BIOLOGICAL ASSESSMENT
FOR THE POTENTIAL EFFECTS OF THE

MIDDLE FORK WEISER RIVER LANDSCAPE RESTORATION PROJECT
IN THE WEISER RIVER SECTION 7 WATERSHED
ON
CANADA LYNX,
NORTHERN IDAHO GROUND SQUIRREL,
WOLVERINE,
AND COLUMBIA RIVER BULL TROUT,

COUNCIL RANGER DISTRICT, PAYETTE NATIONAL FOREST

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Prepared by:

June M Galloway for — 11.07.2017

Name — Date

Jon Almack
West Zone Wildlife Biologist
Payette National Forest

Clayton Nalder for — 11/7/17

Name — Date

Trisha Giambra
West Zone Fisheries Biologist
Payette National Forest

Reviewed by:

June M. Galloway — 11.07.2017

June Galloway — Date

Forest Wildlife Biologist
Payette National Forest, Supervisor's Office

Clayton Nalder — 11/7/17

Clayton Nalder — Date

Forest Fisheries Biologist
Payette National Forest, Supervisor's Office

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INTRODUCTION

Background

The Forest Service is proposing a restoration project approximately 6 miles southeast of Council on the Council District of the Payette National Forest, in Adams County Idaho. The restoration work would take place in the Middle Fork Weiser River, a tributary to the Weiser River. The project area is approximately 50,000 acres and includes part of the Council Mountain and Poison Creek Inventoried Roadless Areas (IRAs). Proposed treatments include timber harvest, thinning, prescribed fire, road closures and road decommissioning. Recreation actions include rerouting trails, installing trail signs, installing toilets, trail designation, improving trailhead parking, installing information kiosks, and graveling campsites and campground access roads. Implementation is expected to take place beginning in the fall of 2017.

Analysis Area

The MFWR Analysis Area is described in detail in the FEIS and ROD for the project.

Physical and Vegetative Characteristics

The MFWR Project area encompasses approximately 49,276 acres and comprises approximately 38,519 acres of NFS lands and 10,757 acres of private lands. Decades of fire exclusion, forest management, insect outbreaks, and other factors, have substantially altered the structure of forests in the project area, especially those that were historically within the nonlethal-to-mixed1 fire regimes (burning about every 5-70 years). Fire regimes in these forests have transitioned from mostly nonlethal and mixed1, to more lethal fire regimes. These low- to mid-elevation forests have substantially fewer old, legacy ponderosa pine and western larch trees, compared to what existed historically (i.e., 100 years ago and longer). These areas often have multiple canopy layers, dense forest structure, and continuous high fuel levels, which places these forests at increased risk for uncharacteristic/stand-replacing wildfires, insect outbreaks, or intensified disease outbreaks.

Forested vegetation is described by habitat types, which use potential climax vegetation as an indicator of environmental condition, and potential vegetation groups (PVGs) that share similar environmental characteristics, site productivity, and disturbance regimes. The Project area has less large tree size class than desired in warm, dry forest types (PVGs 2, 5, and portions of 6) and higher canopy cover than desired. PVGs 6, 7, 10, and 11 also have higher canopy cover than desired. Increased conifer encroachment into aspen and non-forested habitats has reduced the quality of some wildlife habitats. Because of continued fire suppression on the PNF, there are higher levels of surface fuels, which could lead to uncharacteristic/stand-replacing wildfires. A description of PVGs, the acreage and distribution of these vegetation groups and the wildfire history is located in the Final Environmental Impact Statement for the MFWR Project (USDA Forest Service 2017, pages 44, 45).

Anthropogenic Physical and Vegetative Characteristics

The Project area has experienced substantial amounts of forest and range management over the past 70 years. Historically, human use of the Project area consisted of small fires set by Native Americans; followed by harvest of mostly large trees at lower elevations by European Americans, as they settled the Rocky Mountains region; and then harvest by modern techniques, which included large clear cuts and a variety of silvicultural practices that favored commercially valuable tree species. Road building associated with timber harvest has contributed to fragmented wildlife habitats of lesser quality for supporting the wildlife species that occurred in this area. Because of this long-term shift in habitat structure, the current vegetation characteristics favor wildlife species that require smaller size class trees, a dense overstory canopy, an accumulation of dead and dying trees, and an increased amount of dead surface material.

DESCRIPTION OF PROPOSED ACTION

Project Location

The Project area is located approximately 6 miles southeast of Council, Idaho, in Adams County. Land ownership within and adjacent to the Project area includes NFS lands, Idaho State lands, and private ownership. Access to the area is via the Middle Fork Weiser River Road (National Forest System [NFS] road 50186), accessed by US Highway 95, south of Council, Idaho, or via State Highway 55 and West Mountain Road (NFS road 50195) west of Donnelly, Idaho.

The Project area encompasses approximately 49,276 acres within the Weiser River drainage, and comprises approximately 38,519 acres of NFS lands and 10,757 acres of private land within the following 5 subwatersheds: Little Fall Creek—Weiser River, Mica Creek—Weiser River, Jungle Creek—Weiser River, Granite Creek—Weiser River, and a portion of the upper East Fork Weiser River. (Figure 1). The Project area is located in T14N, R1E, Section 1; T14N, R2E Section 6; T15N, R1E, Sections 1-5, 9-16, 21-27, 35 and 36; T15N, R2E, Sections 1-12, 14-22, and 28-32; T16N, R1E, Sections 1, 12, 13, 24-27, and 32-36; T16N, R2E, Sections 2-11 and 14-35; T17N, R2E, Sections 27-34, Boise Meridian (Figure 1).

Purpose and Need

The purpose of the Proposed Action is as follows:

1) Move vegetation toward the desired conditions (e.g., canopy cover in large tree size class, species composition, and size class distribution), with an emphasis on:
    a) Improving habitat for Family 1 wildlife species (low elevation, old forest), such as the white-headed woodpecker, while maintaining habitat for federally-listed and sensitive species;
    b) Maintaining and promoting early seral species composition (e.g., aspen, whitebark pine, western larch, ponderosa pine, and Douglas-fir);
    c) Reducing the risk of uncharacteristic wildland fire, with an emphasis on restoring and maintaining desirable plant community attributes including fuel levels, fire regimes, and other ecological processes;
    d) Maintaining and promoting large tree size class in PVGs 2 and 5;
    e) Restoring spatial patterns by establishing varying patch sizes consistent with the historical range of variability that promote forest resilience to fire, insect, disease and climate change;
    f) Reducing tree densities in PVGs 2, 5, 6, 7, 10, and 11;
    g) Maintaining and promoting native grasses within nonforested habitats and restoring age and canopy class structure of sagebrush and bitterbrush;
    h) Restoring aspen and nonforested habitats by reducing conifer encroachment.

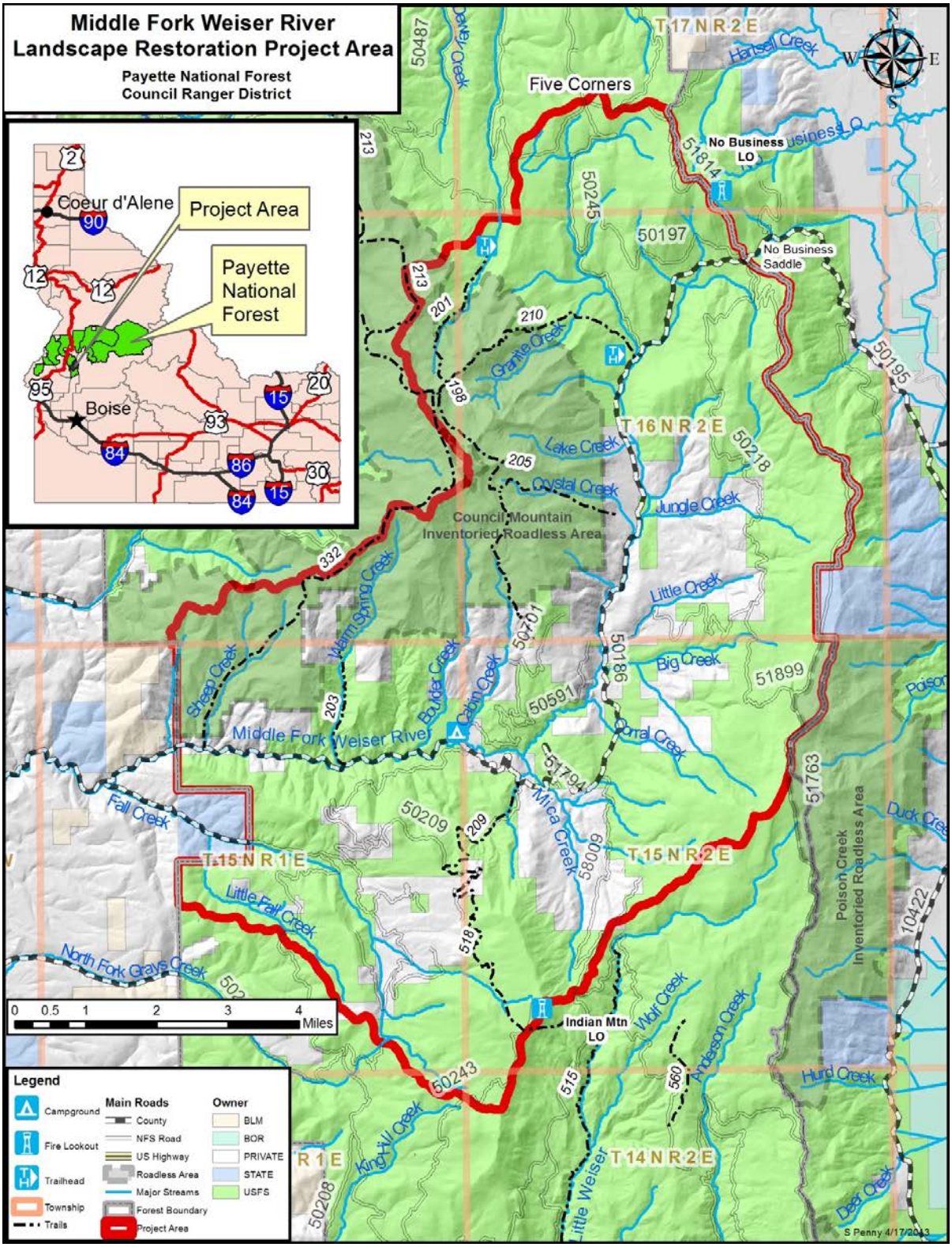

Figure 1. Middle Fork Weiser River Project Landscape Restoration Project area map.

2) Move all subwatersheds within the Project area towards the desired condition for the soil, water, aquatic, and riparian resource with emphasis on:

   i) Improving water quality by reducing road-related accelerated sediment through a combination of road obliteration, realignment, and maintenance.

   j) Restoring hydrologic function, stabilizing unstable streambanks, and reducing channel condition risk through road obliteration and realignment, and removal of culverts on long-term road closures.

   k) Improving aquatic habitat and fish connectivity by obliteration and realignment of roads within RCA and by removing or upgrading culverts that currently impede native fish movement.

   l) Restoring riparian vegetation and reducing sediment impacts by reducing in size (using physical barriers) and hardening dispersed recreation sites in RCAs.

3) Manage recreation use in the Project with an emphasis on hardening primary dispersed recreation areas, updating Cabin Creek Campground, improving existing trails and providing new trail opportunities including an off-highway vehicle (OHV) loop and a non-motorized trail.

4) Contribute to the economic vitality of the communities adjacent to the Payette National Forest.

5) Improve firefighter and public safety by establishing strategically placed defensible fuel breaks within the Project area.

The need for the Proposed Action is driven by the difference between the current and desired conditions. The current conditions are departed from the desired conditions. The objective is to move toward the desired conditions found in Appendices A, B, and E of the Forest Plan (USDA Forest Service 2003). This type of restoration is recommended in the IDFG report, *Preserving and Restoring the Old-Growth Ponderosa Pine Ecosystems in Idaho* (Mehl and Haughler 2004) and the *Idaho Statewide Forest Resource Strategy* (Kimball and Stephenson 2010), which includes restoration goals recommended by a broad range of federal, State, and private partners. Within the Project area, the current conditions are as follows:

1) A loss of habitat for Family 1 wildlife species, such as the white-headed woodpecker, compared to desired conditions;

2) Less large tree size class than desired in the warm, dry forest types (PVGs 2 and 5), and higher canopy cover than desired;

3) Less of an early seral tree species component (e.g., whitebark pine, aspen, ponderosa pine, Douglas-fir, and western larch) than desired;

4) Increased stand and landscape homogeneity of size classes, species diversity, tree distributions (i.e., currently in some vegetation types the tree spacing is uniform in nature);

5) More high canopy cover class than desired in the large tree size class in some vegetation types (PVGs 2, 5, 6, 7, 10, and 11);

6) Increased conifer encroachment into aspen and nonforested habitats (e.g., shrublands, sagebrush, and grasslands);

7) Higher surface fuel loading in those areas that have missed one or more fire return intervals;

8) Impaired watershed function and integrity derived from past and current disturbances, road-related erosion and sediment, floodplain and riparian area encroachment, and aquatic habitat fragmentation;

9) Trail and recreation facilities that do not meet current design, accessibility, and maintenance standards.

The desired conditions for this Project are based on the Forest Plan, the WCF, and the most recent science concerning management of wildlife habitats.

Proposed Action

The proposed action description was copied from the Middle Fork Weiser River Landscape Restoration Project Record of Decision (USDA Forest Service 2017).

Vegetation Treatments

As more fully described in the FEIS Chapter 2, proposed vegetation treatments were developed using a combination of data derived from aerial photo interpretation and field reconnaissance. Current information was used by the ID team to estimate values such as number of acres treated, road miles, and timber volume. On the maps, prescribed fire, thinning and harvest unit locations and prescriptions are also best estimates based on current information. Some adjustments may occur during project design and layout to conform to on-the-ground conditions. In all cases, adjustments would be made to meet the intent of the Purpose and Need and the Forest Plan.

Proposed activities were developed using a combination of data derived from aerial photo interpretation and field reconnaissance. Layout of exact boundaries and treatment types would be determined based upon additional on-the-ground surveys and vegetative conditions within each stand. Based on Project Design Features and the intent of the proposed treatments, it is anticipated that further ground verification may result in a reduction of commercial treatments and a resultant increase in non-commercial treatments. The anticipated reduction in acreage of commercial treatments from proposed to the expected implementation acreages are based on the fact that further site-specific verification is necessary to comply with management requirements and Project Design Features, such as those regarding RCAs, landslide prone areas, wildlife concerns, and archaeology concerns, and would preclude treating some of the proposed areas. Although all acres proposed for treatment would be evaluated based on the descriptions of treatments provided below, only acres that meet the intent of the treatment descriptions, are economically feasible, and consistent with the Project Design Features would be treated. Therefore, total acres of commercial treatments are anticipated to be reduced by 10-40 percent from those proposed, based on field review of proposed treatments and actual implementation of similar previous projects on the Payette National Forest. Actual treatment unit boundaries are anticipated to vary from the GIS files and maps displayed in this document. The maps provided in this document are diagrammatic; actual unit boundaries and treatment units would be determined after further on the ground verification. Limitations such as slope, RCA boundaries, acres treated per 6th field watershed, and wildlife constraints would be applied during treatment unit delineation on the ground. Tables 1 and 2 display a summary of vegetation treatments in the project.

Table 1. Vegetation treatment summary

Type of Vegetation Treatment	Acronym	Total Acres
Noncommercial Thin	NCT	1,369
Restoration Burned Areas/Plantations	BA/PL	3,229
Commercial Thin-Free Thin	CT-FT	2,879
Free Thin–Patch Cut-Modified Shelterwood[a]	FT-PC-MSw	5,367
Commercial Thin / Mature Plantations	CT-MP	1,070
Conifer Removal in Aspen Stands	CT-ASP	1,087
Vegetation treatments in stands with Low Site Quality	LSQ	947
Dry Nonforested Vegetation Treatment	NFT	4,944
Wet Meadow Treatment	WMT	315
Shaded Fuelbreak	SFB	458
Fuel Reduction within a Riparian Conservation Area (RCA)	FR-RCA	15
Total Acres of Vegetation Treatments		21,679
Prescribed Fire Treatment[b]	PFT	27,200

Note: Acres include area within RCAs. None of these treatments are proposed within the inner portion of RCAs except for the FR-RCA and WMT treatments.

[a]Only CT-FT would be used in this type of treatment unless there is aspen present where Conifer Removal in Aspen Stand treatment would be utilized in that portion of the outer RCA.

bPrescribed fire would be allowed to back into RCA.

Table 2. Vegetation treatment acres within Riparian Conservation Areas (RCAs)

Type of Vegetation Treatment within RCAs	Acronym	Total Acres
Noncommercial Thin	NCT	116
Burned Areas/Plantations	BA/PL	380
Commercial Thin-Free Thin	CT-FT	336
Free Thin–Patch Cut-Modified Shelterwood[a]	FT-PC-MSw	971
Commercial Thin / Mature Plantations	CT-MP	168
Conifer Removal in Aspen Stands	CT-ASP	181
Vegetation treatments in stands with Low Site Quality	LSQ	169
Dry Nonforested Vegetation Treatment	NFT	432
Wet Meadow Treatment[b]	WMT	315
Shaded Fuelbreak	SFB	83
Fuel Reduction within a Riparian Conservation Area (RCA)[b]	FR-RCA	15
Total Acres of Vegetation Treatments within RCAs		3,162
Prescribed Fire Treatment[c, d]	PFT	7,386

[a]Only CT-FT would be used in this type of treatment unless there is aspen present where Conifer Removal in Aspen Stand treatment would be utilized in that portion of the outer RCA.

[b]None of these treatments are proposed within the inner portion of RCAs except for the FR-RCA and WMT treatments.

[c]PFT is not counted in the grand total of treatment acres due to the overlap of treatment acres with many of the vegetation treatments.

[d]Prescribed burn would be allowed to back into inner RCA.

Riparian Conservation Area (RCA) Delineation

The Forest Plan (USDA Forest Service 2003a, Appendix B) outlines criteria to aid the IDT in delineating RCAs for perennial and intermittent streams, ponds, lakes, reservoirs, and wetlands. The RCAs within the project area have been identified by the IDT using "Option 2, Delineation Method for Forested Streams" (USDA Forest Service 2003, Appendix B). Option 2 provides a more site-based delineation of an RCA boundary using site-potential tree heights. While PVGs occur within the Project area that, under Option 2, would have RCA widths based on site-potential tree heights that are narrower than 120 and 240 feet, these PVGs are intermixed with PVGs where the 120 and 240-foot RCA distances are appropriate. For consistency and to reduce error during project layout, one distance was used for all PVGs—the most conservative RCA distance. Table 3 lists the RCA delineation distance by water source.

Table 3. Summary of Option 2 RCA delineation distances for forested streams

Water Source	RCA Distance*
Perennial Stream	240-foot slope distance (two site-potential tree heights)
Intermittent Stream providing seasonal rearing and spawning habitat	240-foot slope distance (two site-potential tree heights)
Intermittent Stream	120-foot slope distance (one site-potential tree height)
Ponds, Lakes, Reservoirs, and Wetlands	120-foot slope distance (one site-potential tree height)
Seeps and Springs	30 feet and 120 feet, respectively

* Distance from ordinary high water mark (either side of stream).

Noncommercial Treatments

Noncommercial *Thinning (NCT)—1,369 acres (116 acres in Riparian Conservation Areas)*
Noncommercial thinning (NCT) would be completed in mature stands and plantations with density-related stress and in mature stands targeted for prescribed burning.

In areas targeted for prescribed fire treatments, NCT would be completed where necessary. Slash produced from NCT would be lopped and scattered or piled (machine or hand). Additionally, NCT would be permitted within the outer half of RCAs as approved by the District Hydrologist and/or Fisheries Biologist to help achieve desired conditions. All NCT in RCAs would be completed by hand and would generally not cut trees larger than 8 inches DBH; the majority of cut material would be lopped and scattered. If piling is needed, slash would only be piled by hand within RCAs.

Within plantations, NCT would be completed to improve wildlife habitat, increase growth rates and tree vigor, improve stand resiliency to natural disturbance, and reduce density-related competition. Plantations targeted for NCT are generally <30 years old and have an average DBH of 8–12 inches. NCT would cut trees <8 inches DBH and prune residual trees, when practical, up to 6 feet high. Post treatment, these stands would retain approximately 70–100 trees per acre. Thinning would favor early seral species but would retain a mixture of species and variable densities, depending on site-specific objectives. Where reserve trees within plantations receiving this treatment are causing forest health problems (primarily due to mistletoe), trees may be killed by girdling. Girdled trees would be marked with wildlife tags as necessary to meet desired snag numbers and sizes.

