus ( <i>Sclerocactus cloverae</i> ssp. <i>brackii</i> )
Low and high aerial spraying of herbicides requires a 1-mile (1.6 km) buffer from identified listed species locations.									X	X	X	X	X	X	X	X	X	X	X	X	X
Mechanical, cultural, chemical, and prescribed burn treatments require a 200 ft (60 m) buffer from identified listed plant species locations. A burn plan must be developed for each project using prescribed fire, which will include specific treatment buffers.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Manual treatments (low impact treatments) require a 20 ft (6 m) buffer from identified listed species locations.	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
When doing treatments, workers will place flagging, and/or fencing around listed or sensitive plant populations.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Conservation Measure	Brady pincushion cactus ( <i>Peduncactus bradleyi</i> )	Fickeisen plains cactus ( <i>Pediocactus peeblesianus</i> ssp. <i>fickeiseniae</i> )	Mancos milk-vetch ( <i>Astragalus humillimus</i> )	Zuni (Rhizome) fleabane ( <i>Erigeron rhizomatus</i> )	Welsh' s milkweed ( <i>Asclepias walsbii</i> )	Navajo sedge ( <i>Carex specuicola</i> )	Cutler' s milk-vetch ( <i>Astragalus cutleri</i> )	Mesa Verde cactus ( <i>Sclerocactus mesae-verdae</i> )	Aztec gilia ( <i>Aliciella formosa</i> )	Gooding' s onion ( <i>Allium goodingii</i> )	Alcove death camas ( <i>Anticlea vaginatus</i> )	Marble Canyon milk-vetch ( <i>Astragalus cremnophytax</i> var. <i>hevronii</i> )	Cronquist' s milk-vetch ( <i>Astragalus cronquistii</i> )	Naturita milk-vetch ( <i>Astragalus naturitensis</i> )	Acoma fleabane ( <i>Eriogonum acomaense</i> )	Round dunebroom ( <i>Errazurizia rotundata</i> )	Navajo Penstemon ( <i>Penstemon navajo</i> )	Alcove rock daisy ( <i>Perityle specuicola</i> )	Navajo bladderpod ( <i>Physaria navajoensis</i> )	Alcove bog-orchid ( <i>Platanthera zothecina</i> )	Brack' s hardwall cactus ( <i>Sclerocactus cloverae</i> ssp. <i>brackii</i> )
Vehicles will use only established roads for accessing project sites.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Vehicles will be parked at previously disturbed parking areas located at least 20 ft (6 m) from known populations when treating. Parking areas will be near established Navajo-BIA, tribal, State, or County roads that receive moderate to heavy use.	X	X	X	X	X	X	X	X													
Treatments occurring in the Mesa Verde Biological Preserves require additional consultation with USFWS and the NNHP botanist. A qualified biological is required on-site to monitor all phases of implementation.								X													
Manual treatments (low impact treatments) require a 50 ft (15 m) buffer from identified listed species locations.								X													

**Table 2.** Recommended species conservation measures for NNHP Group 4 plants.

<b>NNHP Group 4 Plants – Recommended Species Conservation Measures</b>														
<b>Conservation Measure</b>	<b>San Juan milkweed (<i>Asclepias sanjuanensis</i>)</b>	<b>Heils milk-vetch (<i>Astragalus heilii</i>)</b>	<b>Navajo saltbush (<i>Atriplex garrettii</i> var. <i>navajoensis</i>)</b>	<b>Atwoods camissonia (<i>Camissonia atwoodii</i>)</b>	<b>Welchs American-aster (<i>Symphotrichum welshii</i>)</b>	<b>Arizona rose sage (<i>Salvia pachyphylla</i> ssp. <i>eremopictus</i>)</b>	<b>Rydberg' s thistle (<i>Cirsium rydbergii</i>)</b>	<b>Utah bladder-fern (<i>Cystopteris utahensis</i>)</b>	<b>Sivinski' s fleabane (<i>Erigeron sivinskii</i>)</b>	<b>Sarah' s buckwheat (<i>Eriogonum lactinogynum</i> var. <i>sarahiae</i>)</b>	<b>Bluff phacelia (<i>Phacelia indecora</i>)</b>	<b>Cave primrose (<i>Primula specuicola</i>)</b>	<b>Marble Canyon dalea (<i>Psoralemmus arborescens</i> var. <i>pubescens</i>)</b>	<b>Parish' s alkali grass (<i>Puccinella parishii</i>)</b>
Low and high aerial spraying of herbicides require a 1-mile (1.6 km) buffer from identified listed species locations.	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mechanical, cultural, chemical, and prescribed fire treatments require a 200 ft (60 m) buffer from identified listed plant species locations. A burn plan must be developed for each project using this technique, which will include specific treatment buffers.	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Manual treatments (low impact treatments) require a 20 ft (6 m) buffer from identified listed species locations.	X	X	X	X	X	X	X	X	X	X	X	X	X	X
When doing treatments, workers will place flagging, and/or fencing around listed or sensitive plant populations.	X	X	X	X	X	X	X	X	X	X	X	X	X	X