Treatment intent in plantations:

- Reduce noncommercial tree densities, increase growth rates, improve wildlife habitat, and improve tree vigor
- Improve stand resiliency to natural disturbance by reducing density-related competition
- Maintain and promote early seral species with variable densities depending upon site-specific objectives
- Promote spatial heterogeneity in species diversity (i.e., retention of naturally regenerating aspen or other desired species when present), canopy cover, and density
- Expand the opportunity for application of prescribed burn by changing the fuel profile
- Reduce fire severity potential and fuel loading prior to prescribed burning
- Reduce the potential for undesired fire effects (i.e., mortality of legacy trees)
- Aid in the retention of desired leave trees

Restoration of Burned Areas/Plantations (BA/PL)—3,229 acres (380 acres in RCAs)
Restoration of Burned Areas/Plantations (BA/PL) treatment would be completed in plantations burned during the Greys Creek fire. Plantations within this area burned at mixed severities; salvage harvested areas were replanted following the fire. Many of these plantations have experienced mixed survival; specifically, intermixed patches of dense, moderate, low and no survival of regeneration occur. Plantations have had 1-, 3-, and 5-year survival plots and have had adequate stocking rates; however, due to a combination of drought, herbivory (pocket gophers), and dense brush, some of these plantations have experienced increased mortality.

BA/PL treatments would include NCT, piling (mechanical or hand), and pruning in areas with dense regeneration, brush removal, and replanting in areas with low stocking. NCT would generally cut trees <10 inches DBH and prune residual trees, when practical, up to 6 feet high.

Treatment intent in dense regeneration areas:

- Reduce noncommercial tree densities, increase growth rates, improve wildlife habitat, and improve tree vigor
- Improve stand resiliency to natural disturbance by reducing density-related competition
- Maintain and promote early seral species with variable densities depending upon site-specific objectives
- Promote spatial heterogeneity in species diversity (i.e., retention of naturally regenerating aspen or other desired species when present), canopy cover, and density

Treatment intent in brush areas with low stocking:

- Reduce competition to seedlings from brush and grass

Treatment intent in low stocking areas:

- Meet desired stocking levels

Commercial Treatments—10,403 acres

Stands would be thinned through commercial logging. Potential harvest systems include ground based, skyline, and/or helicopter. Harvested trees would generally be removed with the limbs and tops attached. The limbs and tops would be utilized as biomass or other products, where practical. Where appropriate and needed, noncommercial-sized (e.g., <8 inches DBH) trees would be cut to reduce ladder fuels and promote desired advanced regeneration. Following harvest, these stands could be underburned as described in the prescribed burn section below. Commercial vegetative treatments have been divided into the categories described below.

Commercial Thin-Free Thin (CT-FT)—2,879 acres (336 acres within the outer half of RCAs)
Commercial thin-free thin (CT-FT) would allow the flexibility to use different thinning methods for varying stand conditions and objectives. CF-FT would be accomplished by low thinning (removing trees from the lower crown classes) with some crown thinning (removing trees from the dominant and co-dominant crown classes) and occasional sanitation cutting (removing trees to improve stand health by reducing the anticipated spread of insects or disease, especially mistletoe infections). Merchantable material would be removed from the site and utilized as markets allow. Noncommercial material (slash) would be lopped and scattered, mechanically harvested for fuelwood decks, removed, hand piled, machine piled, and/or broadcast burned to reduce fuel loading.

These treatments would generally be completed in forested areas dominated by mature, vigorous ponderosa pine, Douglas-fir and/or western larch with canopy cover >35%. Approximately, 1.0% of the CT-FT treatment areas would be located in PVG 11 stands and potentially include promoting and maintaining whitebark pine (e.g., removal of subalpine fir and artificially regenerating rust resistant trees).

Following treatment, these stands would be a mosaic of thinned areas, clumps of trees, and small openings. Lower canopy cover (20%–30% post treatment canopy cover) would generally be targeted in PVG 2. Higher canopy cover (25%–40%) would generally be the desired post-treatment condition in PVGs 5 and 6. Portions of stands with natural openings and heavily thinned areas would have less canopy cover, perhaps as low as 10%. These openings would eventually develop more canopy cover where seedlings establish and grow. Following prescribed burning, up to an additional 10%, with an average of 5%, of the overstory trees would be expected to be killed. The average canopy cover in these stands after harvest and underburn operations would be between 20% and 40%.

This treatment includes the following specifications:

- Legacy western larch, ponderosa pine, and Douglas-fir should be retained. See Appendix 7 for legacy tree identification guidelines.
- Seral species (western larch, ponderosa pine, aspen, whitebark pine, and/or Douglas-fir) should generally be favored for retention over non-seral species (e.g., grand fir and subalpine fir) and preference given to retention of larger diameter trees
- Non-legacy trees greater than 20 inches DBH should generally be given retention preference. When these trees must be selected for retention or removal, the following guidelines should be utilized:

o Give preference to larger diameter, vigorous, early seral trees for retention

o Consider the appropriateness of retaining clumps and/or skips as described below

▪ Dwarf mistletoe that cannot be isolated and would cause mid- to long-term forest health issues

- Trees with lower mistletoe ratings would generally be favored over heavily infected trees. When possible, trees with mistletoe ratings of 0–3 would be favored over trees with a rating of 4–6. When trees with mistletoe ratings of 4–6 can be isolated (i.e., greater than 40 feet from uninfected host trees) while addressing mid-to-long term stand objectives these infected trees should be retained to meet wildlife objectives.

▪ Give preference to retaining tree(s) exhibiting characteristics of high wildlife value (e.g., cavities, stem rot, broken tops with structure for nesting) even if this results in slightly higher than desired stocking.

▪ Consider safety concerns when designating trees for retention/removal, including hazard trees in and/or adjacent to campgrounds, dispersed campsites, and roads/trails open to the public

▪ Consider operational concerns when designating trees for retention/removal, including hazard trees, skid trails, skyline corridors, and landings

▪ In large tree size class stands (generally stands that have 11 or more trees per acre that are ≥20 inches DBH), retain at least eleven, 20-inch DBH or larger trees per acre. This consideration may require retaining large diameter trees that do not meet the description for preference, above.

- Retention/removal of non-legacy late seral species should follow these guidelines:

o Give preference for retaining late seral species when necessary to meet residual structural objectives (i.e., large tree size class and/or old forest characteristics)

▪ Generally give preference to vigorous, healthy larger-diameter, late seral trees. Although, preference to retaining late seral tree(s) exhibiting characteristics of high wildlife value (e.g., cavities, stem rot, broken tops with structure for nesting) should also be given, especially when not common in a stand, even if this results in slightly higher than desired stocking. These would also be good areas to consider skips, see below.

o Retain late seral trees >20 inches DBH not meeting merchantability specifications due to damage, poor form, or indicators of rot to meet wildlife objectives

o Give preference for removing late-seral (e.g., grand fir, subalpine fir and/or Douglas-fir [PVG 2]) trees that are causing direct crown/root competition to large diameter and/or vigorous western larch and ponderosa pine

- Creating clumps, skips, and openings should follow these guidelines:

- Retain clumps of trees, commercial and noncommercial sized, throughout the harvest area to meet wildlife and visual objectives. These clumps would consist of 2 to 20 or more trees and should be designed to enhance spatial variability within each given stand.
- Design skips consistent with the principles identified in Franklin et al. (2013, pp. 81–87). Skips are defined as portions of units not treated mechanically. These skips should not generally exceed 15% of a stand.
- Create small openings <2.0 acres in areas dominated by grand fir, low vigor trees, or diseased trees or in areas with a high potential of aspen regeneration. Where aspen are present, conifers could be removed within the aspen stand to improve stand integrity. These openings should not generally exceed 10% of a stand and should consider the following recommendations.
  - Small openings of up to 2.0 acres may be used to stimulate aspen regeneration. In aspen patches, non-legacy coniferous trees would be removed within 50 feet of the aspen patch. To be considered an aspen patch, an area must have an average spacing of less than 20 feet between stems and be larger than 1/10 acre in size.
  - In openings outside of aspen patches, a minimum of 5–10 trees per acre would be retained, with leave tree preference given to legacy trees; vigorous serals (e.g., ponderosa pine, western larch, and aspen) in the dominant and co-dominant crown classes; and high wildlife value non-legacy/non-serals. Secondary preference would be given to dominant non-seral trees. These openings should rarely be wider than 50–100 feet and be well distributed across the area. Consideration of whether existing openings and the general thinning and burning prescription would create sufficient openings should be taken prior to intentionally creating additional openings. Artificial regeneration may be prescribed in patches between 1.0 and 2.0 acres if no suitable seed trees are present.
- Release legacy ponderosa pine, Western larch, and Douglas fir by removing younger trees for approximately twice the canopy drip line of the legacy tree(s). As discussed earlier, overlap of other legacy tree crowns is okay, and these other legacies should be retained. Release of replacement/future legacy trees/clumps should also be considered. In addition, retention of replacement trees should be considered if a desirable legacy tree replacement is within this area.

Treatment intent of CT-FT

- Reduce stand density and increase mean diameter
- Maintain and promote large tree forest structure and old forest characteristics while restoring the desired species composition, and stand densities
- Release legacy ponderosa pine, Western larch, and Douglas-fir by removing younger trees for approximately twice the canopy drip line of the legacy tree(s). Overlap of other legacy tree crowns is acceptable and these other legacies would be retained. Release of replacement/future legacy trees/clumps would also be considered. In addition, retention of replacement trees would be considered if a desirable legacy tree replacement is within this area
- Promote resiliency, reduce competition and improve growth rates for remaining trees
- Improve habitat for wildlife species that require large tree and old forest characteristics with low-to-moderate canopy cover
- Maintain whitebark pine by reducing density of subalpine fir and artificially regenerating rust resistant trees
- Reduce potential for crown fire spread should a wildland fire occur

- Restore a heterogeneous fine scale mosaic pattern

Free Thin–Patch Cut-Modified Shelterwood (FT-PC-MSw)—5,367 acres (971 acres would occur within the outer half of RCAs. Only free thinning would occur within the outer half of the RCAs unless aspen are present.)

This treatment would be implemented primarily in PVGs 6, 7, 9, 10, and 11 that have evidence (e.g., relic trees, stumps, snags) of previously having had an early seral tree species (e.g., aspen, whitebark pine, ponderosa pine, western larch and/or Douglas-fir) component. Approximately 0.1% of the FT-PC-MSw treatment areas are PVG 11 and potentially have whitebark pine present. Merchantable material would be removed from the site and utilized as markets allow. Noncommercial material (slash) would be lopped and scattered, mechanically harvested for fuelwood decks, removed, hand piled, machine piled, and/or broadcast burned to reduce fuel loading.

Implementing patch cuts would allow for regeneration (i.e., patch cut with reserves ranging from 3.0 to 10.0 acres, generally on less than 50% of a stand). In patch cuts, approximately 0–9 trees per acre would be retained as reserve trees. The patch would be either naturally or artificially regenerated after treatment. Unless the stand is predominately lodgepole pine and the intent is lodgepole regeneration, these stands would only be naturally regenerated. In modified shelterwood/seedtree treatment areas (i.e., <40 acres) approximately 10–25 trees per acre would be retained as reserve trees and artificial or natural regeneration would be used to meet objectives.

Reserve tree preference would be legacy trees, replacement legacy trees, high value wildlife trees (i.e. cavities, broken tops with structure for nesting), dominant non-serals and vigorous serals in any crown class.

In portions of stands with an early seral component still remaining, free thinning or modified shelterwood would be implemented. Free thin treatment would occur as described above. Portions of each stand (approximately 5-10%) not meeting the criteria for patch cuts, modified shelterwood, or free thinning would not receive commercial treatment during this entry (e.g., skips).

Following treatment, these stands would be a mosaic of thinned areas, clumps of trees, and small openings. Canopy cover in thinned areas would average 10-30%; Canopy cover could be over 40% in untreated areas. Canopy cover in created patch cuts would generally be 0-10%, and less than 10 ac in size. Following prescribed burning, up to an additional 30%, with an average of 10%, of the overstory trees would be expected to be killed. The average canopy cover in these stands following harvest and underburn operations would be between 15% and 40%.

Treatment intent of FT-PC-MSw:

- Restore a heterogeneous fine and landscape-level scale mosaic pattern by establishing varying patch sizes consistent with spatial patterns that improve forest resilience to disturbance.
- Retain and remove portions of stands that historically would not have been dominated by early seral species as clumps, skips, and gaps. *Clumps* are small groups retained with spacing closer than desired spacing specifications. *Skips* are areas with higher densities than specified in the rest of the unit that will not have any trees cut. *Gaps* are areas where the unit will have a wider average spacing than specified for the rest of the unit.
- Maintain early seral species in microsites.
- Reduce stand density and increase mean diameter.
- Maintain and promote large tree forest structure and old forest characteristics while restoring the desired species composition, and stand densities.

- Release legacy ponderosa pine, Western larch, and Douglas-fir by removing younger trees for approximately twice the canopy drip line of the legacy tree(s). As discussed earlier, overlap of other legacy tree crowns is acceptable and these other legacies would be retained. Release of replacement/future legacy trees/clumps would also be considered. In addition, retaining replacement trees would be considered if a desirable legacy tree replacement is within this area.
- Promote resiliency, reduce competition and improve growth rates for remaining trees.
- Maintain whitebark pine by reducing density of subalpine fir and artificially regenerating rust resistant trees.
- Improve habitat for wildlife species that require large tree and old forest characteristics with low to moderate canopy cover.
- Promote and maintain willow in PVGs 7, 9, 10, and 11.
- Reduce potential for crown fire spread should a wildland fire occur

Commercial Thin / Mature Plantations (CT-MP)—1,070 acres (168 acres in the outer half of RCAs)
This treatment would be applied to stands which were previously artificially regenerated (plantations). These stands are typically >30 years old and were planted predominately with ponderosa pine, Douglas-fir, and/or western larch. These mature plantations contain commercial trees with an average DBH >10inches and would average approximately 70–80 trees per acre (which would generally result in crown spacing of 10–15 feet) after thinning. Thinning would generally favor retaining larger, early seral trees and be completed to create stands with variable densities while promoting a mix of desired species. Merchantable material would be removed from the site and utilized as markets allow. Noncommercial material (slash) would be lopped and scattered, mechanically harvested, hand piled, machine piled, and/or broadcast burned to reduce fuel loading. The cost of slash treatment, CWD, and fuel loading would be considerations in determining the method of noncommercial material treatment.

Following treatment, these stands would appear more open. Canopy cover in these stands are currently moderate to high and would be reduced to low Canopy cover (between 25% and 35%) after treatment.

Treatment intent of CT-MP:

- Promote large tree forest structure while restoring the desired species composition, and stand densities
- Promote spatial heterogeneity in species diversity (i.e., retention of naturally regenerating aspen or other desired species when present), canopy cover, and density
- Reduce stand density and increase mean diameter
- Promote resiliency, reduce competition, improve growth for remaining trees
- Reduce potential for crown fire spread in the event of a wildland fire

Conifer Removal in Aspen Stands (CT-ASP)—1,087 (181 acres within the outer half of RCAs or adjacent to seeps and springs)
This treatment would be implemented in forest types with evidence (e.g., relic early seral trees, stumps, snags) of previously having a dominant aspen overstory. The treatment would occur in stands which still have a dominant component of aspen present. To be considered an aspen patch, an area must have an average spacing of less than 20 feet between stems and be larger than 1/10 acre in size (not dependent on age class). Merchantable conifers would be removed from the clone and utilized as markets allow. Noncommercial material (slash) would be lopped and scattered, mechanically harvested for fuelwood decks, removed, hand piled, machine piled, and/or broadcast burned to reduce fuel loading.

Following treatment, these stands would be a mosaic of thinned areas, clumps of trees, and openings around aspen clones. The average canopy cover in these stands after harvest and underburn operations would be between 15% and 40%. Conifer canopy cover within and adjacent to aspen clones will generally be reduced to less than 25%.

Treatment intent of CT-ASP:

- Re-establish aspen stands where they have departed from desired conditions as described in Campbell and Bartos (2000). CT-ASP would generally remove all conifers (potential exceptions include legacy ponderosa pine, Western larch, and Douglas-fir). Conifers within 100 feet of the south and west edges of aspen stands and within 50 feet on the north and east edges of aspen stands would be removed. Whole tree yarding would be used to limit slash concentrations within the aspen stands. Excessive slash would be hand piled in the outer half of RCAs and burned. To initiate suckering of the root system, units would be burned; additionally, aspen may, in limited cases, be girdled or felled when other treatment options have failed. Active ignition for the prescribed burn would occur within the RCA where SWRA resource conditions would be maintained or improved.
- Establish varying patch sizes and densities (using FT-PC-MSw treatments as described above) consistent with spatial patterns created by historical fire regimes in areas adjacent to aspen clones. Retain portions of stands that historically would not have been dominated by early seral species as skips.
- To ensure that aspen are restored in riparian areas, both commercial harvesting and hand treatments (including girdling, NCT, and felling conifer trees) may occur within the outer half of RCAs and adjacent to seeps and springs. No equipment would be permitted within perennial or intermittent RCAs or within 30 feet of seeps and 120 feet of springs (See Appendix 5 for definition of seep vs. spring). Location and treatment type within RCAs, seeps, and springs would be determined on a site-by-site basis. In some locations near seeps and springs, fencing may be needed to protect aspen and soils during recovery and would be determined on a site specific basis.

Additional Vegetation Treatments—6,679 acres

These treatments would include a combination of commercial logging, NCT, and prescribed burn. Treatment areas would be those with unique characteristics (e.g., geography, hydrology, geomorphology, and species composition) which make treatment highly variable from stand to stand. Potential commercial harvest systems include ground based, skyline, and/or helicopter. Harvested trees would generally be removed with the limbs and tops attached. The limbs and tops would be utilized as biomass, or other products, where practical. Where appropriate and needed, noncommercial-sized (i.e., <8 inch DBH) trees would be cut to reduce ladder fuels and promote desired species composition. Following treatment, these stands could be underburned as described in the prescribed burn section below. These additional vegetative treatments have been divided into the categories described below. As with other vegetation treatments described, no equipment would be permitted within perennial or intermittent RCAs or within 30 feet of seeps or 120 feet of springs.

Vegetation Treatments in Stands with Low Site Quality (LSQ)—947 acres (169 acres within the outer half of RCAs)

These stands typically have stocking rates not conducive to commercial harvest; however, in many cases restoration needs exist in overstocked forested pockets. In many of these stands, an early seral species component is being affected by increased ladder fuels and insect/disease issues. Approximately, 5% of the low site quality (LSQ) treatment areas occur in PVG 11 and potentially in stands containing whitebark pine. Thinning (commercial and noncommercial), piling (machine or hand), and prescribed fire treatments

are proposed in timber stands with lower densities. These stands generally will not contribute to the Allowable Sale Quantity (ASQ).

Treatment intent of LSQ:

- Maintain legacy trees while reducing stand densities and ladder fuels,
- Restore natural fire disturbance regime to improve understory plant diversity and vigor, and provide habitat for native species
- Move the project area toward a pre-fire suppression vegetative condition related to stand density, tree size class, and species composition to enable the reintroduction of fire into a fire adapted ecosystem
- Maintain whitebark pine by reducing density of subalpine fir and artificially regenerating rust resistant trees
- Promote resiliency and reduce competition for remaining trees

Commercial and Non Commercial Thinning within Nonforested (dry and wet)

Nonforested stratum includes nonforested areas and wet meadow areas typically incapable of supporting more than 10% stocking rates of conifers. Thinning (commercial and noncommercial) and prescribed fire treatments are proposed in these areas to address Forest Plan Objective 0325 for the Weiser River MA, which states, "Maintain and promote native grasses and aspen where they occur…" (USDA Forest Service 2003b). Approximately, 4,519 acres will be treated with noncommercial treatments and 55 acres with commercial/noncommercial treatments. These stands generally will not contribute to the ASQ.

Nonforested Treatment (NFT)—4,944 acres (432 acres within the outer half of RCAs)

NFT areas include grasslands, sagebrush, scablands and dry meadows. Fire exclusion has led to an expansion of young conifers along the edges and a decadency of upland shrubs, grasses, and forbs. Treatment of encroaching conifers include a combination of felling, skidding, and lop and scatter or hand piling, followed by burning. The remaining dry meadow complexes may be treated with prescribed fire.

Since the conifer encroachment is generally concentrated along the nonforested edge it is expected that only 40% of each nonforested treatment areas would need hand thinning and piling. Conifer canopy cover within nonforested treatment areas will generally be reduced to less than 10%. Prescribed fire treatment may occur throughout the entire treatment type.

Treatment intent of NFT:

- Restore natural fire disturbance regime in dry meadows to enhance upland meadow species, increase meadow acreage, improve plant diversity and vigor, and provide habitat for native species
- Move the Project area toward a pre-fire suppression vegetative condition related to stand density, tree size class, and species composition to enable the reintroduction of fire into a fire-adapted ecosystem

Wet Meadow Treatment (WMT)—315 acres (all within the inner and/or outer half of RCAs)

WMT areas include wet meadows, many of which have higher tree densities and reduced riparian vegetation within the project area. The preferred approach is to treat wet meadows in one entry using a combination of mechanical treatment or hand treatment followed by prescribed burn.

Equipment would not be allowed within 30 feet for seeps and 120 feet for springs, or anywhere on saturated soils. Mechanical treatment would be limited to the outer half of these RCAs; any treatment in the inner half would be done by hand. In some locations near seeps and springs, fencing may be needed

and would be determined on a site-by-site basis. Conifer canopy cover within and adjacent to wet meadows will generally be reduced to less than 10%.

Treatment intent of WMT:

- Restore physical and biological (terrestrial and aquatic diversity and abundance) and ecological meadow processes (evapotranspiration) and functions (flow dispersal, ground water recharge, and sediment retention) appropriate for the current climate regime and comparable to reference conditions and offer resiliency to future climate regimes by restoring functional processes
- Restore fire in wet meadows to enhance riparian habitat for native riparian-dependent species, increase meadow acreage, improve plant diversity and vigor, provide habitat for native species, increase water availability for wetland species, and provide wetter conditions for a longer duration each year
- Provide diverse wildlife habitat for native riparian-dependent species

Proposed Vegetation Treatments within RCAs—3,162 acres

Thinning, restoration, and prescribed fire treatments are proposed in RCAs to maintain upland vegetation within the desired conditions. These acres are not additional acres of proposed treatment and are accounted for in the treatments listed above. Only areas in the outer half of RCAs have been proposed for this treatment.

RCA treatments would apply to upland vegetation that occurs within the outer portion of an RCA. These treatments would move more vegetation toward desired conditions as described in the Forest Plan (USDA Forest Service 2003a, pp. III-30, A-15 and III-131; Objectives 0325 and 0326).

Shaded Fuelbreak (SFB)—458 acres (83 acres in outer half of RCAs)

SFBs would be created using existing roads (NFS road 50186, NFS road 50206, and NFS road 51763) and terrain features on approximately 370 acres to provide areas to control large or emerging fires in a safe manner for firefighters and also provide protection to the values to the east of the Project (Tamarack Ski Area and structures in this area) and other private lands. This treatment would involve reducing crown closure, piling and burning ladder fuels (excavator or hand piles) or using a masticator to reduce fuel loading. The width of the fuelbreak would range from no fuelbreak needed to up to 500 feet wide, depending on fuel type, site slope, and the risk level associated with protecting improvements and increasing fire fighter safety.

As with the prescribed fire treatments described above, prescribed burning would, with the approval of the District Hydrologist or Fisheries Biologist, be directly applied to portions of the RCAs within the SFB and allowed to back in other portions. Active ignition would occur within the RCA only where soil and water resource conditions would be maintained or improved.

Thinning (commercial and noncommercial), piling (machine or hand), and prescribed fire treatments are proposed in SFBs.

Treatment intent of SFB:

- Increase fire fighter safety
- Provide protection for values at risk (WUI, private land, past investments)
- Maintain legacy trees while reducing stand densities and ladder fuels
- Promote resiliency and reduce competition for remaining trees.

Fuel Reduction within Riparian Conservation Area (FR-RCA)—15 acres

FR-RCA would occur within approximately 0.5 miles of a stream corridor, or on about 15 acres within an RCA near the junction of two open NFS roads. Location of the FR-RCA treatment area was based on location of the shaded fuel break, proximity to the county road, and presence of high conifer density and fuel loading in the RCA understory. Within this defined location, RCA treatments would occur within the inner RCAs but would not occur within 15 feet of the stream channel; treatments would include understory/overstory thinning and prescribed burning. Treatments would be done by hand, remove less than 40%–50% of the canopy cover, and be developed in consultation with the District Fish Biologist and/or Hydrologist to ensure streambank stability, LWD recruitment, stream shade, and ground cover are addressed and riparian functions are maintained or improved as required by Forest Plan SWST10 (USDA Forest Service 2003a).

Treatment intent of FR-RCA:

- Reduce fuel loading within the RCA boundaries where they intersect with fuelbreaks
- Improve fire fighter safety (ingress and egress via the adjacent NFS roads) by reducing fine and ladder fuel loading
- Create a gradual transition between the treated upland and the stream channel, which would move treated stands toward desired conditions in Appendix A of the Forest Plan (USDA Forest Service 2003a) and increase the likelihood of achieving desired effects from prescribed burn operations

Prescribed Fire Treatments (PFT)—27,200 acres (7,386 acres within RCAs)

Proposed prescribed burning would occur on approximately 27,200 acres over the next 15–20 years. Commercial activities would generally be completed prior to applying fire. Reintroducing 500–10,000 acres of fire annually for the next 15–20 years would move forested and nonforested vegetation towards conditions that more closely represent desired conditions.

Primary target areas (11,200 acres) for treatment consist of stands with historically high fire frequencies and lower severities (grasslands and stands dominated by seral species such as ponderosa pine, Douglas-fir, and Western larch). Secondary target areas (16,000 acres) include stands with historically moderate fire frequency and mixed severities stands comprised of both seral and non-seral species (i.e., grand fir).

A mosaic-like application of fire would reintroduce fire to approximately 75% of treated primary targeted acres and 50% of treated secondary targeted acres. All acres targeted for fire application would be available for NCT in order to minimize mortality from prescribed burning and aid in moving towards restored conditions. Only those acres identified for vegetation treatments within RCAs would be included in the acres available for NCT.

Fire would only be applied to non-target areas to minimize fire intensities and severities in the non-target areas. These stands comprise young plantations, stands of historically low frequency and high severities, and stands set aside for other resource concerns or objectives (e.g., wildlife cover). Approximately 20% of non-target acres located within the proposed burning areas would be expected to receive fire through backing (low intensity fire spread without additional lighting). This minimal fire spread would not alter overall stand conditions within the non-target areas.

Prescribed burning would be used to reduce fuel loads and rejuvenate vegetation. Aspen stands in the Project area are in particular need of rejuvenation and regeneration. Coniferous trees have encroached on aspen stands due to the lack of natural fire (Swanson 2010). In the past, fire killed encroaching conifers and induced aspen root sprouting. After treatment, these areas would appear more open.

Existing barriers to fire spread (barren ridgelines, roads, and trails) would be used where possible to contain prescribed burns within specified boundaries. In areas where existing barriers are insufficient to control fire spread, handline would be constructed. Hand-constructed fireline would be limited to use only where necessary. The integrity of existing trails and roads would be considered in the application of fire and damage caused by these actions would be repaired. Constructed fireline would be rehabilitated after use.

Ignitions would be by hand or aerially. Prescribed burning operations may occur from early spring to late fall. Fire may be applied to tree wells in winter or early spring to reduce fuel accumulation and to reduce the potential for tree mortality during regular broadcast burning. Maintenance burning (burning after initial application of fire) would occur every 5 to 10 years to maintain desired conditions in high-frequency fire regimes. Prescription parameters (wind speed, fuel moisture, smoke dispersion, and other resource area objectives) would influence burn opportunities. Active ignition for the prescribed burn would occur within the RCA where SWRA resource conditions would be maintained or improved and approved of in advance by the District Hydrologist and/or Fisheries Biologist. Active ignition within riparian vegetation would not occur but fire will be allowed to back in RCA.

All burning would follow Forest Plan Standards and Guidelines (USDA Forest Service 2003a) and adhere to national and State air quality regulations. Specific conditions under which burning would occur would be developed through a prescribed burn plan, prior to ignition. To protect wildlife resources, some seasonal timing restrictions will also apply (see Appendix A).

Associated Actions

A number of activities associated with implementing these vegetation treatments are necessary.

Road Maintenance—Road maintenance may include the following activities: surface blading, culvert and ditch cleaning, removal of encroaching brush, installation of drivable dips, culvert installation and replacement, and surface replacement. This maintenance would occur on NFS roads used by the Project that are open for public and/or administrative use, including seasonally open roads. Approximately 137.5 miles of roads are proposed for maintenance.

Temporary roads—Temporary roads are defined as roads authorized by contract, permit, lease, other written authorization, or emergency operation that are not intended to be part of the forest transportation system; that are not necessary for long-term resource management; that are not forest roads or forest trails; and that are not included in a forest transportation atlas. Both planned and incidental temporary roads would be utilized and obliterated after project implementation. Planned temporary roads are defined as routes identified during the planning process and depicted on project maps. Some of the planned temporary roads would be newly constructed; however, most of the planned temporary roads have existing roadbeds (unauthorized routes) in place. Up to 9.7 miles of planned new and 34.8 miles of existing unauthorized routes would be used as temporary roads and obliterated after use. Incidental temporary roads are roads needed to complete vegetation treatments but cannot yet be identified due to the level of site-specificity necessary. These incidental temporary roads would be preferentially located on existing roadbeds (unauthorized routes) where possible and be obliterated when logging is completed. Incidental temporary roads would require approval by resource specialists prior to construction and would be limited to 7 miles or less of temporary road (not on an existing roadbed) throughout the Project area.

Brush Disposal—After thinning, slash reduction would include machine piling and burning, hand piling and burning, lop and scatter, broadcast/underburning, or removal. Slash reduction would apply within and outside of areas designated for prescribed fire treatments. Opportunities would be sought for removing and utilizing the biomass for energy production or other uses, where practicable.

Site Preparation—After harvest activities are completed, but prior to planting in proposed areas, site preparation may be completed either by prescribed burning or hand scalping. Site preparation would be

completed to reduce competition to seedlings from brush and grass. All site preparation activities would be consistent with SWRA resource requirements, specifically detrimental disturbance and CWD.

Planting—Planting of ponderosa pine, rust resistant whitebark pine, Western larch, Douglas-fir and/or Engelmann spruce seedlings on all proposed regeneration treatments would be completed as necessary to meet desired stocking levels. The species mix would depend on elevation and site conditions.

Firewood Availability—Areas and roads currently closed and used for timber harvest would be evaluated for firewood retrieval, including firewood decks. These areas may be made available for public use for a limited time period. NFS roads currently closed may be opened for a limited time to the public in the summer for firewood retrieval if resource objectives are met and the road has a minimum of 10 cords of firewood available. Snags identified for retention to meet wildlife habitat needs would be tagged as not to be cut. Roads in long-term closure would not be opened. Areas not meeting the minimum number of snags as defined in the Forest Plan (USDA Forest Service 2003a) would not be opened.

Watershed Improvement and Restoration Treatments

The Proposed action would include watershed improvements that would improve watershed function and resiliency by minimizing the impact of the road and trail network throughout the Middle Fork Weiser River subwatersheds and restoring vegetation and soil productivity in riparian areas. Treatments include road and trail decommissioning, improvements, and reroutes; dispersed recreation site improvements within the Middle Fork Weiser River RCA; and vegetation treatments designed to restore or enhance native riparian vegetation through mechanical or hand treatment, prescribed burning, and planting and seeding.

Restoration prioritization of subwatersheds in the Project area is based on the amount of NFS land within each one. Since impediments to watershed function, such as road density and disturbance in RCAs, are present in relatively equal proportions within each subwatershed, the higher the percentage of NFS land, the greater the immediate opportunity to restore the subwatershed to desired conditions, as stated in the Purpose and Need section.

Road treatments proposed for this project were developed using the TAP conducted in 2013 (USDA Forest Service 2013a). Changes to the NFS road network are proposed to reduce road-related impacts to water quality and fish habitat, as well as reduce overall road density and comply with the Travel Rule (36 CFR Parts 212, 251, 261, and 295 2005) requirement of establishing a MRS.
Roads that are recommended to remain on the landscape as part of the MRS would be maintained and improved to reduce sediment production (guided by recommendations from site-specific sediment modeling). Aquatic Organism Passage (AOP) would be improved at two crossings as described below. NFS roads not needed for future management or access and unauthorized routes are identified for decommissioning.

NFS road treatments proposed throughout the project area include maintenance and/or improvement (see “Transportation Management” section below). Table 4 displays a summary of SWRA improvements.

Long-term Closure of Roads—19.3 miles

NFS roads that were either known to resource specialists as high-priority candidates for long-term closure due to their location (e.g., located within an RCA or known to be contributing to sediment delivery in streams) or were field surveyed due to their proximity to streams or stream crossings and found to be inhibiting proper stream or watershed function would be put into long-term closure for a total of 19.3 miles. To improve the condition of these roads, work may include decompacting, establishing vegetation, installing cross-ditches, removing or bypassing culverts at stream crossings and blocking the entrance.

Road Decommissioning—76.1 miles

Decommissioning treatments proposed range from full recontour to spot treating isolated areas, such as stream crossings on roads that have little-to-no defined prism and have recovered based on the professional judgment of the Hydrologist or Soil Scientist, to a point where features blend with the surrounding terrain and hydrologic and soil functions are largely restored. Natural recovery is not a common occurrence, and usually these "recovered roads" are legacy, non-engineered skid trails, or temporary roads that were never recontoured following past management activities. Roads that were engineered (prism and drainage structures) largely require treatment to restore natural physical and biological processes (Lloyd et al. 2013).

Roads identified for decommissioning that were also recognized during planning as needed for administration of grazing permits (i.e., as stock driveways or access to range improvements like bull trout exclosure fences) would be treated so as to allow passage of cattle and provide for other necessary grazing permit activities but would not be designed for motorized access. The maximum restoration of soil-hydrologic function would be achieved while providing access to grazing permittees as well as a barrier to unauthorized use, which would result in decompaction of most of the road surface and a remnant path wide enough for livestock passage and grazing permit activities. These roads are exceptions to the description of road treatments above; they would be closed to public use and be incorporated into the grazing annual operating instructions (AOIs) as authorized infrastructure for use by the permittee only. These roads are identified in the project data and final actions would be determined during implementation.

Approximately 76.1 miles of road would be decommissioned, including 16.0 miles of NFS roads and 60.0 miles of unauthorized routes. A total of 23.4 miles of routes proposed for decommissioning are located within RCAs.

Aquatic Organism Passage/Habitat Connectivity

Two culverts that restrict proper hydrologic function and passage of fish and other aquatic organisms would be replaced:

10) NFS road 50186 at the Middle Fork Weiser River near the junction with NFS road 50245

11) NFS road 50186 at Big Creek

Temporary culverts or bridges would be installed where planned temporary roads cross intermittent or perennial streams or on closed system roads where culverts have been removed. AOP would be provided where needed.

Table 4. Soil, water, riparian, and aquatic resource improvement treatment summary

Type of Treatment	Miles and Number
Long-term Closure	19.3 miles
Road Decommissioning	76.1 miles
National Forest System Road Decommissioning	16.0 miles
Unauthorized Route Decommissioning	60.1 miles
Total Road Decommissioning in Riparian Conservation Areas	23.4 miles
National Forest System Road Decommissioning	7.1 miles
Unauthorized Route Decommissioning	16.3 miles
Aquatic Organism Passage/Habitat Connectivity	2 culverts

Transportation Management

All road miles are approximate and based on field and GIS data.
Five sources of material are identified in the proposed action and would be used for road improvement.

Road Reconstruction—16.6 miles

Road reconstruction in the Project area includes any activity that improves or realigns an existing NFS road as defined below:

- Road improvement—Activity that results in an increase of an existing road's traffic service level expansion of its capacity, or a change in its original design function.
- Road realignment—Activity that results in a new location of an existing road or portions of an existing road and treatment of the old roadway.

Road Improvement

Approximately 16.6 miles of road resurfacing would be completed on NFS road 50214 (King Hill–Fall Creek Road), NFS road 50245 (Granite Creek Road), and NFS road 50692 (Little Creek Road) using crushed rock sources to improve the road surface and reduce watershed and fisheries impacts from sedimentation. Road reconstruction within RCAs totals 5.5 miles.

In addition to the areas identified above, spot graveling of roads would occur at crossings, dips, and soft spots.

Road Realignment

To reduce sediment and other road effects on water quality and riparian habitat, 3.0 miles of existing NFS road would be realigned away from RCAs; 2.2 miles of road would be constructed in the realignment for a net decrease of 0.8 miles of road. Roads to be realigned include segments of the following NFS roads: 50489, 50566, 50707, 51547 and 51791.

Other Road Actions

Implement Best Management Practices (BMPs)
Approximately 5.5 miles of NFS road that are currently Maintenance Level (ML) 1 would have BMPs implemented. BMPs are designed to ensure the road can be stored, with minimal maintenance, for a period up to 30 years. Treatment would include removing culverts, installing water bars to ensure surface drainage, outsloping, or other treatments that would reduce sediment transport from the road and preserve the integrity of the road prism for future use.

ML 1 to ML 2 Roads
Approximately 14.2 miles of NFS road that are currently ML 1 would be converted to ML 2. These are roads that currently have easements for access by DF Development LLC. Converting the roads to ML 2 would allow for maintenance while providing private access.

Ensure Effective Closure on year-round and seasonally closed National Forest System Roads

If needed, closed NFS roads would be improved to ensure effective closure through the use of gates (ML 2 roads only), barriers, or obliterating the first portion of the road (generally the line of sight distance from the start of the road to where it turns out of view; This applies to ML 1 roads only). Ensuring effective closures may also be implemented in on-going road maintenance activities.

Minimum Road System

The Travel Analysis Process (TAP) for the Middle Fork Weiser River was completed by the Council Ranger District in 2013 (located in the project record), determined the risk and benefit of each road in the project area. The proposed action is a good balance of road decommissioning, realignment, and

reconstruction, and roads added to the system to improve watershed resources, while maintaining an adequate road system that provides access to the Forest for the public and for future restoration and management activities. It follows the recommendations from the 2013 Middle Fork Weiser River TAP and is refined through analysis in the FEIS. The Minimum Road System will consist of 139 miles of NFS road while less than 2 miles of unauthorized road will exist in the Project area. Table 5 displays a summary of road treatments.

Table 5. Summary of Road Treatments. (Figures rounded to the nearest whole number so totals may be off)

Road Treatments by Subwatershed	Subwatershed					Total
	East Fork Weiser River	Granite Creek	Jungle Creek	Little Fall Creek	Mica Creek	
National Forest System Road (MRS)	2	38	34	26	38	**139 miles**
Remaining Unauthorized Routes	<1	<1	<1	<1	<1	**2 miles**
System Road Decommissioning	0	8	1	4	3	**16 miles**
Move to Long Term Closure *(Currently closed to the public)*	0	9	<1	2	3	**14 miles**
Aquatic Organism Passage Improvements	0	1	1	0	0	**2 culverts**
Unauthorized Route Decommissioning	0	28	11	16	20	**60 miles**
Unauthorized Routes Used as Temporary Roads*	3	5	0.5	4.5	2	**40 miles**
Road Realignment	0	2	<1	1	1	**4 miles**
Add to System Roads	0	2	<1	1	<1	**4 miles**

***** All unauthorized routes used as temporary roads will be decommissioned after use. This figure does not represent an addition to the total of unauthorized route decommissioning.

Recreation Improvements

The recreation improvements and actions of the proposed action are summarized in Table ROD-6. The specifics of these improvements and actions are displayed in Figure ROD-2. Project Design Features for all recreation improvements are found in FEIS Table 2-28 and ROD-Attachment 1. Table 6 displays a summary of recreation improvements.

The Proposed action includes improvements at one developed campground, dispersed camp site improvements, trail maintenance, minor trail realignments, trail re-establishments, and trail construction to realign trails around private land. Work would focus on trails on the east side of Council Mountain that are located in the headwaters of main tributaries to the Middle Fork Weiser River. Trailhead development off private land is also proposed to better accommodate recreational use of these trails.

The *Proposed action* includes the following recreation improvements:

Developed and Dispersed Recreation Improvements

Cabin Creek Campground would be improved as follows:

- Install one single vault toilet to replace the old existing one, and relocate it to meet all required health and safety codes
- Add new site markers to individual campsites, replace an existing fee tube and information kiosk, install accessible tables, and build an accessible pathway to the water system
- Gravel the main campground loop road, and widen the road and turn at the campground access to accommodate full size recreational vehicles

The Horse Cabin Flat dispersed site would be improved by installing hitch rails, designating up to 5 camping sites with metal fire rings using boulders, installing gravel and site signs to mark the allowed camping locations, and adding a single vault toilet.

The crossing of the Middle Fork Weiser River at the dispersed camping area near the confluence with Jungle Creek would be hardened for stock use and to minimize resource damage and focus motorized access to the existing bridge approximately 300 feet from this crossing. Other general improvements would be made to the site, such as hardening, providing physical barriers to direct use, to minimize impacts to the adjacent Middle Fork Weiser River.

Roads identified for decommissioning located at the intersection with NFS open or seasonally open roads would be evaluated for site-specific dispersed recreation opportunities within 300 feet of the NFS road junction if no resource concerns are identified. If necessary for resource protection, sites would be improved by surfacing, or other hardening and evaluate for barriers, where stream impacts are found.

Trail Improvements

The south portion of NFS trail 198 (4.4 miles) would be rerouted to avoid sections currently on private land with no easement held by the Forest Service to provide legal access to this trail. A new trailhead would be established on NFS land near Cabin Creek Campground for NFS trail 198.

Motorized use is currently present and allowed within the Council Mountain IRA. To accommodate continued two-wheel motorized access on the entirety of NFS trail 198, the designation of a short section (2.0 miles) of the trail would be changed from non-motorized to two-wheel motorized use.

Trail maintenance (including proper signing) would be performed to bring all 28 miles of existing open designed trail to trail class and standard, as defined in the Trail Management Objective (TMO) (TMOs for each trail are found in the Forest Service - Payette National Forest Trails database called INFRA Trails) for that trail, within the Project area. Maintenance levels would vary from routine to heavy, depending on the trail condition and trail class. NFS trail 518 would need to be re-established/reconstructed in several sections.