**Table 3.** Required species conservation measures for Federally listed endangered, threatened, and experimental population and NNHP Group 2 and 3 bird species.

Birds (NNHP G2, G3, and G4 Exp Pop) – Species Conservation Measures								
USFWS Status	T	E, Exp. Pop.*	E	T				
NNDFW Group	G3	G4	G2	G2	G2	G3	G3	G3
Conservation Measure	Mexican spotted owl ( <i>Strix occidentalis lucida</i> )	California condor ( <i>Gymnogyps californianus</i> )	Southwestern willow flycatcher** (SWFL) ( <i>Empidonax traillii extimus</i> )	Western yellow-billed cuckoo (YBCU) ( <i>Coccyzus americanus</i> )	Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	Golden Eagle ( <i>Aquila chrysaetos</i> )	Ferruginous hawk ( <i>Buteo regalis</i> )	American dipper ( <i>Cinclus mexicanus</i> )
Breeding season is March 1 through August 31.	X							
All treatments require a ¼ mile (0.4 km) buffer from protected activity centers (PACs) and suitable nesting habitat during the breeding season. A PAC is approximately 600 acres (240 ha) around an owl activity center (nest, roost, or best roost habitat).	X							
Specified herbicides may be applied along road and utility rights-of-way in MSO PACS during the breeding season, but applicators should make sure that pesticide spray drift does not occur beyond rights-of-way.	X							
Contact NNDFW for background information on known nesting sites, suitable nesting sites, or known communal roosting sites in species habitat.		X						
Mechanical, prescribed fire, and ground application of herbicide treatments require a one-mile (1.6 km) buffer from known nesting sites, suitable nesting sites, or known communal roosting sites in species habitat of canyon lands and mountain ridges.		X						
Aerial applications of herbicides require a 1.5-mile (2.4 km) buffer from release sites, suitable nesting sites, or known communal roosting sites in species habitat of canyon lands and mountain ridges.		X						
If a condor is present all weed treatment activities will cease and NNDFW will be contacted. Field crews will avoid interacting with condors if present on site.		X						
All trash and debris will be disposed of properly off site.		X						
No new populations biological control for saltcedar on the Navajo Nation.			X					
A permitted biologist will confirm occupancy during the breeding season (May 15 through July 17, “SWFL Recovery Plan”) within a year prior to conducting treatments to determine suitable habitat, breeding habitat, important migration corridors, or potential territory for occupied habitat.			X					
A qualified SWFL biologist in coordination with NNDFW will determine breeding patch size for nesting areas per the “SWFL Recovery Plan” and identify sites on the ground prior to treatments.			X					