Approximately 0.8 miles of former NFS trail 202 would be signed and formally designated as open for non-motorized use. This trail would be designated as NFS trail 212 and is referred as NFS trail 212 in this FEIS. For this trail, switchback construction would be needed to mediate the steep sections. This is the only proposed action proposed in the East Fork Weiser River subwatershed.

The trailhead for NFS trail 209 (an all-terrain vehicle [ATV] trail) would be relocated onto NFS lands. The map would need to be corrected to coincide with the actual trail location. The designation of NFS trail 209 would be changed from “open year round” to “seasonal” to coincide with other seasonal trail and road designations in the immediate area.

Portions of NFS trail 198 (not to exceed 1.0 mile) would be re-routed near the base of Council Mountain to reduce resource impacts and improve sustainability. Work would also need to be done to reduce congestion of multiple trail junctions in this sensitive upper elevation trail network.

Approximately 3.4 miles of the West Mountain Jeep Road NFS road 51763 would be converted from Level 2 open road to a trail open to all vehicles to better reflect the type of motor vehicle use this route can accommodate. This change would add 3.4 miles of trail to the NFS trail system.

Council Mountain and Poison Creek Inventoried Roadless Areas

The following activities are proposed for the Council Mountain and Poison Creek IRAs (These miles are included in those described in previous sections and not additional proposals):

- Sign and formally designate 0.8 miles of NFS trail 212 as open for non-motorized use. Complete needed switchback trail construction to mediate the steep sections.
- Reroute the south portion of NFS trail 198 (2.3 miles located in the IRA) and the east portion of NFS trail 205 (1.5 miles located in the IRA) to avoid sections currently on private land with no easement held by the Forest Service to provide legal access to these trails.
- Reroute portions of NFS trail 198 near the base of Council Mountain to reduce resource impacts and improve sustainability. Work to reduce congestion of multiple trail junctions in this sensitive upper elevation trail network.
- Motorized use is currently present and allowed within the Council Mountain IRA. To accommodate continued two-wheel motorized access on the entirety of NFS trail 198, change the designation of a short section (two miles) of the trail from non-motorized to two-wheel motorized use.
- Full obliteration would occur on 10 segments (1.0 mile) of unauthorized route
- Trail maintenance would occur on 15 miles

Council Mountain Research Natural Area (RNA)

No activities are proposed in the Council Mountain RNA.

Table 6. Summary of Recreation Improvements.

Recreation Improvements	Unit
Vault toilet installation (Cabin Creek Campground and Horse Cabin Flat Dispersed site)	2
Kiosks and fee tube installed (Cabin Creek Campground)	1
Campground accessibility improvement (tables, paths, and loop)	1
Dispersed site development on decommissioned roads	up to 20
Improved existing dispersed campsites	2
Trailhead construction and relocation (Trail # 198 and # 209)	2
Miles of trail maintenance	28
Miles of non-motorized trail changed to motorized	2
Miles of new non-motorized trail	0.8
Miles of road converted to trail open to all motorized vehicles	3.4
Change in overall miles of motorized access	+ 5

Project Design Features/Mitigations

Project Design Features (PDFs) are designed to avoid, reduce, or eliminate undesirable effects. Mitigation Measures are designed to rectify or compensate for undesirable effects from proposed activities. Unless noted otherwise in the decision document, the PDFs / Mitigation Measures are mandatory, if the Responsible Official selects an action alternative for implementation.

Project Design Features and Mitigation Measures for all subjects included in the MFWR project are listed in Appendix A, in order to maintain consistency with the project EIS.

Wildlife and Fisheries fall under many of the general PDFs – Mitigation Measures.

<u>Project Design Features / Mitigation Measures for Wildlife</u>

Canada lynx – Please see Table A-1 – PDFs # 5-7; Table A-3 – PDFs # 38, 39; Table A-5 – PDFs # 48; Table A-6 - PDF # 49; Table A-7 – PDFs # 58, 59.

NIDGS – Please see Table A-1 – PDFs # 1-3, 5-7; Table A-3 – PDFs # 38, 39; Table A-5 – PDF # 48.

Wolverine – Please see Table A-1 – PDFs # 5, 6; Table A-6 – PDF # 49; Table A-7 – PDFs # 58, 59.

<u>Project Design Features / Mitigation Measures for Fisheries</u>

Please see Table A-3 – PDFs # 13-40; Table A-5 – PDF # 48.

Monitoring

Monitoring and evaluation are used to determine whether the *Payette National Forest Land and Resource Management Plan* (Forest Plan) is being implemented correctly and to determine the effectiveness of

Forest Plan standards and guidelines, management requirements, and mitigation measures. Implementation monitoring is used to decide whether the project was implemented as planned. Effectiveness monitoring determines whether the project design and mitigation measures were effective in meeting resource protection objectives. Monitoring results are evaluated to determine what, if any, adjustments are needed. Table 7 summarizes the monitoring that would occur if the preferred action is implemented.

Table 7. Monitoring plan summary

Resource	Monitoring Item	Timing	Personnel
Wildlife	Implementation and effectiveness of restoration treatments to provide wildlife habitat improvement	Implementation monitoring will coincide with all harvest-related activities. Effectiveness monitoring will occur for up to 5 years following on-site restoration activities.	Journey-level wildlife biologist and wildlife technicians, coordinated with Sale Administrator and Timber Management Assistant
Fisheries	Water temperatures in the Middle Fork Weiser River and major tributaries	Will continue to monitor water temperatures at already-established locations in the Middle Fork watershed.	Biological and hydrologic technicians, and fisheries biologist or hydrologist
Fisheries and Watershed	RCA treatment delineation	Implementation monitoring will occur after treatment unit layout/marking but before vegetation treatment begins. 20% of RCA treatment units will be monitored to ensure proper delineation. Priority will be given to wet meadow units and units with steep slopes and/or sensitive soils.	Hydrologist or Journey-level fisheries biologist and biological and hydrologic technicians
Fisheries and Watershed	Implementation and effectiveness of RCA treatments and prescribed fire	Implementation monitoring will occur prior to RCA treatment and immediately after in the same year, then again after prescribed fire. Effectiveness monitoring will occur once the year following the activity; if the need for additional work or monitoring is identified, effectiveness monitoring will continue as the journey-level specialist deems appropriate for up to 5 years.	Hydrologist or Journey-level fisheries biologist and biological and hydrologic technicians
Fisheries	Implementation and effectiveness of culvert replacements	Implementation monitoring will occur in the same year as replacement. Effectiveness monitoring will occur once the year following the activity; if the need for additional work or monitoring is identified, effectiveness monitoring will continue as the journey-level specialist deems appropriate for up to 5 years.	Journey-level fisheries biologist and fisheries technicians
Fisheries	Temperature Monitoring	Established stream temperature monitoring sites will continue to be monitored with thermographs placed in-stream at locations in the Middle Fork Weiser River drainage.	Fisheries technicians and/or fisheries biologist
Soil and Water	Monitoring of detrimental disturbance (DD) levels	Monitoring will occur in 20% of timber sale units following harvest to determine if the Forest Plan detrimental disturbance standard has been met.	Soil scientist and technicians
Soil and Water	Implementation and effectiveness of road decommissioning and long-term closure treatments	Implementation monitoring will occur during the year of decommissioning activities. Effectiveness monitoring will occur, at a minimum, the first year after implementation, and then at years 3 and 5, unless findings indicate sites have stabilized and revegetated to their natural potential prior to 5 years post-implementation.	Hydrologic technicians and hydrologist

Resource	Monitoring Item	Timing	Personnel
Soil and Water	Implementation and effectiveness of Timber Best Management Practices	The majority of the monitoring will occur during harvest operations in at least 20% of harvest units. Where revegetation or reclamation is planned, monitoring will be conducted a minimum of twice—the first year for implementation and the second year for effectiveness—allowing one snowmelt and spring runoff to occur.	Hydrologist or soil scientist, hydrologic technicians
Soil and Water	Implementation and effectiveness of prescribed fire prescriptions/soil response	The majority of the monitoring will occur prior to, and immediately following, burning operations. Soil moisture at the time of burning, and vegetation/soil response to burning, will be evaluated.	Soil scientist, fuels specialist and fuels technicians
Soil and Water	Implementation of coarse woody debris retention requirements in mechanical treatment units	Monitoring would occur in at least 20% of harvest units during and/or immediately after mechanical treatment	Soil scientist, Timber Sale Administrator
Vegetation	Fire effects on plantations, harvest units, and burn only stands	Monitoring will occur pre- and post-burning operations	Fuels specialist and silviculturist
Vegetation	Harvest unit boundaries and timber marking	Monitoring will occur during sale preparation activities.	Sale preparation Forester and Silviculturist
Vegetation	Need for site preparation and regeneration in harvest units and burn only units	Monitoring will occur after harvest and/or burning operations	Silviculturist
Vegetation	Need for protection of aspen regeneration	Monitoring will occur after harvest and/or burning operations	Silviculturist and Wildlife Biologist
Vegetation	Need for IPS beetle mitigation measures	Monitoring will occur during and after harvest operations	Silviculturist, Sale Administrator, and FHP Entomologist
Vegetation	Need for general bark beetle mitigation measures	Monitoring will occur after harvest and/or burning operations	Silviculturist and FHP Entomologist
Range	Noxious weeds	Monitoring will occur immediately after harvest and road work activities and continue for the following 5 years.	Range technicians
Cultural	Cultural and archeological sites	Monitoring will occur prior to ground-disturbing activities in areas needing clearance and on-going-in areas identified as “Eligible” by the State Historical Preservation Officer	Archeologist or Archeological Technician

Environmental Baseline

Section 7 Watershed Summary The WR covers about 700,000 acres in west-central Idaho and includes the Weiser River and its tributaries (Figure 2). The watershed is on the west edge of the Idaho batholith in the Columbia River basin. The surface geology is dominated by Columbia River basalts, with some headwater areas composed of Idaho batholith granitic soils. Elevations within the watershed range from more than 8,129 feet (2,478 meters) to 2,631 feet (802 meters) near the confluence of the Weiser and Snake Rivers. Approximately 43 percent (302,000 acres) of the watershed is National Forest System land. Isolated areas of Bureau of Land Management (BLM) and State lands also exist in the watershed. Activities on public lands in the watershed include timber harvest, livestock grazing, and recreation. The lowlands in the center of the watershed are privately owned. Approximately one third of the watershed is used primarily for agriculture, but there are also developed areas consisting of small cities, rural communities, and residential areas.

SPECIES CONSIDERED AND EVALUATED

Listed or Proposed Species and Critical Habitat

Overview

The general description of the WR can be found in Section II of the most recent fisheries BA analysis for the effects of ongoing actions in that watershed (Zurstadt and Burns 2007). Descriptive information pertinent to wildlife was contained in the most recent wildlife BA analyses in the WR: Volume #2 (Richards and Egnew 2008).

Wildlife and fisheries species included in this BA are based on the biannual Forest-wide Species Lists prepared by the U.S. Fish and Wildlife Service (USDI FWS 2016) for the Payette National Forest, dated June 2016 (Table 8). These wildlife and fish species include threatened and proposed threatened species. Actions considered in this BA were determined to have “No Effect” to the yellow-billed cuckoo, due to the absence of appropriate cuckoo habitat, so no further discussion of this species is included.

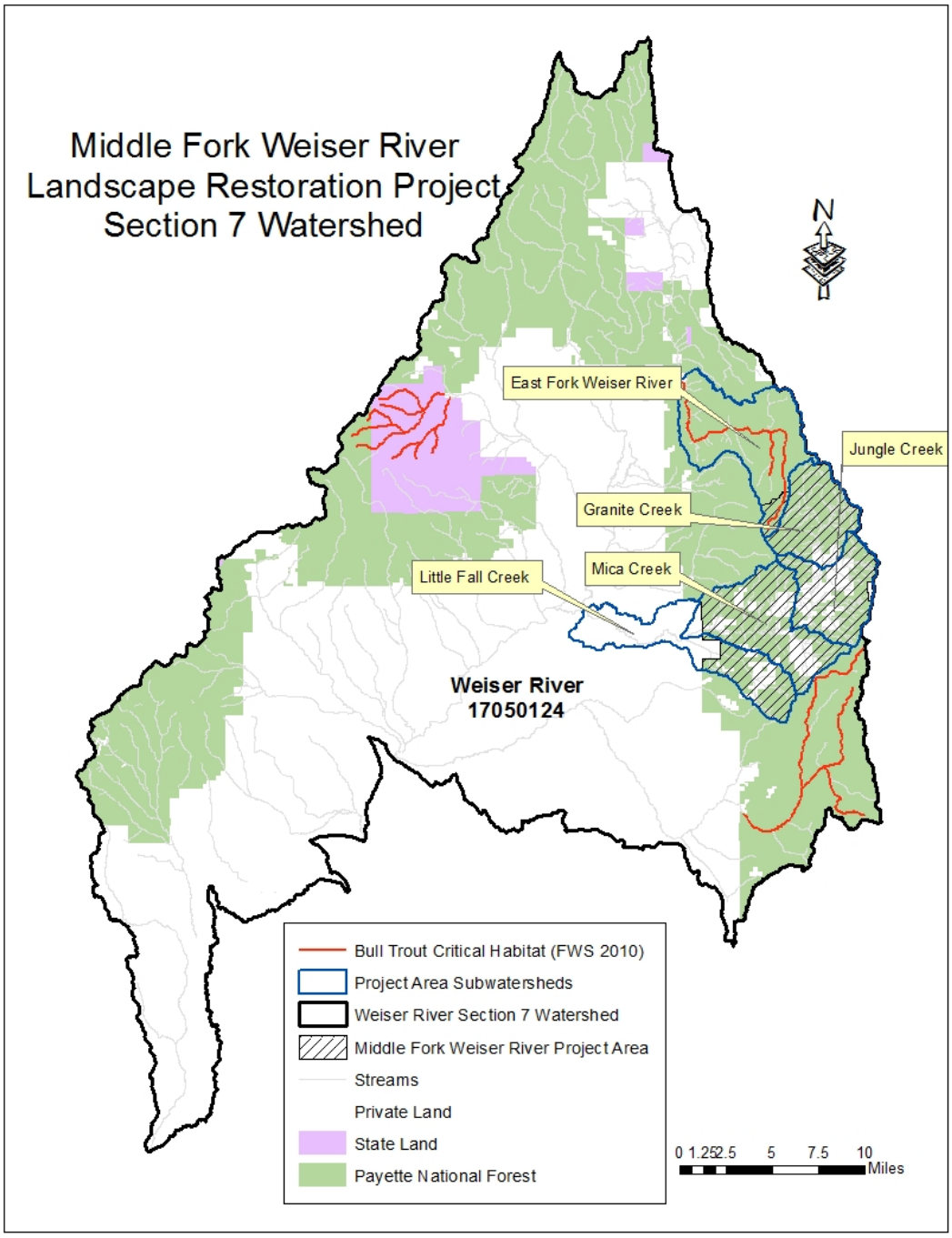

Figure 2. Middle Fork Weiser River Landscape Restoration Project and the Weiser River Section 7 Watershed.

Table 8. Listed and proposed species, and critical habitat (CH) analyzed for the MFWR Project (Weiser River Section 7 Watershed).

Common Name	Status	Habitat Present	Critical Habitat Designated
Canada lynx	Threatened	Yes	None
Northern Idaho ground squirrel	Threatened	Yes	None
Yellow-billed cuckoo	Threatened	No	None
Wolverine	Proposed-Threatened	Yes	NA
Bull trout	Threatened	Yes	Yes

Consultation History

This project was presented to the Level 1 Team in a Phase 1 meeting on February 3, 2015. At that time, the preliminary determination for bull trout was *May affect, Not Likely to Adversely Affect (NLAA)* bull trout or their habitat specifically for the project area in the East Fork Weiser River because that is where bull trout and critical habitat occur. On July 6, 2015, the Level 1 Team and district biologists visited the project area to look at the stream crossings in the East Fork Weiser River and vegetation treatments in the higher PVGs in the Middle Fork Weiser River. An adaptive management approach was developed for the FEIS and ROD because of a positive eDNA sample for bull trout in No Business Creek in 2016. Ten eDNA samples and five electrofishing surveys were completed in No Business Creek in summer 2017. All of the surveys were negative for bull trout. The project was reintroduced to the Level 1 team on March 13, 2017. The preliminary determination for both lynx and NIDGS was *May affect, Not Likely to Adversely Affect (NLAA)*. For the wolverine, the determination was *Not Likely to Jeopardize the Continued Existence of the Species Or Result in Destruction or Adverse Modification of Proposed Critical Habitat (NLJ).* At that time, the preliminary determination for bull trout was *May affect, Not Likely to Adversely Affect (NLAA)* bull trout or their habitat for the project area.

WILDLIFE

This BA analyzes the effects of the Middle Fork Weiser River Landscape Restoration Project on threatened wildlife species, the Canada lynx *(Lynx canadensis)* and northern Idaho ground squirrel (*Urocitellus brunneus brunneus*); proposed-threatened species, the wolverine (*Gulo gulo luscus*); and candidate species, the yellow-billed cuckoo (*Coccyzus americanus).*

This BA tiers to analyses in previous BAs, listed below, and associated supplements created for listed, proposed, and candidate species in the WR.

- Biological Assessment Effects of Ongoing/Existing Projects on Canada Lynx on the Payette National Forest (Hescock and Gould 2000)

- Biological Assessment for the Revision of the Boise, Payette, and Sawtooth Land and Resource Management Plans (Chatel et al. 2003)

- Biological Assessment of the Potential Effects of Managing the Payette National Forest on the Northern Idaho Ground Squirrel (threatened) and Canada Lynx (threatened). Weiser River Section 7 Watershed. Volume 2. Ongoing and New Actions (Richards and Egnew 2008)

Descriptive information in this BA, and previous Weiser River BAs, covers the Weiser River Section 7 Watershed (WR). The baseline, as previously described and updated herein, provides an assessment of watershed conditions, describes the current status of all listed, proposed, and candidate species, and their habitats in the area, and includes other information pertinent to land management in that watershed. This watershed baseline document constitutes the next smaller scale for aggregation of information about conditions and conservation needs for listed species and serves as the foundation for consultation on all actions and programs in the watershed.

Canada Lynx

Species Status, Distribution, and Existing Habitat

Species Status

The Final Rule to list the lynx as threatened under ESA by the USFWS occurred in March 2000 (65 FR16052). In 2000, the *Canada Lynx Conservation Assessment and Strategy* (LCAS; Ruediger et al. 2000) was developed to provide a consistent and effective approach to conserve Canada lynx on federal lands. In 2002, an effort was started to amend existing Forest Plans in the northern Rockies to be consistent with the LCAS. The Northern Rockies Lynx Amendment ROD was signed March 23, 2007. The Payette National Forest is within the area covered by the Northern Rockies Lynx Amendment, but was not included in the amendment because the Payette Land and Resource Management Plan (LRMP) was revised in 2003 and included appropriate LCAS direction.

Species Distribution and Occupancy

Current and historic status of lynx in Idaho, and the latest scientific literature, predict low occurrence of lynx on the PNF. Additional lynx distribution information is also described in previous BAs in the WR: Volume 2. There are 16 records in IFWIS through 2016 for lynx on the PNF. Eight of the records are potential sightings, one record is of a tagged pelt, and seven are records of tracks observed. Ten of these records were digitized from a report entitled *Canada Lynx in Idaho: Past, Present and Future* (Terra-Berns et al 1998). Many of the records are documented as anecdotal, incomplete or have not been verified. The most complete and verifiable records of lynx are a sighting in 1957 in the headwaters of the Little Salmon River and a pelt (trapped) in Fall Creek in 1964. Further review found that the 1957 sighting, verified by Idaho Department of Fish and Game (IDFG), occurred within the Mill Creek Council Mountain Project Area, adjacent to the MFWR Project Area to the north.

The NRM WILDLIFE database maintains observations and survey records for the Forest Service and contains 5 records for lynx observations on the PNF through 2016. Only one record in NRM is complete and verifiable, a sighting in 2012 near Price Valley. Of the remaining four, there are two reported in the Frank Church River of No Return Wilderness (Chamberlain area) and two between Ladder and Mann creeks (Cuprum area).

Track surveys and baited trail camera surveys were conducted by snowmobile in 2006, 2007, 2008, 2010, 2011, 2012, and 2015, with a limited attempt in 2016, along the mountain crest running north–south on the east boundary of the Project area; no lynx tracks or photos were identified in these surveys. Logistical problems involved with conducting these winter surveys impede our documentation of lynx in the Project area.

Existing Habitat

Effects to Canada lynx are analyzed based on modeled Lynx Analysis Units (LAUs), which were delineated across the Forest using fifth-level hydrologic unit (HU) boundaries. Thirty-eight LAUs have been delineated on the Forest. The MFWR Project area contains the following LAUs: Little Weiser, Middle Fork Weiser, and Northwest Council (Figure 3). Due to changes over time in the mapping of watershed boundaries, small portions of these LAUs extend beyond the boundary of the watershed, but the entire LAUs were placed into the WR watershed for analysis purposes.

Vegetative communities capable of providing modeled habitat conditions include PVGs 3, 7, 8, 9, 10, and 11 (USDA Forest Service 2011b). The MFWR project area occurs mostly in the Middle Fork Weiser LAU, with minute portions of the Northwest Council and Little Weiser LAUs. The Middle Fork Weiser LAU is approximately 50,000 acres (Table 9), which is slightly more than twice the size of an average home range for female lynx in northwestern Montana (LCAS 2013). The amount of modeled potential lynx habitat in the LAU is approximately 6,467 acres, with approximately 6,156 acres of existing suitable habitat (Table 9).

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The analysis of the effects of the ongoing actions to lynx followed direction in the PNF Protocol for Lynx Analysis (2008), to use the best available information, a combination of PNF forest working groups and strata, LANDSAT imagery, and ground verification. For those areas where working group and strata data were not available (i.e., the Council Mountain Inventoried Roadless Area), a combination of PVG and LANDSAT data were used. For more details on how these data sources were used, see Payette National Forest Lynx Analysis Protocol. These data, (PVGs/structural mapping) are highly dependent on canopy closure and likely a poor predictor of snowshoe hare habitat, which is associated with specific understory conditions (Hodges 1999, Wirsing et al. 2002). Also, fine-scale habitat features, such as snags, patch size, and understory vegetation cannot be identified with LANDSAT data, nor are they evaluated in the existing models. LANDSAT is best used to identify broad-scale habitat patterns, because of the limitations of the 30-meter resolution data (Redmond et al. 1997).

In 2013, the LCAS was revised (Interagency Lynx Biology Team 2013). Substantial changes were proposed, primarily focused on reclassifying areas on the edges of suitable primary lynx habitat to "secondary areas". Based on current vegetative mapping, most of the PNF would be classified as secondary habitat under the revised LCAS, resulting in a deviation from LMRP direction and the guidance provided in the FWS Letter of Concurrence, dated September 12, 2000 (File#113.0000/1-4-00-I-765), which provided direction for delineation of LAUs. The 2013 LCAS directs that delineation of LAUs is not required for secondary/peripheral areas. Until, however, the 2003 LRMP is revised, or amended, to incorporate this updated direction, management must comply with existing Forest Plan standards based on the 2000 LCAS.

Table 9. Potential and suitable lynx habitat, by LAU, in the Weiser River Section 7 Watershed. (PNF Lynx Analysis Protocol 2008)

LAU	Total Acres	Potential Habitat Acres	Suitable Habitat Acres	Percent in Suitable Habitat
Little Weiser	37,927	4,122	3,707	90%
Middle Fork Weiser	50,033	6,467	6,156	95 %
Northwest Council	36,406	3,728	3,406	91 %

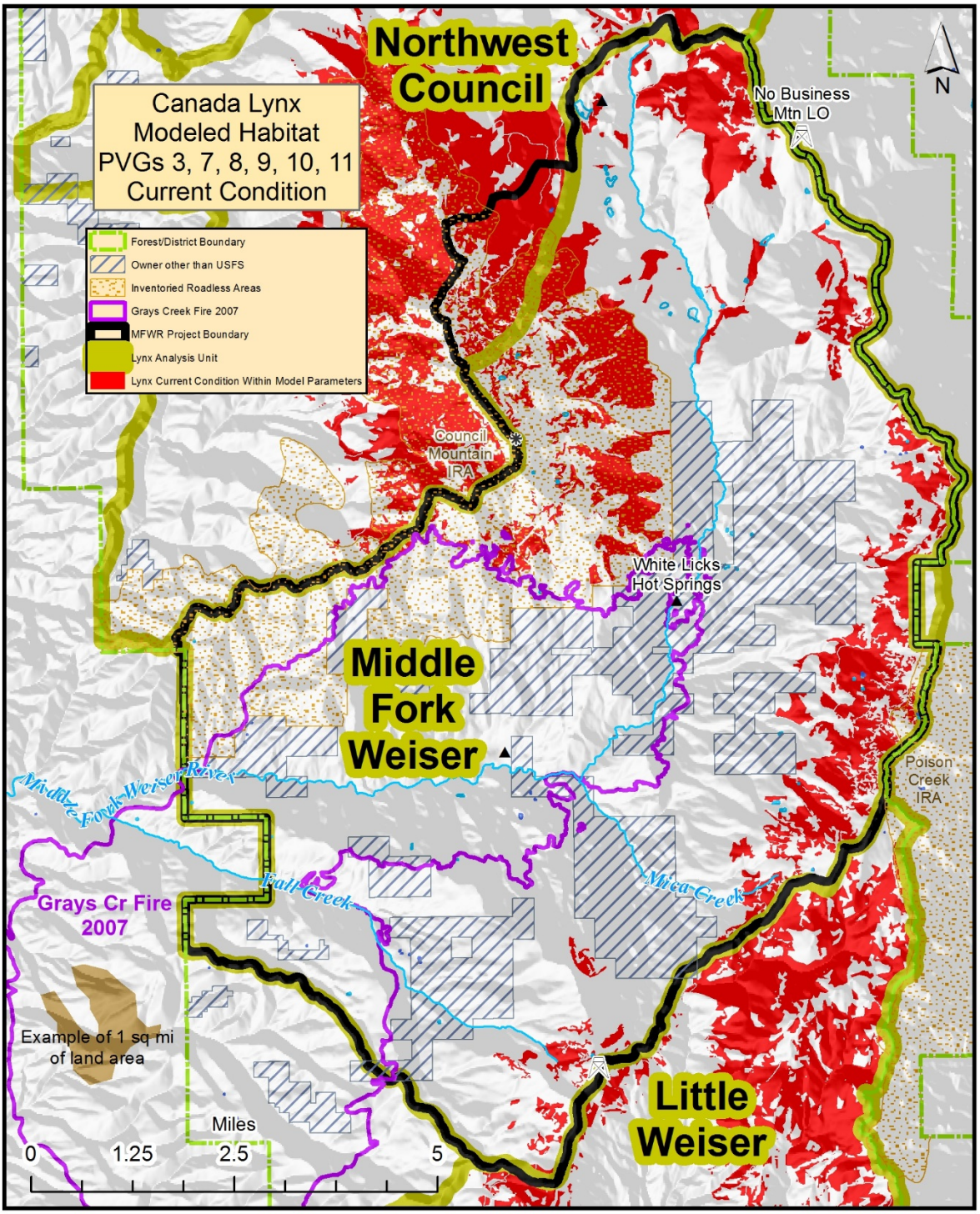

Figure 3. Locations of the three Lynx Analysis Units (LAUs) in relation to the Middle Fork Weiser River Landscape Restoration Project Area. The three LAUs analyzed for the MFWR project are the Northwest Council, Middle Fork Weiser, and Little Weiser. Modeled potential habitat at current condition for Canada lynx in the Middle Fork Weiser LAU, based on the distribution of Potential Vegetation Groups (PVGs) 3 and 7-11, in the Project area.

Northern Idaho Ground Squirrel

Environmental Baseline

Species Status, Distribution, and Existing Habitat

Species Status
Since initial listing, NIDGS have been monitored annually on the PNF. As mentioned above, starting in 2013, a new monitoring approach was implemented for the species. Monitoring results since 2010 indicate the species estimated annual population continues to increase, from 1,560 NIDS in 2010 to 2,757 in 2015 (USFWS 2011, p. 6; Evans Mack and Baker 2015, p. 6).

Species Distribution and Occupancy

The distribution of the northern Idaho ground squirrel (NIDGS) is within the Council and New Meadows ranger districts, located in Adams and Valley counties in Idaho (Figure 4). Current distribution has increased from that described in the Biological Assessment of the Potential Effects of Managing the Payette National Forest on the Northern Idaho Ground Squirrel (threatened) and Canada Lynx (threatened) (Weiser River Section 7 Watershed, Volume 2, Ongoing and New Actions; Richards and Egnew 2008).

Surveys for NIDGS presence were conducted in different parts of the Project area each year from 2006 through the 2017 field season. In 2007, during the Grays Creek Fire in the MFWR drainage, surveys for NIDGS were conducted by the Council Ranger District Wildlife Biologist throughout drainage, as part of a detailed field survey supporting Resource Advisors working on the fire. Since 2007, NIDGS surveys were conducted by FS wildlife personnel in conjunction with surveys for other wildlife species. Approximately 1,500 acres of potential NIDGS habitat have been surveyed for occupancy within the project area.

Although suitable habitat does occur (Figure 5), no NIDGS observation has been reported for the MFWR drainage, nor has NIDGS been documented in the FS Natural Resources Management (NRM) sighting databases for the MFWR Project area,. The nearest known northern Idaho ground squirrel sites are the Lost Valley Reservoir site, approximately 20 miles to the northwest of the Project Area, and the Mud Creek site, approximately 20 miles northeast of the Project Area.

Existing Habitat

Modeled habitat for NIDGS within the WR is described in previous BAs for the watershed. Modeled potential habitat for NIDGS was mapped using a model that included specific vegetative structure in grass and sagebrush communities, with basalt soils, and no restriction on elevation (Figure 4, 5). Since 2007, over 3,000 acres of NIDGS habitat have been improved in the WR (Tables 10, 11), based on our current understanding of NIDGS habitat needs.

The Project area contains approximately 7,404 acres of modeled potential habitat for NIDGS, with no known occupied colonies. Figure 5 displays the distribution of modeled NIDGS habitat in the Project Area. Population trends for NIDGS are monitored by IDFG, noting increases in some colonies and decreases in others. Overall, the trend for NIDGS habitat may have improved over the past 20 years, due to interagency efforts to improve NIDGS habitat in selected areas, by moving stands into more appropriate conditions for occupancy (Tables 10, 11).

Ongoing research by the interagency group, with field work conducted mostly by the University of Idaho, under an agreement with the Forest, FWS, and IDFG has verified loss of habitat from conifer encroachment into non-forested openings as a major issue for NIDGS recovery. Additionally, research has identified the presence of plague in many of the NIDGS colonies. Researchers are working on techniques to reduce plague in the affected colonies by the application of insecticide dust at burrow entrances. Other limiting factors may include competition with Columbian ground squirrels, or cattle, and predation of NIDGS by badgers, hawks, falcons, coyotes, and foxes.

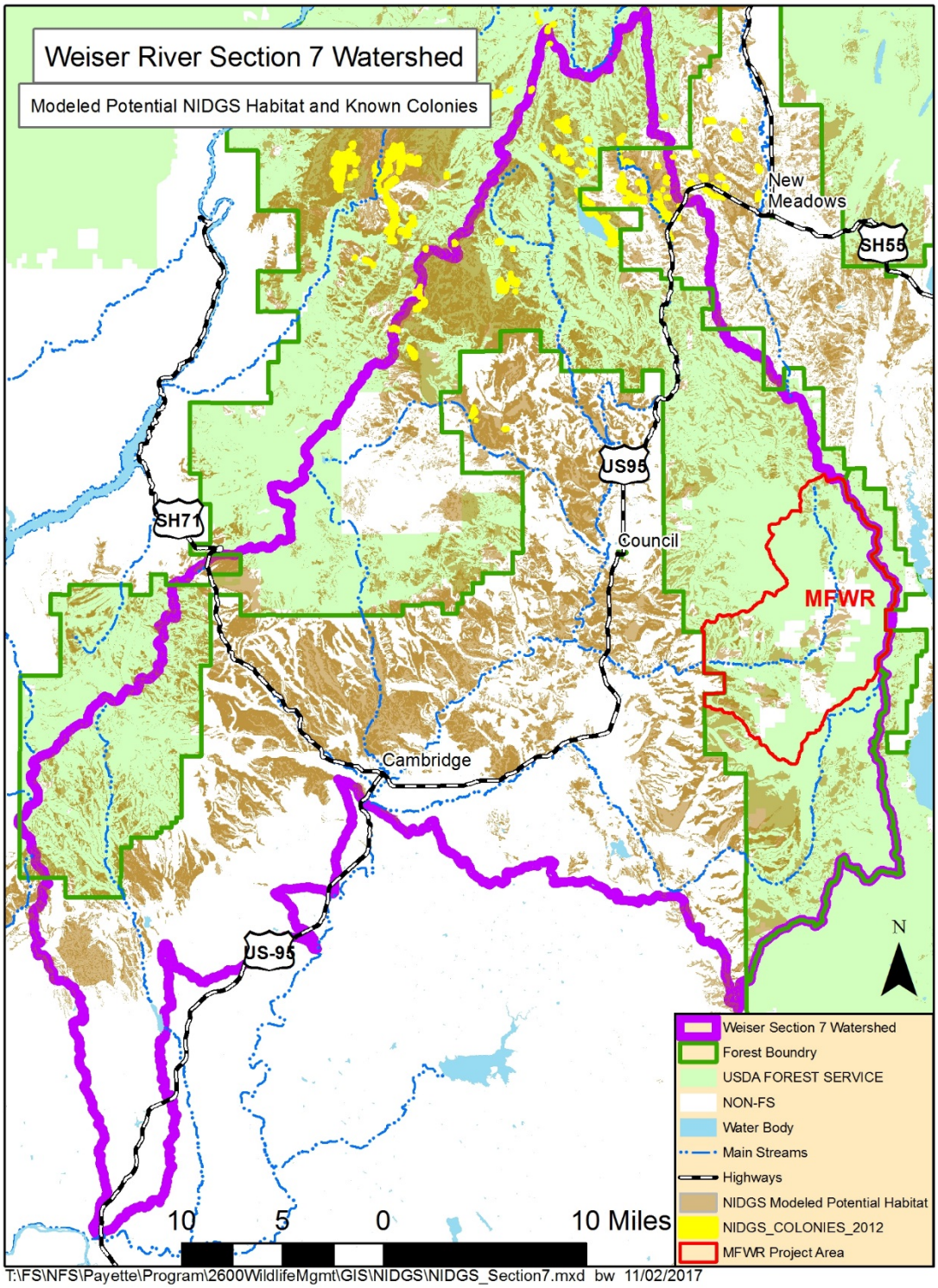

Figure 4. Modeled potential habitat for northern Idaho ground squirrel (NIDGS) and known NIDGS colonies in the Weiser River Section 7 Watershed.

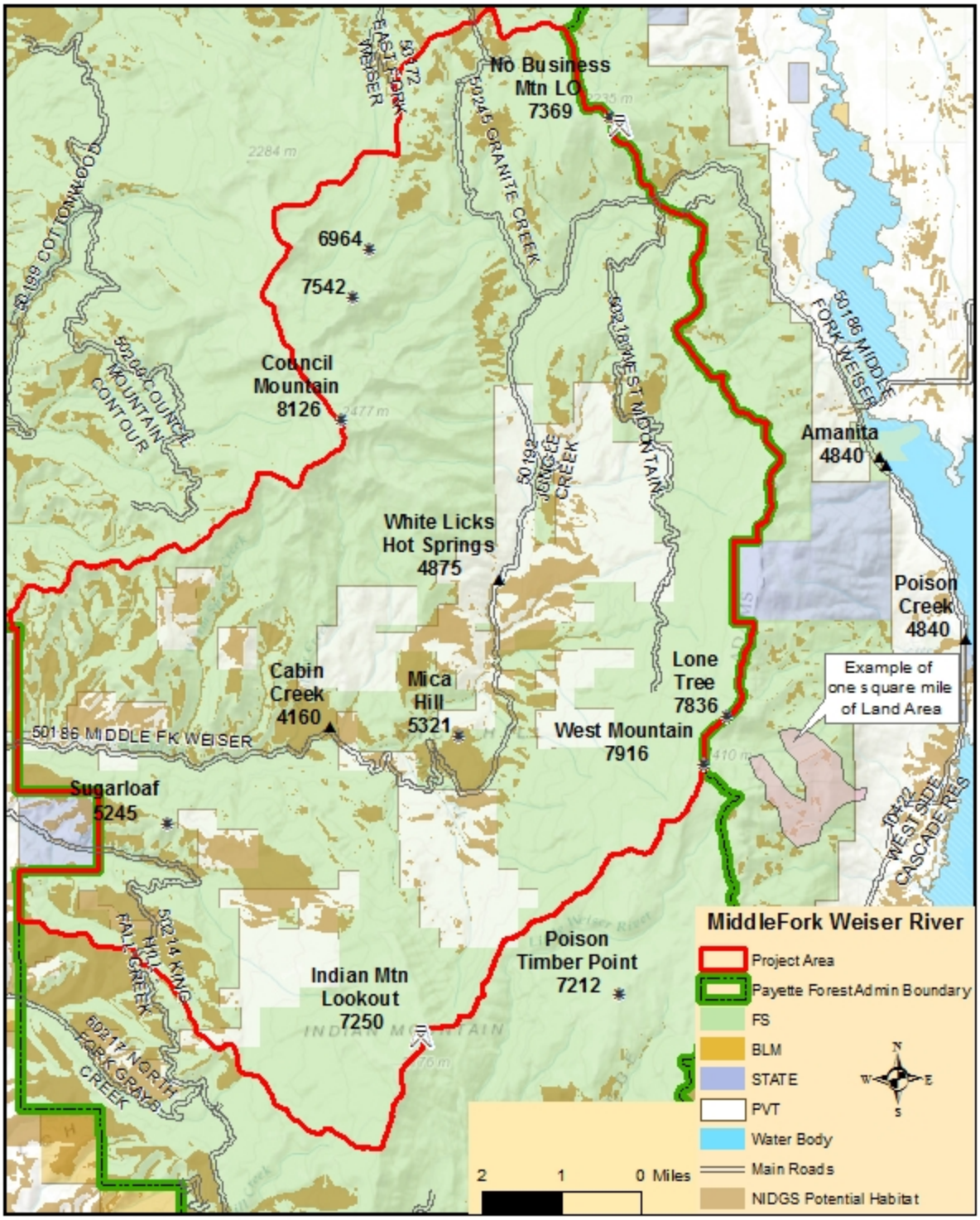

Figure 5. Modeled potential habitat for northern Idaho ground squirrel (NIDGS) in the Middle Fork Weiser River Landscape Restoration Project area.

Table 10. New Meadows Ranger District 2000-present NIDGS Habitat Improvement Projects, Weiser River Section 7 Watershed.

Year	Area	Thin Acres	Burn Acres	Other
2000	Lost Valley	28	15	
	Slaughter Campground	15	8	
	Price Valley	0	18	
2001	Lost Valley (eagle nest)	17	30	
	Slaughter Campground	12	35	
	Lost Valley (east)	5	0	
	Lost Valley, Slaughter Campground & Price Valley	0	0	Slash piling on 40 acres to improve hiding and burrowing habitat
	Lost Valley			Reduced campgrounds to 7, reduced dispersed camping. Cattle excluded from burned areas using electric fencing
2002	Lost Valley	175	25	
	Lost Valley, Slaughter Campground & Price Valley			Slash piling on 50 acres to improve hiding and burrowing habitat
	Lost Valley			Cattle excluded from burned areas using electric fencing
2003	Lost Valley	27	37	
	Price Valley	15		
	Lost Valley			Slash piling on 70 acres to improve hiding and burrowing habitat
	Lost Valley			Road closures (no acreages reported)
2004	Lost Valley		23	
	Price Valley	12		
	Lost Valley and Price Valley			Slash piling on 70 acres to improve hiding and burrowing habitat
	Slaughter Campground			Closed to overnight camping
2005	Lost Valley	70	95	
	Lost Valley and Price Valley			Slash piling on 125 acres to improve hiding and burrowing habitat
	Price Valley	35		30 acres mechanically slashed piled
	Lost Valley			Two permanent gates installed to restrict impacts to NIDGS habitat at campground

Year	Area	Thin Acres	Burn Acres	Other
2006	Lost Valley		105	105 acres broadcast burned, including 45 acres that received second burning from previous years
	Price Valley			80 acres burned, including 30 acres that received second burning from previous years. Objective was to rejuvenate grass and forb communities, and reduce slash from the PV Squirrel Timber Sale.
2007	Lost Valley	0	30	30 acres (previously burned in 2003) were broadcast burned to rejuvenate and enhance the grass and forb communities.
	Price Valley and Slaughter Campground			Youth Conservation Corp (YCC) live-trapped and translocated Columbian ground squirrels (COGS) to reduce potential competition with NIDGS. Translocated 16 COGS from Slaughter Campground and 23 COGS from Price Valley Guard Station area.
2008	Lost Valley	0	40	40 acres were broadcast burned to rejuvenate and enhance the grass and forb communities and thereby improve forage for NIDGS.
2009	Lost Valley	0	97	Occupied NIDGS site.
2011	Mud Creek	0	236	Adjacent to occupied NIDGS site.
2011	Lost Valley	0	22	Occupied NIDGS site.
	Warm Springs	0	762	Not an occupied site. Identified in the 2003 NIDGS Recovery Plan as a Secondary Metapopulation Site.

Table 11. Council Ranger District 1996-present NIDGS Habitat Improvement Projects, Weiser River Section 7 Watershed.