USFWS Status	T	E, Exp. Pop.*	F	T				
NNDFW Group	G3	G4	G2	G2	G2	G3	G3	G3
Conservation Measure	Mexican spotted owl ( <i>Strix occidentalis lucida</i> )	California condor ( <i>Gymnogyps californianus</i> )	Southwestern willow flycatcher** (SWFL) ( <i>Empidonax traillii extimus</i> )	Western yellow-billed cuckoo (YBCU) ( <i>Coccyzus americanus</i> )	Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	Golden Eagle ( <i>Aquila chrysaetos</i> )	Ferruginous hawk ( <i>Buteo regalis</i> )	American dipper ( <i>Cinclus mexicanus</i> )
In occupied breeding areas, mechanical and mechanized and low and high aerial chemical treatments require a ¼ mile (0.4 km) buffer from the breeding patch boundary or suitable habitat.			X	X				
Prescribed fires outside of a breeding patch will be conducted outside of the migrating and breeding season. Small pile burns will be conducted outside of the floodplain or 300 ft (90 m) buffer from edge of waterway.			X	X				
Manual treatments will be used up to the breeding patch boundary or suitable habitat.			X	X				
Important migratory corridors for SWFL will be buffered as listed above from May 15 to July 17.			X					
All projects within the riparian zone near occupied habitat will require restoration with native riparian/wetland vegetation following noxious weed removal.			X	X				
A permitted biologist will confirm occupancy during the breeding season (June 15 through August 15) within a year prior to conducting treatments. No activity will occur within ¼ mi (0.4 km) of potential habitat no survey information exists.				X				
A qualified yellow-billed cuckoo (YBCU) biologist, in coordination with NNDFW, will determine breeding patch size for nesting areas and identify sites on the ground prior to treatments.				X				
The breeding season for bald and golden eagles is January 15 – July 15 ('Navajo Nation Golden and Bald Eagle Nest Protection Regulations').					X	X		
Brief activities that occur for up to one hour per day and involve only personnel and passenger or maintenance vehicles (one hour of spot spraying, mechanical, or manual treatments) require a 0.4 mi (600 m) buffer from an active nest.					X	X		
Breeding season occurs March 1 – July 31 (Navajo Nation Endangered Species List: species accounts).							X	
Light activities that occur for up to one day in the same general area and involve up to five vehicles and up to ten personnel (mechanical treatments and mechanized ground chemical treatments) require a 0.5 mi (800 m) buffer from an active nest.					X	X	X	
Heavy activities that exceed at least one of the criteria for Light Activities that involve human activity of up to one visit per week (prescribed fire, low and high aerial chemical treatments) will be conducted outside of the breeding season and ¾ mi (1 km) from a nesting site.					X	X	X	

USFWS Status	T	E, Exp. Pop.*	F	T				
NNDFW Group	G3	G4	G2	G2	G2	G3	G3	G3
Conservation Measure	Mexican spotted owl ( <i>Strix occidentalis lucida</i> )	California condor ( <i>Gymnogyps californianus</i> )	Southwestern willow flycatcher** (SWFL) ( <i>Empidonax traillii extimus</i> )	Western yellow-billed cuckoo (YBCU) ( <i>Coccyzus americanus</i> )	Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	Golden Eagle ( <i>Aquila chrysaetos</i> )	Ferruginous hawk ( <i>Buteo regalis</i> )	American dipper ( <i>Cinclus mexicanus</i> )
Brief activities that occur for up to one hour per day and involve only personnel and passenger or maintenance vehicles (one hour of spot spraying, mechanical, or manual treatments) require a ½ mile (0.8 km) buffer from an occupied nest.							X	
Mechanical treatments require a 50–200 ft (15-60 m) buffer from occupied nesting habitat outside of breeding season.								X
No mechanical, mechanized ground, low or high aerial chemical treatments within 1/8 mile (0.2 km) from the active nest during March 15- August 15.								X
Spot chemical spraying or manual treatments require a buffer of 330 ft (0.1 km) from the active nest during March 15- August 15.								X
Small migratory birds- Class 2 or Class 3 herbicides require 30 ft (9 m) buffer for spot and mechanized ground application of herbicide, 150 ft (50 m) with low aerial chemical treatments, and 1/8 mi (200 m) for high aerial chemical treatments near the species habitat.								X

**\*Exp. Pop = Experimental Population**

**\*\*Southwestern willow flycatcher (*Empidonax traillii extimus*)**

Definitions (from “Southwestern Willow Flycatcher Recover Plan (“SWFL Recovery Plan)

**Currently suitable habitat** is defined as a riparian area with all the components needed to provide conditions suitable for breeding flycatchers. These conditions are generally dense, mesic riparian shrub and tree communities 0.25 acre (0.1 ha) or greater in size within floodplains large enough to accommodate riparian patches at least 33 ft (10 m) wide. Suitable habitat may be occupied or unoccupied.

**Potentially suitable habitat** is defined as a riparian system that does not currently have all the components needed to provide conditions suitable for nesting flycatchers, but which could – if managed appropriately – develop these components over time. Potential habitat occurs where the flood plain conditions, sediment characteristics, and hydrological setting provide potential for development of dense riparian vegetation.

**Breeding Patch** is the area used by breeding flycatchers. Breeding patches include all flycatcher territories, and most flycatcher breeding patches are larger than the sum total of the flycatcher territory sizes at that site.

**Table 4.** Recommended species conservation measures for NNHP Group 4 bird species and bird species protected under the Migratory Bird Treaty Act.

NNHP Group 4 Bird – Species Conservation Measures Protected under Migratory Bird Treaty Act																
Mitigation Measure	Northern goshawk ( <i>Accipiter gentilis</i> )	Clarks grebe ( <i>Aechmophorus clarkia</i> )	Northern saw-whet owl ( <i>Aegolius acadicus</i> )	Burrowing owl ( <i>Athene cunicularia</i> )	Belted kingfisher ( <i>Ceryle alcyon</i> )	Mountain plover ( <i>Charadrius montanus</i> )	Dusky grouse ( <i>Dendragapus</i> )	Yellow warbler ( <i>Dendroica petechial</i> )	Hammond' s flycatcher ( <i>Empidonax</i> )	Northern pygmy-owl ( <i>Glaucidium gnoma</i> )	Flammulated owl ( <i>Otus flammeolus</i> )	Band-tailed pigeon ( <i>Patagioenas fasciata</i> )	American three-toed woodpecker ( <i>Picoides dorsalis</i> )	Tree swallow ( <i>Tachycineta bicolor</i> )	Sora ( <i>Porzana Carolina</i> )	Gray vireo ( <i>Vireo vicinior</i> )
All treatments require a ¼ mi (0.4 km) buffer from nest site during March 1- August 15 and within 0.20 mi (0.2 km) of nest site year-round.	X			X												
Mechanical treatments require 200 ft (60 m) buffer from lake-side vegetation or within the 100-yr floodplain, whichever is greater.		X														
Prescribed fire, target livestock grazing, and mechanized ground, low and high aerial chemical spraying require a 1/8-mile (0.2km) buffer from the active nest.		X*			X*	X*	X <sup>∞</sup>								X <sup>‡</sup>	
Chemical spot and manual treatments require a 330 ft (0.1 km) buffer from active nest.		X*			X*	X*	X <sup>∞</sup>		X <sup>φ</sup>			X <sup>‡</sup>	X <sup>‡</sup>	X <sup>‡</sup>	X <sup>‡</sup>	X <sup>***</sup>
All treatments require a 1/8- mile (0.2 km) buffer from the nest site year-round or during nesting.			X					X <sup>**</sup>								
Pesticides that rate as Class 2 or Class 3 in the Predatory Avian, Small Mammal, or Terrestrial Arthropod toxicity groups should have a ½ mile (0.8 km) buffer from occupied nests.			X	X						X	X					
No treatments within nesting habitats year-round.					X	X										
Mechanical treatments require 1/8-mile (0.2 km) buffer from nest site year-round.							X				X					
Mechanical, mechanized ground and low and high aerial chemical treatments require a 1/8-mile (0.2 km) buffer from habitat patches used for breeding or potential habitat year-round.								X	X	X		X	X	X		X

Chemical spot and manual treatments require a 1/8-mile (0.2 km) buffer from the nest site.										X <sup>∞</sup>	X <sup>#</sup>					
Mechanical treatments require 200 ft (60 m) buffer from lakes and Category I wetlands and 150 ft (45 m) of Category II wetlands, per Navajo Natural Heritage Program 1994.																X
* - nesting period May 1- July 31, ** - nesting period April 15 – July 31	*** - nesting period May 1 – August 31 ∞ - nesting period April 1- July 15				φ - nesting period May 15 – August 15 ‡ - nesting period May 1 – August 1				# - nesting period May 1 – August 15							

<b>Migratory Birds – Species Conservation Measures</b>
Mechanical treatments within the buffer zone will be conducted outside of the breeding season (March through August).
Non-endangered raptors - All treatments require a 490 ft (0.15 km) buffer from the active nest from March-August or until juveniles have left the nest.
Predatory birds - Spot and mechanized ground herbicide treatments with Class 2 or Class 3 liquid formulation herbicides require a 300 ft (90 m) buffer from the active nest from March- August or until juveniles have left the nest. Low and high aerial treatments require a 1/8 mi (200 m) buffer from the active nest.
Small migratory birds - Class 2 or Class 3 herbicides require 30 ft (9 m) buffer for spot and mechanized ground application of herbicide, 150 ft (50 m) with low aerial chemical treatments, and 1/8 mi (200 m) for high aerial chemical treatments near the species habitat.
Waterfowl - avoid using Class 2 or 3 herbicides in areas where waterfowl are concentrated and wait until birds have migrated for the season. Applications of liquid formulations of Class 2 and 3 herbicides require a 30 ft (9m) buffer for spot applications, 60 ft (20 m) for mechanized ground, 200 ft (60 m) for low aerial spraying, and 1/8 mi (200 m) for high aerial spraying.
Prescribed fires outside of a breeding patch will be conducted outside of the migrating and breeding season.