Year	Area	Thin Acres	Burn Acres	Other
1996	Cottonwood Corral Restoration Area	33	88	
1997	Cottonwood Corral Restoration Area	150	340	100 acres seeded; 1.25 miles of fence
1998	Cottonwood Corral Restoration Area	121	204	
1999	Cottonwood Corral Restoration Area	0	25	
	Mill Creek	15	52	
2000	None	-----	-----	-----
2001	None	-----	-----	-----
2002	None	-----	-----	-----
2003	None	-----	-----	-----
2004	None	-----	-----	-----
2005	None	-----	-----	-----
2006	None	-----	-----	-----
2007	Lost Valley	0	30	
2008	Lost Valley	0	40	
2009	Lost Valley	0	97	
2010	Summit Gulch	420	420	Summit Gulch Stewardship Timber Sale thinning and two University of Idaho NIDGS research project prescribed burns.
2010	Crooked River Timber Sale	61	0	Thinned stands that were adjacent to area of occupied sites at Cottonwood Corral and Halfway.
2011	Summit Gulch	327	440	Thinning and prescribed burns; part of NIDGS timber sale treatments. Included Rx burn of non-forested sites.

Wolverine

Species Status, Distribution, and Existing Habitat

Species Status
On April 4, 2016 the U.S. District Court- District of Montana vacated the USFWS's withdrawal of its proposed rule to list the distinct population segment of the North American wolverine (*Gulo gulo*) occurring in the contiguous United States as a threatened species under the Endangered Species Act (case 9:14-cv-00246-DLC, document 108). Pending a final decision on the status of the species by the USFWS, the FS is directed to analyze the species as "Proposed-Threatened". Section 7(a)(4) of the ESA requires Federal agencies to confer (rather than consult) with the Service on actions that are likely to jeopardize the continued existence of a species proposed to be listed. Conferencing and consultation under this guidance is, however, also discretionary for action Agencies. Due to the existence of confirmed wolverine breeding habitat on the Forest and limited data relating to the effects of project activities to secondary habitat for this species, the PNF has chosen to conference for wolverine and address potential effects to the species from the MFWR project

Species Distribution and Occupancy
The wolverine is circumboreal in distribution, occurring in Europe, Asia, and North America. In western North America, the wolverine historically occurred in Alaska, Canada, Washington, Oregon, California, Nevada, Colorado, Utah, Montana, Wyoming, and Idaho. Wolverines are found in the higher elevations of Idaho, including the PNF, and the surrounding areas of west-central Idaho. Mostly due to their specialized habitat needs (persistent snow cover, cool temperatures and large home ranges), wolverines naturally occur at low densities across their global range and in the contiguous US, the current population estimate is

Existing Habitat
Habitats used by wolverines include alpine tundra and all subalpine and montane forests (Wisdom et al. 2000; Vol. 3). Within the forest types, all structural stages (except the closed canopy stem exclusion stage) provide modeled habitat. In a Central Idaho study (Copeland 1996), wolverines used modestly higher elevations in summer versus winter, and they shifted use of cover types from whitebark pine (*Pinus albicaulis*) in summer to lower elevation Douglas fir (*Pseudotsuga menziezii*) and lodgepole pine (*Pinus contorta*) communities in winter. Elevation explained wolverine habitat use better than any other variable in both summer and winter (Copeland et al. 1998). A persistent snow pack, from late winter through late spring, is thought to be critical for the reproductive denning success of the wolverine, both because of the insulating warmth it provides to the newborn kits and for the protection afforded against predators. It also has been recognized that wolverines are not found in regions where maximum summer temperatures occur above a threshold value of 22 °C (roughly 72 °F; Copeland et al. 2010).

Recent studies have provided a strong correlation between wolverine habitat and a persistent snowpack (Copeland et al. 2010). The authors developed a spatial data layer of spring snow cover in the Northern Hemisphere for a 7-year period from 2000 to 2006, using moderate-resolution imaging spectroradiometer (MODIS) snow data, classified daily (500 m spatial resolution) from the Terra satellite (Hall et al. 2006 in Copeland et al. 2010). Areas that exhibited snow cover in years 6-7 showed the strongest correlation with wolverine radio telemetry locations. We used this methodology to model and map potential wolverine habitat in the MFWR Project area (Figure 6).

Wolverines use large home ranges. Females average 98 square miles (63,000 acres) and males 588 square miles (376,000 acres) per home range in central Idaho (Copeland et al. 1996). Denning usually occurs in February, typically on north- to east-facing slopes of talus or mixtures of forest and talus.

Based on the model utilized for the Management Plan for the Conservation of Wolverines in Idaho (2014-2019), the PNF is estimated to contain 10.5 % of the predicted wolverine habitat in Idaho, with 83.8% of the Forest comprised of predicted habitat (IDFG, 2014). The PNF also contains Tier I (high), II, and III (low) Priority Conservation Areas (IDFG, 2014).

The Payette, Boise, and Sawtooth National Forests collaborated with the Rocky Mountain Research Station, Round River Conservation Studies, Idaho Fish and Game, and other government and non-government organizations, to investigate wolverine populations and assess potential impacts from winter recreation. Research efforts include using a unique combination of approaches to simultaneously and intensively monitor both wolverines and winter recreation, including GPS monitoring of wolverines and winter recreationists. During the winter of 2010-2011, investigators captured 11 individual wolverines on the east side of the PNF. The winter recreation study area did not include the MFWR Project area.

Since 2011, five natal dens, of four individuals, have been documented on the PNF. In 2015-2016, wolverine DNA was confirmed at 7 camera / hair snare trap stations on the Forest located at 9 of the 10 live trap locations used for the Winter Recreation Study (IDFG CCS Agreement 16-CS-11041200-006, 2016). Wolverines were captured on camera a total of 20 times. Although none of these monitoring sites are located within the project area, the spatial requirements of wolverine would suggest that they utilize a range of areas across the Forest, including portions of the analysis area, for dispersal and peripheral habitat.

Track surveys and baited trail camera surveys were conducted by snowmobile in 2006, 2007, 2008, 2010, 2011, 2012, and 2015, with a limited attempt in 2016, along the mountain crest running north–south on the east boundary of the Project area; no wolverine tracks or photos were identified in these surveys. Logistical problems involved with conducting these winter surveys impede our documentation of wolverines in the Project area.

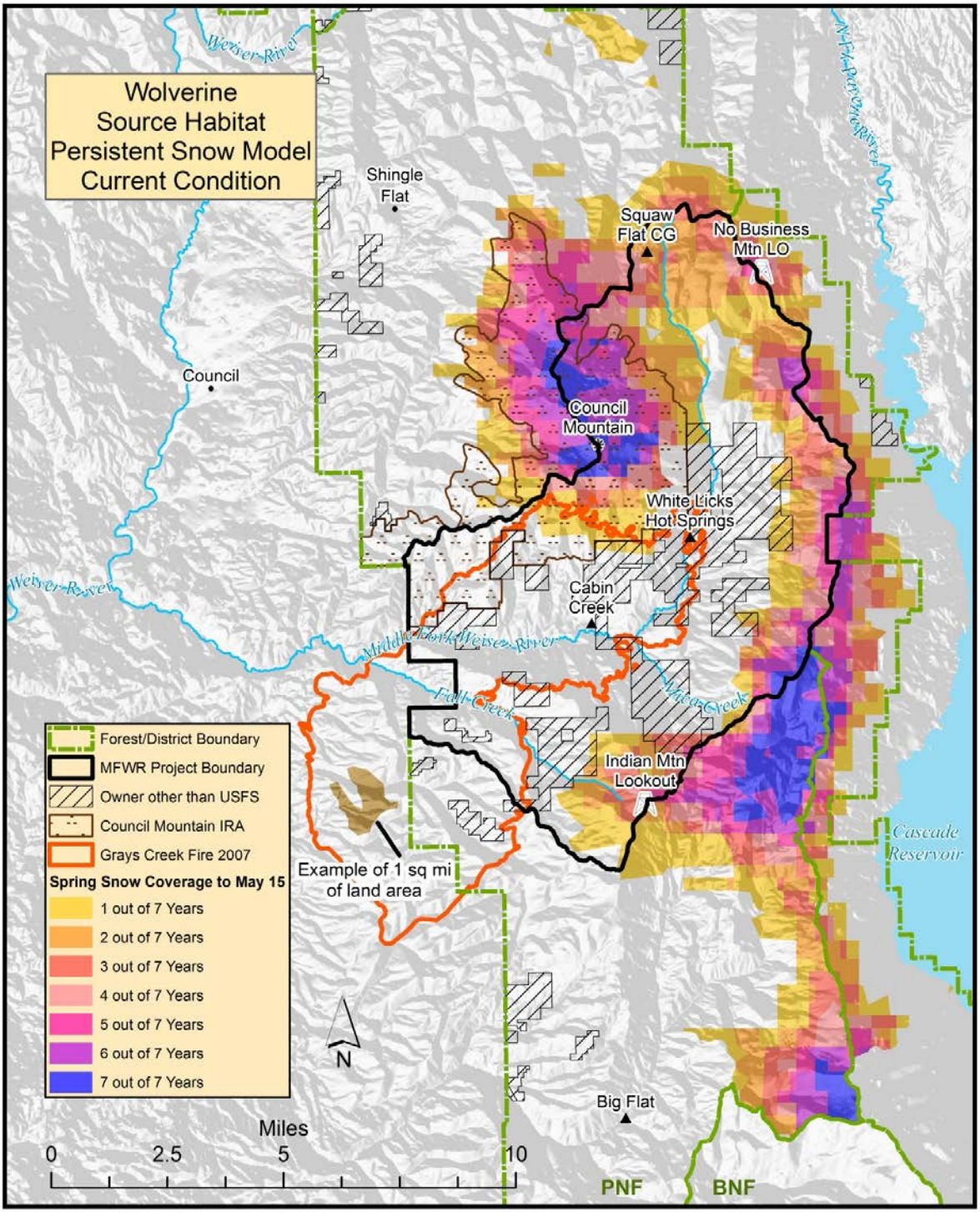

Figure 6. Wolverine modeled potential habitat identified for the Middle Fork Weiser River Landscape Restoration Project Area, using the persistent snow model described by Copeland et al. (2010).

Effects Analysis

Direct, Indirect, and Cumulative Effects

Canada lynx

If lynx are present on the Forest, they are likely in very small numbers. Recent on-the-ground reconnaissance surveys conducted in higher elevation stands in the project area indicate that…..
Due to the long history of fire suppression in the MFWR area, much of the modeled lynx habitat in the Project area has become excellent denning habitat, with dense tree stands, loaded with dead and dying trees and understory debris. The abundance of denning habitat has led to a decrease in the amount and distribution of foraging (hunting) habitat, which includes the shrub understory characteristics that support snowshoe hares.

The direct effects of thinning and burning of specific sites, while causing a loss of some potential denning habitat, would increase the amount and distribution of foraging habitat in lower elevations. Treatments in higher elevations, which reduce the understory, ladder fuels, and dense horizontal cover preferred by snowshoe hares, would result in reduced habitat for hares and lynx (LCAS 2013).

The mechanized activities associated with logging would likely create enough disturbance from noise and the presence of the equipment and people to push lynx out of the immediate area (displacement), at least for the duration of the logging activities. However, the benefit of creating better habitat in the long-term would outweigh the displacement of an individual lynx in the short-term. While the logging activities would have negative direct effects to individual lynx, the indirect and cumulative effects to these same individual lynx would be negligible, due to the shift in habitat from denning to foraging.

Approximately 29 percent of the current modeled suitable lynx habitat in the Project area (Figure 3) would change to unsuitable, thereby remaining within the guidelines of the LRMP standard (TEST12). Applying the management scheme in the 2013 LCAS, which suggests creating a mosaic of different habitat structure and distribution across the landscape, not just within an LAU, the proposed action would likely improve foraging habitat for lynx in the Project area. By planning the forest manipulations in these higher elevation sites to favor connectivity with other forested stands, traveling habitat may be decreased in some portions of the Project area. Some of the short to mid-term direct and indirect effects may be offset by habitat alteration activities, in the lower elevations, that provide increased foraging opportunities.

The cumulative effects area for Canada lynx is mostly the Middle Fork Weiser LAU, with minute portions of the Northwest Council and Little Weiser LAUs (Figure 3). Within this area, there would be the cumulative effects of habitat alteration and disturbance. Snowmobile activity on the West Mountain ridge system from general public use and the additional use of snowmobilers from Tamarack Resort, just below the east side of the ridge, would add human disturbance and displacement of lynx at higher elevations during winter months, from November through April each year into the foreseeable future. Snowmobile activity would present a long-term effect to lynx that could deter movements of lynx between LAUs, thereby reducing the opportunity for genetic interchange between core population areas, currently mapped outside of PNF boundaries and well outside of the project area (Core Areas 3, NW Montana/NE Idahoand 6, Greater Yellowstone) (FWS, 2006).

Northern Idaho Ground Squirrel
As mentioned previously, to date, no NIDGS colony has been identified on the east side of the Council Ranger District, although adequate habitat appears to be present in the Project area (Figure 5). During implementation of this project activities, wildlife staff will continue to survey for NIDGS throughout the Project area. Because NIDGS have not been identified in the Project area, no known direct, indirect, or cumulative negative effects are expected to this species.

The thinning of stands to lower tree density and to provide more open canopy cover would favor NIDGS, but without a source of NIDGS nearby, these project activities, although beneficial for NIDGS in specific locations, would have no effect on NIDGS. However, there is still the possibility, although unlikely, that field surveys could identify the presence of NIDGS in the Project area. If NIDGS are documented, potential mitigations will be discussed at Level 1. See Table A-1, # 1-3 for more detailed project design features and mitigations for NIDGS.

Wolverine
As mentioned previously, wolverines have been well documented on the east side of the Forest; however, no wolverine observation has been recorded in, or near, the Project area. Secondary /peripheral habitat is present in, and near, the Project area (Figure 6). Direct effects caused by noise and presence of equipment and people at specific sites may cause displacement of individuals.

Indirect effects could include displacement of prey species in and around project activity areas and alteration of dispersal habitat. The wolverine would either move away from the disturbance, or stay in the area and change its movement patterns to nocturnal, as noted in the recreation study. Additional indirect impacts may result from winter recreational use in concentrated areas (i.e. snowmobiles) and motorized vehicle use near the ridge lines that could cause displacement. Additional impacts may result from winter recreational use in concentrated areas (i.e. snowmobiles) and cause displacement of individuals. The indirect effects to wolverines would be beneficial, because the habitat mosaic created would provide better habitat to support large and small mammals, thereby providing a better source of prey and carrion.

Cumulatively, the habitat quality improvements provided by the MFWR project, coupled with similar landscape projects to the north and east of the Project area, would again improve habitat conditions and support a variety of prey species and carrion. Denning habitat occurs mostly in talus slopes, which will not be impacted by the thinning and burning activities of the MFWR project. Also, denning occurs in winter conditions, in the off-season for the project activities, so there would be no direct, indirect, or cumulative negative effects to wolverines from this project.

Effects Determinations

Canada lynx

Determination
The determination of effects for the Middle Fork Weiser River Landscape Restoration Project on the Canada lynx is *May Affect, Not Likely to Adversely Affect* (NLAA).

Rationale
- Although displacement of individuals resulting from project activities (thinning, burning) may occur, due to low probability of occurrence, impacts are expected to be negligible.

- Some of the short to mid-term direct and indirect effects may be offset by habitat alteration activities that provide increased foraging opportunities. Because the PNF is mapped as secondary habitat, impacts are expected to be negligible.

Northern Idaho ground squirrel

Determination
The determination of effects for the Middle Fork Weiser River Landscape Restoration Project on the Northern Idaho ground squirrel is *May Affect, Not Likely to Adversely Affect* (NLAA).

Rationale
- Direct, indirect, and cumulative negative effects to individual NIDGS would not occur, because NIDGS are not known to exist in the Project area.
- The nearest known NIDGS colonies are approximately 20 miles away.
- Thinning and reducing canopy closure in specific stands adjacent to open sites with the correct vegetative structure to support NIDGS would improve potential habitat for NIDGS.
- NIDGS could be identified in the Project area while conducting field surveys. If NIDGS are identified, Project Design Features and Mitigation Measures would be followed to ensure protection of the species.
- No potential NIDGS habitat would be altered by project activities.

Wolverine

Determination
The determination of effects for the Middle Fork Weiser River Landscape Restoration Project on the wolverine is *Not Likely to Jeopardize the Continued Existence of the Species Or Result in Destruction or Adverse Modification of Proposed Critical Habitat* (NLJ).

Rationale
- No wolverine observations have been recorded in, or near, the Project area.
- The primary effect to wolverine is displacement, potentially of individuals and prey species. If project activities cause displacement of dispersing individuals, individuals would most likely just avoid the area.
- The wolverine is capable of existing in a disturbed area by shifting to a nocturnal activity pattern, making some direct effects insignificant.

Table 12. Federally-Listed Wildlife Species Determination Summary.

Species	Scientific Name	Status	Determination
Canada Lynx	*Lynx canadensis*	Threatened	NLAA
Northern Idaho Ground Squirrel	*Urocitellus brunneus brunneus*	Threatened	NLAA
Yellow-billed cuckoo	*Coccyzus americanus*	Threatened	NE
Wolverine	*Gulo gulo luscus*	Proposed Threatened	NLJ

NLAA = May Affect, Not Likely to Adversely Affect; NE = No Effect; NLJ = Not Likely to Jeopardize the Continued Existence of the Population

FISHERIES

CHINOOK SALMON, STEELHEAD, AND BULL TROUT

Environmental Baseline

Section 7 Watershed Summary

The Middle Fork Weiser River Landscape Restoration Project occurs in the WR (Figure 2). This watershed is described in the Biological Assessment for the Potential Effects of Managing the Payette National Forest in the Weiser River Section 7 Watershed (Volume 9; Zurstadt and Burns 2007), which is incorporated here by reference. Specifically the project occurs in the East Fork Weiser River subwatershed and Middle Fork Weiser River watersheds in the WR.

Anadromous fish are denied access to the watershed by the Hells Canyon Dam complex, which was completed in 1967 with the closure of Hells Canyon Dam (USDA Forest Service, 2003). Columbia River bull trout is the only ESA-listed fish species that occur in the Weiser River Section 7 Watershed. Bull trout are found in only the Hornet Creek, East Fork Weiser River and Little Weiser River drainages. Based on the best available information, the bull trout populations inhabiting the three subwatersheds in the Section 7 watershed are isolated from one another and act as discrete populations.

Much of the watershed is National Forest System land with isolated areas of Bureau of Land Management (BLM), state and private lands. Activities on public lands in the watershed include timber harvest, livestock grazing, road maintenance, fire suppression and recreation. Activities on private lands may include timber harvest, road construction, recreation, and livestock grazing.

Analysis Area

The fisheries analysis area includes multiple scales; the baseline table was completed at the subwatershed scale (20,906 acres) and the effects were analyzed at both the subwatershed and 7th field hydrologic unit (HU) scale (1,438 acres) (Figure 7). The current USGS watershed boundary GIS layer was used for the subwatershed boundary and a 7th field HU was developed based on the project activities, project boundary and potential effects. Figure 7 shows the 7th field as the portion of the project area within the East Fork Weiser River subwatershed. The use of the subwatershed and 7th field HU as an analysis area unit for fisheries is biologically and physically relevant for the site specific activity and the subwatershed scale allows for an operational way to understand the spatial context of the existing conditions, potential impacts of proposed land management activities, and associated cumulative effects.

The Middle Fork Weiser River Landscape Restoration Project includes activities throughout the entire Middle Fork Weiser River watershed on Forest Service lands. However, only the activities proposed in the East Fork Weiser River subwatershed will be analyzed in this BA because bull trout and critical habitat are not found in the MFWR. See species description for bull trout below.