**Table 5.** Required species conservation measures for federally listed candidate and endangered and NNHP Group 2 fish species and recommended species conservation measures for NNHP Group 4 fish species.

Fish – Species Conservation Measures						
USFWS Status	E	E	C	E	E	
NNDFW Group	G2	G2	G2	G2	G2	G4
Mitigation Measure	Colorado pikeminnow ( <i>Ptychocheilus Lucius</i> )	Razorback sucker ( <i>Xyrauchen texanus</i> )	Roundtail chub ( <i>Gila robusta</i> )	Humpback chub ( <i>Gila cypha</i> )	Zuni bluehead sucker ( <i>Catostomus discobolus yarrowii</i> )	Bluehead sucker ( <i>Catostomus discobolus</i> )
Weed removal projects will require restoration of native vegetation to prevent erosion. Weed removal activities in the riparian zone will be conducted in patches to prevent erosion. Patch size will be determined in consultation with NNDFW.	X	X	X	X	X	X
Best Management Practices (see NNIWMP, BIA 2020) will be used to reduce sedimentation and chemical run-off from mechanical and chemical weed treatments along bank lines within the 100-year floodplain.	X	X	X	X	X	X
Pile burning and prescribed burning will be conducted 300 ft (90 m) outside of the floodplain.	X	X	X	X	X	X
Approved herbicides (aquatic formulations only): 2,4-D, Glyphosate, Triclopyr and Imazapyr will exclusively be used within 25 ft (7.6 m) of the daily high-water mark.	X	X	X	X	X	X
Herbicides with relatively low aquatic toxicity to fish require a 25 ft (7.6 m) buffer from the daily high-water mark in the riparian zone, including: Aminopyralid, Chlorsulfuron methyl, Clopyralid, Diflufenzopyr, Imazapic, and Thifensulfuron-methyl.	X	X	X	X	X	X
Non-aquatic approved and moderate to high aquatic toxicity herbicides require a 300 ft (90 m) buffer from the daily high-water mark (see NNIWMP, EPP 2020).		X	X	X	X	
No surface disturbance year-round within 98 – 200 ft (30 – 60 m) from the top of the stream bank. NNDFW fish biologist will determine exact distance on a case by case basis.					X	X
Only the cut-stump method will be used to remove large trees or shrubs in the floodplain. Debris will be piled outside of the floodplain.					X	
Heavy machinery (bulldozers/root plows) mechanical treatments require a 300 ft (90 m) buffer from edge of the waterway.					X	

**Table 6.** Required species conservation measures for federally listed endangered and NNHP Group 3 invertebrate species and recommended species conservation measures for NNHP Group 4 invertebrate species.

Invertebrates – Species Conservation Measures				
USFWS Status	E			
NNDFW Group	G4	G3	G4	G4
Mitigation Measure	Kanab ambersnail ( <i>Oxyloma kanabense</i> )	Great Basin silverspot ( <i>Speyeria nokomis</i> )	Rocky mountainsnail ( <i>Oreohelix strigosa</i> )	Yavapai mountainsnail ( <i>Oreohelix yavapai</i> )
Mechanized, manual and chemical spot treatments require a 200 ft (60 m) buffer from suitable habitat.	X			
Low aerial spraying requires a 150 ft (50 m) buffer and high aerial spraying requires a 1/8 mile (200 m) buffer from suitable habitat.	X			
Surveys will be conducted from August 1 - September 1.		X		
Avoidance measures will be applied to the host plant, violet.		X		
No chemical or mechanical treatments permitted within 200 ft (60 m) of occupied habitat year-round.		X		
No target livestock grazing in wet areas containing host plants during the mating season.		X		
No broadcast or aerial herbicide applications will be permitted within western seep fritillary habitat or in areas containing host plants.		X		
Mechanical and manual treatments require a 200 ft (60 m) buffer from occupied habitat year-round.			X	X

**Table 7.** Required species conservation measures for NNHP Group 2 amphibian and reptile species and recommended species conservation measures for NNHP Group 4 amphibian and reptile species.

<b>Amphibians and Reptiles – Species Conservation Measures</b>			
<b>NNDFW Group</b>	<b>G2</b>	<b>G4</b>	<b>G4</b>
<b>Mitigation Measure</b>	<b>Northern leopard frog (<i>Lithobates pipiens</i>)</b>	<b>Milk snake (<i>Lampropeltis triangulum</i>)</b>	<b>Chuckwalla (<i>Sauromalus ater</i>)</b>
Mechanized and manual treatments require a 200 ft (60 m) buffer from open water habitats.	X		
Prescribed fire requires a 200 ft (60 m) buffer zone from the edge of the wetland vegetation.	X		
No applications of herbicides will be used inside occupied or potentially occupied aquatic habitat.	X		
Mitigation measures will be applied in dispersal and migration corridors after rain events.	X		
All projects in riparian/wetland habitats near occupied habitat will require native riparian/wetland vegetation restoration following invasive species removal.	X		
Only herbicides labeled for aquatic use and the cut-stump method on tree species will be used in potential habitat.	X		
No target grazing will be used in the habitat.	X		
All equipment and boots will be cleaned with bleach before and after treatments within 200 ft (60 m) of occupied habitat to prevent the spread of chytrid fungus.	X		
No mechanical treatments (surface disturbance) within occupied habitats.		X	X

**Table 8.** Required species conservation measures for NNHP Group 3 mammal species and recommended species conservation measures for NNHP Group 4 mammal species.

Mammals – Species Conservation Measures							
NNDFW Group	G3	G4	G4	G4	G4	G4	G4
<b>Mitigation Measure</b>	<b>Pronghorn</b> ( <i>Antilocapra americana</i> )	<b>Townsend's big-eared bat</b> ( <i>Corynorhinus townsendii</i> )	<b>Chisel-toothed kangaroo rat</b> ( <i>Dipodomys microps</i> )	<b>Banner-tailed kangaroo rat</b> ( <i>Dipodomys spectabilis</i> )	<b>Navajo Mountain vole</b> ( <i>Microtus mogollonensis</i> )	<b>Arizona (Wupatki) pocket mouse</b> ( <i>Perognathus amplus cineris</i> )	<b>Kit fox</b> ( <i>Vulpes macrotis</i> )
All treatments require a 1-mile (1.6 km) buffer from potential lambing areas from May 1 through June 15.	X						
All treatments require a 200 ft (60 m) buffer from occupied roost site during April 15- August 31.		X					
Mechanical and target grazing treatments require a 200 ft (60 m) buffer from occupied habitats year-round.			X	X	X	X	X
All treatments require a 1/8 mi (0.2 km) buffer from active den during December 1- August 31							X

Black-footed ferret (*Mustela nigripes*) and Northern river otter were extirpated from the Navajo Nation. Both species have been reintroduced in areas adjacent to the Navajo Nation. For black-footed ferret, reintroduction efforts have occurred at Babbitt Ranches, adjacent to the Navajo Nation, and may be considered for other areas within or around the Navajo Nation. Northern river otters were detected in southern Colorado, but no sightings have occurred on the Navajo Nation. If black-footed ferrets and Northern river otters are reintroduced or expand into the Navajo Nation the conservation measures, listed below, for this species would be initiated in addition to the regulations outlined in the reintroduction guidelines.

**Table 9.** Recommended species conservation measures for NNHP Group 1 mammal species.

<b>Mammals (G1 Extirpated) – Species Conservation Measures</b>		
<b>Mitigation Measure</b>	<b>Northern river otter (<i>Lontra canadensis</i>)</b>	<b>Black-footed ferret (<i>Mustela nigripes</i>)</b>
No activity year-round within 300 ft (100 m) of occupied habitat that could result in destruction of burrows/runways and take of individuals or prevent changes to water chemistry.	X	
Breeding season for black-footed ferret is from mid-March to August, with most sensitive period from mid-March to June. Only occur in medium to large active prairie dog towns (>198 acres (80 hectare (ha), and ≥20 burrows/ha).		X
Notify USFWS and NNDFW of any project that will impact prairie dog towns greater than 200 acres (80 ha).		X
Weed treatments will be scheduled outside of breeding season.		X
No disking, plowing or prescribed burns around habitat during the breeding season (March to September).		X
No herbicide limitations for this project per the RPMPA, pg. 109.		X