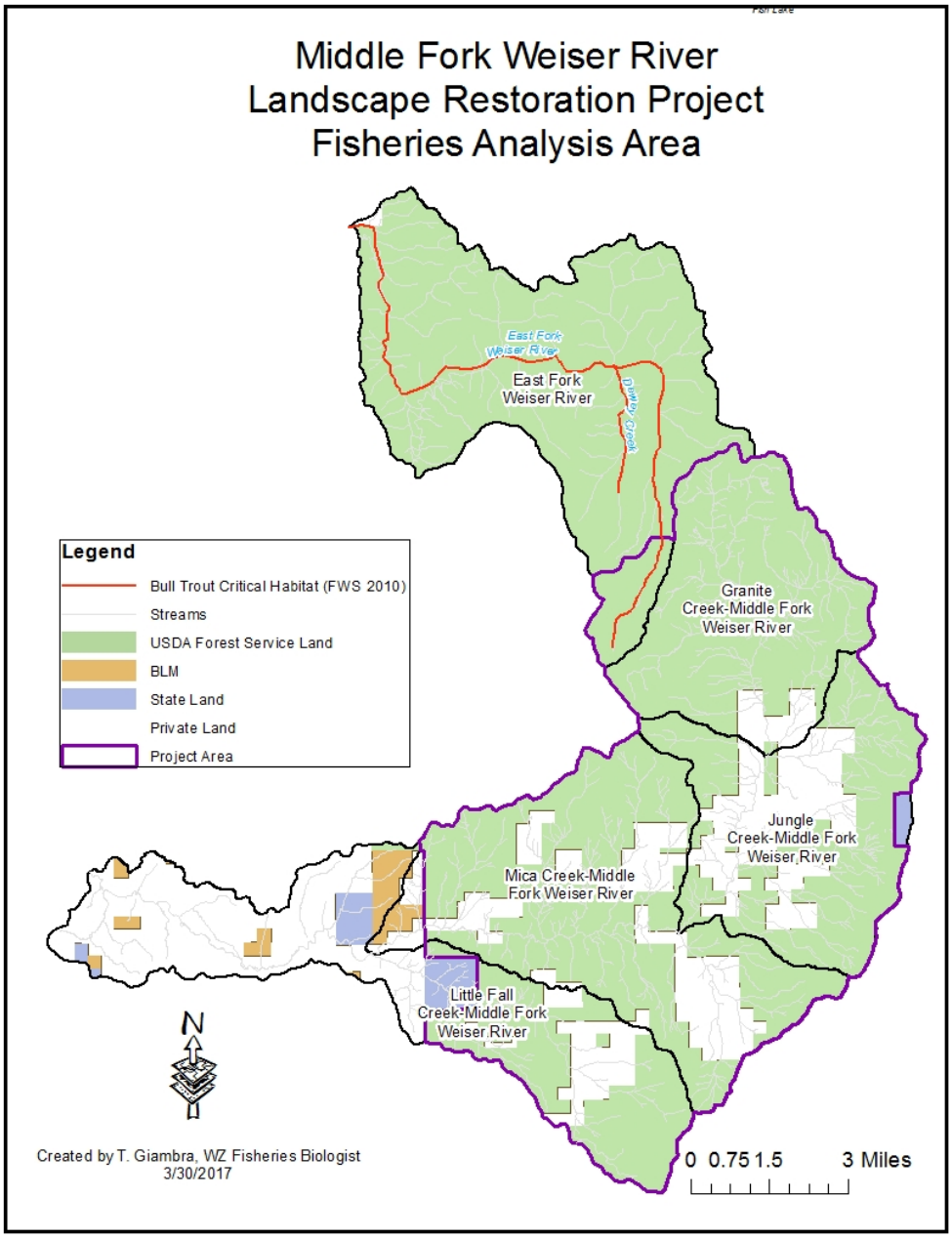

Figure 7. Fisheries analysis area.

Species Status

Snake River Spring, Summer and Fall Chinook Salmon and Steelhead

Snake River spring/summer and fall Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*) are listed as threatened under the Endangered Species Act, but both have been extirpated from the Weiser River Subbasin (USDA Forest Service 2003, p. III-105). Construction of Hells Canyon dam complex eliminated all anadromous runs of salmon and steelhead upstream of the dam. No designated critical habitat or essential fish habitat exists in the Weiser River Subbasin for Snake River spring/summer and fall Chinook salmon or steelhead. The proposed project will have *no effect* on these species or habitats, and they will not be discussed further in this document.

Columbia River Bull Trout

Columbia River bull trout are the only federally listed fish species in the Weiser River subbasin (USDI FWS 2015). The FWS listed bull trout (*Salvelinus confluentus*) as threatened under the ESA on June 10, 1998 (USDI FWS 1998, 63FR31647).

In 2015, the FWS finalized the Recovery Plan for the Coterminous United States Population of Bull Trout (*Salvelinus confluentus*) (USDI FWS 2015a). The Recovery Plan outlines actions believed to be necessary to protect and recover the species and describes the biology and ecology of bull trout in the Columbia River Distinct Population Segment. The goal of the Recovery Plan is "…to manage threats and ensure sufficient distribution and abundance to improve the status of bull trout throughout their extant range in the coterminous United States so that protection under the Act is no longer necessary" (USDI FWS 2015a, p. vi). The Plan includes Recovery Unit Implementation Plans (RUIPs) for each of the six Recovery Units. The Project is located in the Upper Snake Recovery Unit in the Weiser River Core Area. Within the Weiser River Core Area, populations are known to exist in the East Fork Weiser River, Little Weiser River, and in the headwaters of Hornet Creek; however, these local populations isolated and are considered vulnerable (USDI FWS 2015a). The East Fork Weiser River is the only bull trout local population within the Project analysis area. No bull trout local populations or potential local populations were identified within the Middle Fork Weiser River drainage. Burns *et al.* (2005) evaluated bull trout viability and trend on the Forest and concluded bull trout viability is low in the Weiser River subbasin.

A single adult bull trout (200–300 millimeters [mm]) was reported by Hurley (1995) in the mainstem Middle Fork Weiser River above the mouth of Warm Springs Creek in 1994. Bull trout have also been reported near Jungle Creek and anglers have reported catching bull trout high in the headwaters of the Middle Fork Weiser River (McGee and Burns 2001). Veach (1998) reported that a fisheries technician caught bull trout in the Middle Fork Weiser River near Jungle Creek, between Warm Springs Creek and Cabin Creek and downstream from the mouth of Fall Creek. Although anecdotal accounts of bull trout have been reported, extensive electrofishing and snorkel surveys completed after those sightings were reported have failed to document bull trout presence in any streams in the Middle Fork Weiser River drainage (USDA Forest Service 2015 FID unpublished data; McGee and Burns 2001; Hogen and Burns 2003; Nelson and James 2010; Williams and Veach 1999). Surveys in 1999 were intense enough to detect a population of bull trout that was larger than 0.74 fish per 100 meters (Hogen and Burns 2003). Brook trout are prevalent throughout the watershed, especially in headwater reaches, and have likely been misidentified as bull trout. Nelson and James (2010) concluded bull trout were naturally absent from the Middle Fork Weiser River drainage.

In 2010, the RMRS developed a scientifically defensible bull trout monitoring protocol based on Isaak *et al.* (2009). The RMRS identified habitat patches on the Forest with the potential to support bull trout using elevation, stream slope, and contributing drainage area. A bull trout patch is considered a contributing drainage area greater than 500 hectares in size above 1600 meters elevation (Isaak *et al.* 2009; Rieman and McIntyre 1995). There are 12 patches in the project area: one patch including the East Fork Weiser River and Dewey Creek and 11 patches in the Middle Fork Weiser River drainage.

In 2014, the Forest Fisheries program initiated a strategy to sample bull trout patches throughout the Forest. A temperature monitoring device was placed in-stream at the bottom of identified patches and a habitat survey using the Forest PIBO 100 protocol was completed to determine if suitable habitat exists. An environmental DNA (eDNA) water sample was collected near each site to determine if bull trout are present (Figure 8). In the upper East Fork Weiser River, an eDNA sample was collected as part of the patch effort about two miles downstream from a potential natural barrier and in 2015 a sample was collected from the upper East Fork Weiser River directly above the potential natural barrier. The RMRS analyzed the samples and found bull trout were present in only the sample collected downstream from the potential natural barrier. Bull trout were not found in the sample collected above the potential barrier (Carim *et al.* 2015, unpublished data). In the Middle Fork Weiser River watershed, nine of the 11 patches within the Project area were sampled in 2014. The Little Creek patch was not sampled because Little Creek is located primarily on private land. One of the two Big Creek tributary patches was not sampled

in 2014 but a water sample was collected in 2015. The temperature data were analyzed and included in the Middle Fork Weiser River Landscape Restoration Project Environmental Impact Statement. The RMRS analyzed the eDNA samples and found bull trout were present in only the East Fork Weiser River patch (USDA Forest Service 2015, FID, unpublished data; Carim et al. 2015 unpublished data). Bull trout were not found in any of the Middle Fork Weiser River drainage samples.

The Rangewide Bull Trout eDNA Project is a partnership between the Forest Service Rocky Mountain Research Center and biologists from 20 different organizations to collect information about the distribution of bull trout in the northwest. Several streams within the project area are modeled to potentially providing suitable habitat for bull trout. These include Granite Creek, an unnamed tributary to the Middle Fork Weiser River, Jungle Creek, No Business Creek, and the upper Middle Fork Weiser River (RMRS 2016). Environmental DNA collected will be used to validate modeled habitat and inform conservation planning. In the Middle Fork Weiser River, the Forest Service has collected eDNA from all the patches on National Forest lands, along with numerous other past fish presence absence surveys (Figure 8). In July 2016, the Payette Forest Coalition and the Idaho Conservation League contributed to this partnership by collecting about 19 eDNA samples throughout the Middle Fork Weiser River drainage. Results were obtained in February 2017 and showed one positive sample for bull trout in No Business Creek. Ten additional eDNA samples and five electrofishing surveys were completed in No Business Creek in summer 2017. All of the surveys were negative for bull trout.

Significant effort has been made to determine if bull trout are present in the Middle Fork Weiser River drainage. Over 275 snorkel/electrofishing surveys (over 17 miles of streams) and 30 eDNA samples collected throughout the drainage over the last 17 years did not observe bull trout. Only one snorkel survey in 1994 (below the Middle Fork Weiser River Falls) and one eDNA sample collected in No Business Creek in 2016 showed positive results for bull trout. Because an eDNA sample tested positive for bull trout, more data (electrofishing and eDNA) will be collected during summer 2017 in No Business Creek. If bull trout are found, no RCA treatments will occur within the No Business Creek drainage. Since bull trout were not found in the 2017 sampling effort, RCA treatments will occur. Based on the extensive sampling effort described above, bull trout are absent from the Middle Fork Weiser River drainage.

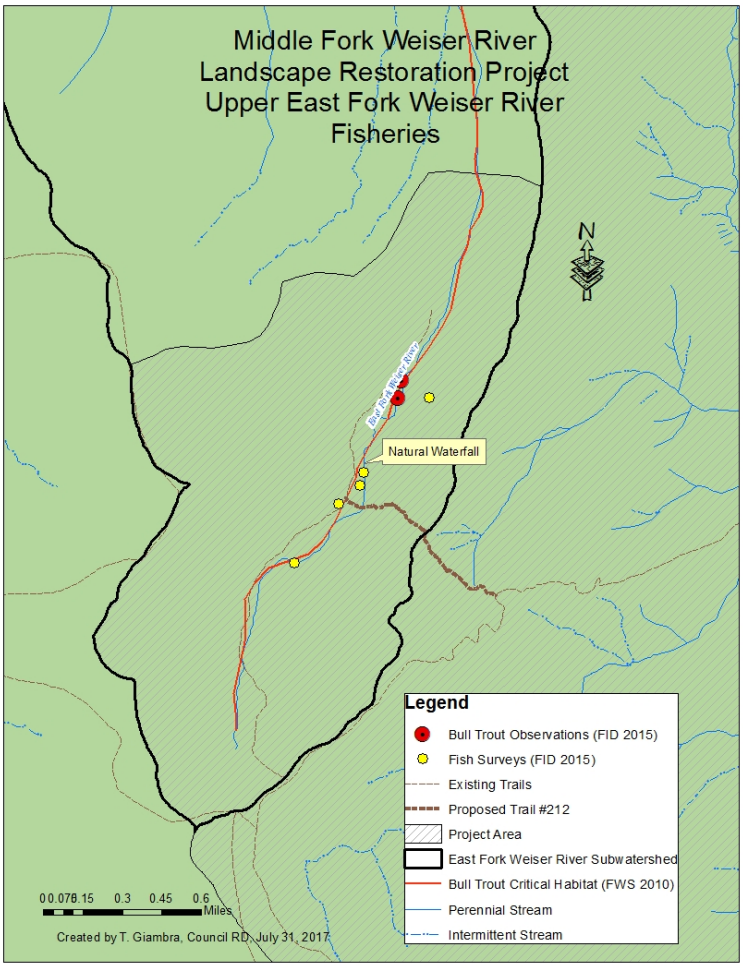

Figure 8. Site specific map of the project activity in the upper East Fork Weiser River.

Critical Habitat

On October 18, 2010, the US FWS (USDI FWS 2010) designated critical habitat for bull trout (75 FR 63898). Within the analysis area, designated critical habitat occurs only within the East Fork Weiser River from the mouth to the headwaters and including Dewey Creek (Figure 8). Although critical habitat was proposed in the Middle Fork Weiser River in 2009 (75 FR 2270), it was not included in the final designation.

Subwatershed Baseline

The baseline matrix tables (USDA 2003) were completed at the 6th level subwatershed scale and the East Fork Weiser River baseline is located in Table 13. The baseline was taken from the Mill Creek – Council Mountain Landscape Restoration Project biological assessment and updated where appropriate for the East Fork Weiser River. Effects of this project are assessed at the subwatershed scale (the 6th level HU) and at the site-specific scale where appropriate for some WCIs.

Information from the Fisheries Information Database (FID) (USDA Forest Service 2015, unpublished data), Idaho Department of Environmental Quality (DEQ) (Idaho Department of Environmental Quality 2012), the Forest Service National Aquatic Survey (AqS) database (USDA Forest Service 2014), Greenway (2005), Hurley (1995), the Natural Conditions Database (Overton *et. al* 1995), past biological assessments, Forest GIS layers and the WARS database (USDA Forest Service 2003a) were used to

determine current conditions for the baseline. The former Upper East Fork Weiser River subwatershed is identified as an Aquatic Conservation Strategy (ACS) priority subwatershed in the 2003 Forest Plan.

In 2010, the Forest Service developed the Watershed Condition Framework (WCF). The WCF is a comprehensive approach for classifying watershed condition, proactively implementing integrated restoration, and tracking and monitoring program accomplishments. As part of a national effort, the Payette completed a Watershed Condition Classification Assessment to evaluate and classify 6-level watersheds in terms of their health and resiliency (Potyondy and Geir 2011; USDA Forest Service 2011).

Class 3 watersheds have “Impaired Function” and exhibit low geomorphic, hydrologic and biotic integrity relative to their natural condition. The East Fork Weiser River subwatershed is categorized as Class 3 watershed and is a Region 4 focus subwatershed.

Table 13. Current conditions in the East Fork Weiser River subwatershed.

Agency/Unit	Payette NF, Council RD	HU Code and Name	
Fish Species Present	Bull trout	**Spatial Scale of this Matrix**	6th-level HU (20,878 acres)
(Anad. Sp.) Population:	None	**Subpopulation:**	None
Core Area (Bull Trout)	Weiser River	**Local Population**	Upper East Fork Weiser River
Management Actions	Landscape Restoration		
Pathways & Indicators	**Population and Environmental Baseline**		
	Desired Condition	**Baseline Condition**	**Discussion of Baseline and Current Condition**
Local Population Character			
Local Population Size	Mean total local population size or local habitat capacity more than several thousand individuals. Adults in local population > 500. All life stages are represented within the local population.	**FR** SR, PJ	In the East Fork Weiser River subwatershed, bull trout have been found in Dewey Creek and upper East Fork Weiser River above Bench Creek (Greenway 2005; USDA Forest Service 2015 FID). In 2001, IDFG electrofished in Dewey Creek and East Fork Weiser River and they estimated bull trout densities in Dewey Creek to be 0.06 fish per m^2 and 0.008 fish per m^2 in the upper East Fork Weiser River. A bull trout (225 mm) that was collected 100 m downstream of the East Fork Ditch diversion (Greenway 2005) was the furthest downstream bull trout have been observed in the East Fork Weiser River. Two suspected hybrids were also collected at the same location (Greenway 2005). Bull trout have not been found above a natural waterfall in the upper East Fork Weiser River (n=2).
Growth and Survival	Local population has the resilience to recover from temporary or short-term disturbances (e.g., catastrophic events, etc.) or local population declines within 1 to 2 generations (5-10 years). The local population is characterized as increasing or stable. At least 10 years of data support this estimate.	**FR** PJ	There are not sufficient data (>10 years) to support an estimate of growth and survival. Therefore, the baseline is described as FR as directed in Appendix B, Table B-1.
Life History Diversity and Isolation	The migratory form is present and the local populations are in close proximity to each other. Migratory corridors and rearing habitat (lake or larger river) are in good to excellent condition for the species. Neighboring local populations are large with high likelihood of producing surplus individuals or straying adults that will mix with other local populations.	**FUR** SR, PJ	Other bull trout local populations occur in the Little Weiser River and Hornet Creek (Olive Creek) watersheds (DuPont 2000) but due to barriers connectivity between bull trout local populations within the Weiser River sub-basin are poor. A fish passage barrier (150 ft culvert at 5%gradient) has existed since at least 1965 at the mouth of the East Fork Weiser River that blocks connectivity with the rest of the Weiser River subbasin. Based on data from electroshocking surveys and a fish weir located one mile downstream of Dewey Creek there is no evidence that bull trout regularly migrate out of the East Fork Weiser River (Moore *et al.* 2002; Watry and Hogen 2002; USDA Forest Service 2015 FID). The total local population size is likely less than 2000 individuals (IDFG data on file PNF S.O. McCall, ID). Climate change modeling shows potential decrease in suitable habitat, which may exacerbate this.
Persistence and Genetic	Connectivity is high among multiple (5	**FUR**	The bull trout local population in the East Fork Weiser and Dewey Creek

Agency/Unit	Payette NF, Council RD	HU Code and Name	
Fish Species Present	Bull trout	**Spatial Scale of this Matrix**	6th-level HU (20,878 acres)
(Anad. Sp.) Population:	None	**Subpopulation:**	None
Core Area (Bull Trout)	Weiser River	**Local Population**	Upper East Fork Weiser River
Management Actions	Landscape Restoration		
Pathways & Indicators	**Population and Environmental Baseline**		
	Desired Condition	**Baseline Condition**	**Discussion of Baseline and Current Condition**
Integrity	or more) local populations with at least several thousand fish each. Each of the relevant local populations has a low risk of extinction. The probability of hybridization or displacement by competitive species is low to nonexistent.	SR, PJ	is small and isolated from other local populations (see WCIs above). The presence of culvert barriers, dams, water diversions, and high water temperatures in the Weiser River subbasin suggest there is little connectivity for refounding subpopulations. IDFG found bull trout and bull trout x brook trout hybrids in the upper East Fork Weiser River in 1998 and 2001. In 2011, a bull trout and brook trout were observed courting in the upper East Fork Weiser River (Giambra personal observation) and many suspected bull trout x brook trout hybrids have been documented (Greenway 2005; USDA Forest Service 2015, FID unpublished data). Climate change modeling shows a potential decrease in suitable habitat.

Agency/Unit	Payette NF, Council RD	HU Code and Name	
Fish Species Present	Bull trout	**Spatial Scale of this Matrix**	6th-level HU (20,878 acres)
(Anad. Sp.) Population:	None	**Subpopulation:**	None
Core Area (Bull Trout)	Weiser River	**Local Population**	Upper East Fork Weiser River
Management Actions	Landscape Restoration		
Pathways & Indicators	**Population and Environmental Baseline**		
	Desired Condition	**Baseline Condition**	**Discussion of Baseline and Current Condition**
Water Quality			
Temperature (bull trout)	7-day average maximum temperature in a reach during the following life history stages: Incubation: 2-5°C or 35.6-41.0°F Rearing: 4-12°C or 39.2-53.6°F Spawning: 4-9°C or 39.2-48.2°F Also temperatures do not exceed 15°C or 59.0°F in areas used by adults during migration (no thermal barriers)	**FR** SR	The median MWMT (from 2001-2010) in the headwaters of the East Fork Weiser River is 12.1°C which is in bull trout spawning and rearing areas. In Dewey Creek, the median MWMT (from 2002 to 2008) was 11.3°C. The MWMT during the spawning period was generally < 11.0°C. The MWMT (from 2001-2005, 2010) sometimes exceeded 15°C at locations that are not spawning and rearing areas, but are where an adult bull trout has been documented (sites W109, W110). The average MWMT in 2010 in known bull trout spawning and rearing areas was 10.6°C in the East Fork Weiser River (site W186) and 9.7 °C in Dewey Creek (site W098). In 2013, the average MWMT was 12.6°C in the upper East Fork Weiser River (site W186) and 11.5°C in Dewey Creek (site W098).
Temperature (other fishes)	Summer maximum weekly maximum temperature (MWMT) between 17° and 20°C (Nelson and Burns 2007).	**FR** SR	The average MWMT for the East Fork Weiser subwatershed is approximately 13.3°C for all years at all seven sites (National Aquatic Survey (AqS) Database (USDA Forest Service 2014) and District temperature information).
Sediment (bull trout)	< 12% fines (< 0.85 mm) in gravel. Surface fines (≤6mm) ≤ 12%	**FR** SR, PJ	Average 17.5% surface fines (n=45, USDA Forest Service 2015 FID, unpublished data). Adams (1994) estimated fine sediment in two reaches of Dewey Creek at 14 and 20%. Hurley (1995) estimated fine sediment (pebble counts) for 14 reaches of East Fork Weiser River at 14 to 55 percent for particles under 6 mm. Nine surveys out of 46 surveys in the analysis area had surface fines > 20% (USDA Forest Service 2015 FID, unpublished data). The lower reaches of the East Weiser River were flooded in January 1997, and in 2000 surface fines were <12% in 5 out of 6 reaches. The lower East Fork Weiser River also flooded in June 2010 and surface fines were estimated to be 13.3% in East Fork Weiser River and 16.1% in Joker Creek.
Sediment (other fishes)	<27% surface fines (≤6mm), standard deviation 22. Natural Conditions Database (Overton *et al*. 1995).	**FA** SR	Average 17.5% surface fines (n=45, USDA Forest Service 2015 FID, unpublished data). Ranged from 2.6% to 60%.
Chemical Contaminants and/or Nutrients	Low levels of chemical contamination from agricultural, industrial, and other sources; no excess nutrients, no 303(d) water quality limited water bodies.	**FA** PJ	No 303(d) listed stream segments occur in the East Fork Weiser River analysis area (Idaho Department of Environmental Quality 2012).
Habitat Access			
Physical Barriers	Any man-made barriers present in watershed allow upstream and downstream fish passage at all flows.	**FR** SR, PJ	A culvert at the mouth of the East Fork Weiser River (Highway 95 crossing) blocks upstream fish movement. Given the heavily roaded subwatershed there are potentially many more fish barriers than is

Agency/Unit	Payette NF, Council RD	HU Code and Name	
Fish Species Present	Bull trout	**Spatial Scale of this Matrix**	6th-level HU (20,878 acres)
(Anad. Sp.) Population:	None	**Subpopulation:**	None
Core Area (Bull Trout)	Weiser River	**Local Population**	Upper East Fork Weiser River
Management Actions	Landscape Restoration		
Pathways & Indicators	**Population and Environmental Baseline**		
	Desired Condition	**Baseline Condition**	**Discussion of Baseline and Current Condition**
			indicated here. However, several fish passage barriers have been replaced with implementation of the Mill Creek – Council Mountain Project (Giambra and Nelson 2012); with the exception of the culvert at Highway 95, all of the culverts on mainstem Dewey Creek and the East Fork Weiser River have been replaced with fish friendly structures.
Habitat Elements			
Substrate Embeddedness	Dominant substrate is gravel or cobble (interstitial spaces clear), or embeddedness is < 20%.	**FA** PJ	Dominant substrate is gravel/cobble (2013, n=5, USDA Forest Service 2015 FID).

Agency/Unit	Payette NF, Council RD	HU Code and Name	
Fish Species Present	Bull trout	**Spatial Scale of this Matrix**	6th-level HU (20,878 acres)
(Anad. Sp.) Population:	None	**Subpopulation:**	None
Core Area (Bull Trout)	Weiser River	**Local Population**	Upper East Fork Weiser River
Management Actions	Landscape Restoration		
Pathways & Indicators	**Population and Environmental Baseline**		
	Desired Condition	**Baseline Condition**	**Discussion of Baseline and Current Condition**
Large Woody Debris	> 20 pieces per mile, > 12 inches in diameter, > 35 feet length; and adequate sources of large woody debris for both long and short-term recruitment in RCAs.	**FA** SR	Approximately 39 pieces per mile (n=29; USDA Forest Service 2015 FID).
Pool Frequency	Pools have good cover and cool water, and only minor reduction of pool volume by fine sediment. Large woody debris recruitment standards for functioning appropriately (above) are met and pool frequency in a reach closely approximates: Wetted Width (ft) / Pools/mile 0-5 / 39 5-10 / 60 10-15 / 48 15-20 / 39 20-30 / 23 30-35 / 18 35-40 / 10 40-65 / 9 65-100 / 4	**FA** SR, PJ	Pool frequency is approximately 55 pools per mile. The sediment WCI is functioning appropriately, the temperature WCI is functioning at risk and the LWD WCI is functioning appropriately (n=45; USDA Forest Service 2015 FID unpublished data). Average wetted width is 3.2 m (10.5 feet).
Pool Quality	Each reach has many large pools > 3.28 feet (1 meter deep). Pools have good cover and cool water, and only minor reduction of pool volume by fine sediment.	**FR** SR, PJ	In general, reaches have few if any pools > 3.28 ft deep. No large pools were found in Dewey or Joker Creek but small channel size may limit pool depth. There were a total of six pools > 3.28 ft deep in the East Fork Weiser downstream of Shingle Creek. The diversion of water from the East Fork Weiser River to the East Fork Ditch diversion reduces the maximum depth of pools in the lower East Fork Weiser River during the summer months. The sediment WCI is functioning appropriately, the temperature WCI is functioning at risk and LWD WCI is functioning appropriately (USDA Forest Service 2015 FID unpublished data).
Off-Channel Habitat	Watershed has many ponds, oxbows, backwaters, and other off-channel areas with cover; side channels are low energy areas.	**FR** SR, PJ	Most of the streams in the area are Rosgen type A and B (Rosgen 1994) channels with little slow water areas. In many locations, roads have encroached on stream banks and riparian areas. The analysis area has some off-channel areas with cover, but side-channels are generally high-energy areas (Hurley 1995; Forest GIS road layers, USDA Forest Service 2015 FID unpublished data).

Agency/Unit	Payette NF, Council RD	HU Code and Name	
Fish Species Present	Bull trout	**Spatial Scale of this Matrix**	6th-level HU (20,878 acres)
(Anad. Sp.) Population:	None	**Subpopulation:**	None
Core Area (Bull Trout)	Weiser River	**Local Population**	Upper East Fork Weiser River
Management Actions	Landscape Restoration		
Pathways & Indicators	**Population and Environmental Baseline**		
	Desired Condition	**Baseline Condition**	**Discussion of Baseline and Current Condition**
Refugia	Habitats capable of supporting strong and significant local populations are protected and are well distributed and connected for all life stages and forms of the species.	**FUR** SR, PJ	Based on the available data, the three populations of bull trout (East Fork Weiser River, Hornet Creek, and Little Weiser River) in the Weiser River subbasin appear to have resident life histories with very few to no fluvial bull trout currently existing. These local populations are not connected due to both culvert and thermal barriers in the Weiser River.
Channel Condition and Dynamics			
Width/Max Depth Ratio	≤10	**FA** SR	The average width to maximum depth ratio is 7.6 (n=45; USDA Forest Service 2015 FID, unpublished data). The lower reaches of the East Weiser River were flooded in January 1997 and in 2010.
Streambank Condition	>90% of any stream reach has stable banks relative to the percent of inherent stable streambanks associated with a similar unmanaged stream system.	**FR** SR, PJ	Approximately 83% average. Bank stability ranged from 50% – 98%. The lower reaches of the East Weiser River were flooded in January 1997 and in 2010. The Hall Fire in 2003, flooding in 1997 and 2010, cattle grazing, and roads within RCAs have likely affected streambank condition in the subwatershed.
Floodplain Connectivity	Within RCAs, floodplains and wetlands are hydrologically linked to the main channel; overbank flows occur and maintain wetland/floodplain functions; and riparian vegetation succession.	**FUR** PJ	Roads are adjacent to all major streams constricting their floodplains; floods in 1997 and 2010 did considerable damage to many roads where they were in the floodplain, some damage from plugged culverts; all empirical evidence that floodplain connectivity is unacceptable. Implementation of the Mill Creek – Council Mountain project will reduce roads in RCAs (and consequently increase floodplain connectivity).
Flow/Hydrology			
Change in Peak/Base Flows	Watershed hydrograph indicates peak flow, base flow, and flow timing characteristics comparable to an undisturbed watershed of a similar size, geomorphology and climatology.	**FUR** PJ, O (GIS)	Due to the extent of harvest activities and road construction in the watershed, it is likely that peak flow is somewhat altered from undisturbed conditions. ECA maximum estimate for the analysis area is 22.6% after implementation of the Mill Creek Council Mountain project (Giambra and Nelson 2012). Base flow is reduced to approximately 2 cfs downstream of the East Fork Irrigation Ditch during the summer months.
Drainage Network Increase	Zero or minimum change in active channel length correlated with human caused disturbance.	**FUR** PJ, O (GIS)	Road density on National Forest System lands in the East Fork Weiser River analysis area is high (see below). The exact proportion of out-sloped roads is unknown, but out-sloping is common.
Watershed Conditions			
Road Density and Location	Total road density < 0.7 miles/square mile of subwatershed, no roads within RCAs.	**FUR** O (GIS)	The overall road density on National Forest system lands is 4.2 mi/mi^2 within the analysis area. This includes both system roads and unauthorized routes and assumes implementation of the Mill Creek-Council Mountain Landscape Restoration Project has already occurred (USDA Forest Service 2012a). There are approximately 33 miles of roads within RCAs.
Disturbance History	< 15% ECA (entire watershed) with no concentration of disturbance in areas	**FUR** O (GIS), SR, PJ	The maximum estimate of ECA within the East Fork Weiser subwatershed is 22.6% after implementation of Mill Creek – Council Mountain Project

Agency/Unit	Payette NF, Council RD	HU Code and Name	
Fish Species Present	Bull trout	**Spatial Scale of this Matrix**	6th-level HU (20,878 acres)
(Anad. Sp.) Population:	None	**Subpopulation:**	None
Core Area (Bull Trout)	Weiser River	**Local Population**	Upper East Fork Weiser River
Management Actions	Landscape Restoration		
Pathways & Indicators	**Population and Environmental Baseline**		
	Desired Condition	**Baseline Condition**	**Discussion of Baseline and Current Condition**
	with landslide or landslide prone areas, and/or refugia, and/or RCAs.		(GIS information). Fires have affected this subwatershed. Road densities within RCAs are 6.3 mi/mi^2 and other management related disturbance such as livestock grazing occurs within RCAs. Flooding and road damage shows that the hydrologic regime is unacceptably vulnerable.
Riparian Conservation Areas	The riparian conservation areas within the subwatershed(s) have historic and occupied refugia for listed, sensitive or native/desired nonnative fish species which are present and provide: adequate shade, large woody debris recruitment, sediment buffering, connectivity, and habitat protection and connectivity to adequately minimize adverse effects from land management activities (>80% intact). All vegetative components are within desired conditions identified in Appendix A of the Forest Plan. RCA functions and processes are intact, providing resiliency from adverse effects associated with land management activities. Conditions fully support habitat for aquatic species.	**FUR** SR, O (GIS), PJ	There are high road densities within RCAs, which has led to a moderate loss of shade, large woody debris recruitment, and sediment buffering ability. Implementation of the Mill Creek – Council Mountain Project has reduced RCA road density. Livestock grazing has altered RCA vegetation in some locations within the analysis area. Flooding in 2010 caused extensive channel aggradation so that riparian areas downstream of Shingle Creek are predominantly large rock.
Disturbance Regime	Disturbance resulting from land management activities are negligible or temporary. Streamflow regimes are appropriate to the local geomorphology, potential vegetation and climatology resulting in appropriate high quality habitat and watershed complexity that provide refugia and rearing space for all life stages or multiple life-history forms. Ecological processes are within historical ranges.–Resiliency of habitat to recover from land management disturbances is high.	**FUR** SR, PJ	Fish habitat and riparian inventories indicate that ecological processes such as riparian succession and bank stability are moderately altered by management practices such as roads and livestock grazing (see WCIs above). Riparian areas were altered by the 1997 and 2010 floods. The riparian areas appear to be recovering as evidenced by vigorous reestablishment of a hardwood understory (Zurstadt personal observation; Giambra personal observation). There is considerable channel aggradation from flooding, road fill constitutes riparian and streambank system throughout, and repeated flooding shows impaired hydrologic function.

Agency/Unit	Payette NF, Council RD	HU Code and Name	
Fish Species Present	Bull trout	**Spatial Scale of this Matrix**	6th-level HU (20,878 acres)
(Anad. Sp.) Population:	None	**Subpopulation:**	None
Core Area (Bull Trout)	Weiser River	**Local Population**	Upper East Fork Weiser River
Management Actions	Landscape Restoration		
Pathways & Indicators	**Population and Environmental Baseline**		
	Desired Condition	**Baseline Condition**	**Discussion of Baseline and Current Condition**
Integration of Species and Habitat Conditions	Habitat quality and connectivity among local populations is high. The migratory form is present. Disturbance has not altered channel equilibrium. Fine sediments and other habitat characteristics influencing survival and growth are consistent with pristine habitat. The local population has the resilience to recover from short-term disturbance within one to two generations (5 to 10 years). The local population is fluctuating around an equilibrium or is growing.	**FUR** SR, O (GIS), PJ	The majority of WCIs are functioning at risk, and many are functioning at unacceptable risk including sediment, physical barriers and refugia. The local bull trout population is likely on a downward trend due to hybridization with brook trout and is not connected with other local populations in the core area (see Refugia WCI and other WCIs above).

a. Matrix checklist adapted from USFWS and NMFS 1998.
b. FA = Functioning Appropriately, FR = Functioning at Risk, UR = Functioning at Unacceptable Risk, NA = Not Applicable
Note: "☒" in baseline discussion indicates actual data were used as the primary source of baseline assessment, otherwise reflects a professional estimate of condition. PJ = Professional Judgment. SR = Survey. O=Other.
c. Evaluated against local criteria where appropriate and available.

Bull Trout Physical or Biological Features Crosswalk (Formerly Primary Constituent Elements Crosswalk)

In addition to the Forest Plan WCIs, the Physical or Biological Features (PBF's) as identified in the proposed designation of critical habitat for bull trout (Federal Register Vol. 75 No.9) were also assessed. The PBFs for bull trout are those habitat components that are essential for the primary biological needs of foraging, reproducing, rearing of young, dispersal, genetic exchange, or sheltering. Nelson (2011) documented the relationship of the Pathways/WCIs in the effects matrix to the PBFs of bull trout CH, as displayed in Table 14. Bull Trout DCH is found only in the East Fork Weiser River portion of the project area and is identified as spawning and rearing habitat.

Table 14. Forest Plan Watershed Condition Indicators and Bull Trout Critical Habitat Physical or Biological Features relationship.

PCE #	Present in Project Area	PBF Description	Corresponding Pathway Indicator (WCI)
#1	Yes*	Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.	Floodplain Connectivity, Change in Peak/Base Flows, Increase in Drainage Network, Riparian Conservation Areas, Chemical Contamination/Nutrients.
#2	Yes*	Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including, but not limited to permanent, partial, intermittent or seasonal barriers.	Life History Diversity and Isolation, Persistence and Genetic Integrity, Temperature, Chemical Contamination/Nutrients, Physical Barriers, Average Wetted Width/Maximum Depth Ratio in Scour Pools in a Stream Reach, Change in Peak/Base Flows, Refugia.
#3	Yes*	An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.	Growth and Survival, Life History Diversity and Isolation, Riparian Conservation Areas, Floodplain Connectivity.
#4	Yes*	Complex river, stream, lake, reservoir, and marine shoreline aquatic environments and processes with features such as large wood, side channels, pools, undercut banks and substrates, to provide a variety of depths, gradients, velocities, and structure.	Large Woody Debris, Pool Frequency and Quality, Large Pools, Off Channel Habitat, Refugia, Average Wetted Width/Maximum Depth Ratio in Scour Pools in a Stream Reach, Streambank Condition, Floodplain Connectivity, Riparian Conservation Areas.
#5	Yes*	Water temperatures ranging from 2 to 15 C (36 to 59 F), with adequate thermal refugia available for temperatures at the upper end of this range.	Temperature, Refugia, Average Wetted Width/Maximum Depth Ratio in Scour Pools in a Stream Reach, Streambank Condition, Change in Peak/Base Flows, Riparian Conservation Areas, Floodplain Connectivity.
#6	Yes*	In spawning and rearing areas, substrate of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence; and young of the year and juvenile survival. A minimal amount of fine sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system.	Sediment, Substrate Embeddedness, Intragravel Quality (Nelson and Burns 2005), Interstitial Sediment (Nelson and Burns 2005), Large Woody Debris, Pool Frequency and Quality.
#7	Yes*	A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, they minimize departures from a natural hydrograph.	Change in Peak/Base Flow, Increase in Drainage Network, Disturbance History, Disturbance Regime.
#8	Yes*	Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.	Sediment, Substrate Embeddedness, Intragravel Quality (Nelson and Burns 2005), Interstitial Sediment (Nelson and Burns 2005), Chemical Contamination/Nutrients, Change in Peak/Base Flows.
#9	Yes*	Sufficiently low levels of occurrence of nonnative predatory (e.g. lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.	Persistence and Genetic Integrity, Physical Barriers.

Effects Analysis

The effects analysis described below is limited to the East Fork Weiser River subwatershed. Specifically, the analysis covers the upper portion of the East Fork Weiser River because surveys have found bull trout

in that area. The discussion of effects is summarized in Table 15. WCIs are discussed in detail if there are potential mechanisms of effect. If there is no mechanism of effect, rationale is given in Table 15. The baseline and effects analysis were completed at the subwatershed scale and, as described in the Forest Plan (LRMP 2003, Appendix B, p. 5), effects were described at multiple scales for some WCIs, where appropriate. Because of the small scale of the activities, effects resulting from activities such as sediment/turbidity plumes and disruption of streambanks, were analyzed at the site specific scale. The temporal analyses of effects is described for the temporary (0-3 years), short-term (3-15 years) and long-term (>15 years) timeframes as described in the Forest Plan (III-4).

East Fork Weiser River

The only activities proposed within the East Fork Weiser River drainage are trail related improvements and all vegetation treatments and road work are restricted to the Middle Fork Weiser River. This trail work includes the formal designation and signage of the former non-motorized trail 202 as non-motorized 212 trail, hardening of the trail approaches and a trail reroute. The non-motorized 202 trail has existed for approximately 30 years and was maintained informally by a local group. The trail crosses the upper East Fork Weiser River and an unnamed tributary stream. The topography in the contributing area of the East Fork Weiser River crossing is flat and passes between two cattle exclosure fences (Figure 9 and Figure 10). The river in that location often runs dry in late summer. The topography near the trail crossing on the tributary stream is flat on one side (Figure 11) and slopes upward on the other side (Figure 12). The approaches to the streams would be hardened with rock to stabilize the streambanks and minimize sediment delivery to the streams from trail use.

Figure 9 and Figure 10. Proposed trail #212 crossing on the East Fork Weiser River.

Figure 11 and Figure 12. Proposed trail #212 crossing on an unnamed tributary to the East Fork Weiser River.

Approximately 530 feet of the non-motorized trail will be rerouted within the RCA of the tributary to the East Fork Weiser River. Currently, the trail within the RCA is very steep and does not disperse water properly resulting in rutting and erosion. Rerouting the trail and improved trail drainage would decrease erosion and incrementally decrease sediment delivery to the stream.

Middle Fork Weiser River

This effects analysis is limited to the activities in the East Fork Weiser River subwatershed because of the lack of bull trout presence or their critical habitat in the Middle Fork Weiser River. Significant effort has been made to determine if bull trout are present in the Middle Fork Weiser River drainage. Over 275 snorkel/electrofishing surveys and 30 eDNA samples collected throughout the drainage over the last 17 years were negative for bull trout. One snorkel survey in 1994 (below the Middle Fork Weiser River Falls) showed positive results for bull trout. Because of a weak positive eDNA sample in No Business Creek collected by a third party in 2016, 10 eDNA samples and five electrofishing surveys were completed during summer 2017. All were negative for bull trout. Since bull trout were not found in the 2017 sampling effort, RCA treatments will occur in the No Business Creek drainage. Based on the extensive sampling effort described above, bull trout are absent from the Middle Fork Weiser River drainage and there would be no impact to bull trout or their critical habitat.

Table 15. Potential and expected effects of the proposed action.

Agency/Unit	USDA Forest Service	HU Code and Name	East Fork Weiser River
Fish Species Present	Bull Trout	Spatial Scale of this Matrix	(Upper East Fork Weiser River)
Anadromous Species Pop.	NA	Subpopulation	None
Core Area (Bull Trout)	Weiser River	Local Population	East Fork Weiser River
Management Actions	**Middle Fork Weiser River Landscape Restoration Project**		

Pathways & Indicators	**Effects of the Management Action(s)**				
	Effects	**Expected Trend + positive, - negative, * negligible, none**			**Discussion of Effects**
		Temporary	**Short-term**	**Long-term**	
Local Population Character					
Local Population Size and Growth and Survival	M	-*	-*	-*	See discussion below for analysis of this WCI.
Life History Diversity and Isolation	N	None	None	None	The proposed activities would not affect migratory corridors or connectivity between local populations.
Persistence and Genetic Integrity	N	None	None	None	The addition of a trail to the system, hardening the approaches to two stream crossings and rerouting a trail does not have the potential to affect the persistence or the genetics of bull trout.
Water Quality					
Temperature (bull trout)	N	None	None	None	There would be no effect to stream shading because the trail would be designed to avoid cutting trees, although some brush may need to be cut.
Sediment/Turbidity	M	-*	+*	+*	See discussion below for analysis of this WCI.
Chemical Contamination and/or Nutrients	N	None	None	None	The potential for chemicals to enter the stream is discountable because work would be completed by hand.
Habitat Access					
Physical Barriers	N	None	None	None	Hardening the trail approaches to the streams would not change physical barriers and would continue to provide passage.
Habitat Elements					
Large Woody Debris	N	None	None	None	There would be no effect to LWD because the trail reroute would be designed to avoid cutting large trees.
Pool Frequency and Quality	N	None	None	None	There would be no effect to pool frequency and quality because no trees would be cut and sediment delivery is expected to be negligible.
Large Pools and Pool Quality	N	None	None	None	There would be no effect to large pools because no trees would be cut and sediment delivery is expected to be negligible.
Off-Channel Habitat	N	None	None	None	There would be no effect to off-channel habitat because the proposed activities would not affect the number of low energy areas in the streams.
Refugia	N	None	None	None	The proposed activities would not change the connectivity between local populations.

Channel Condition and Dynamics					
Width/depth ratio	M	-*	+*	+*	See discussion below for analysis of this WCI.
Streambank Condition	M	-*	+*	+*	See discussion below for analysis of this WCI.
Floodplain connectivity	N	None	None	None	Since the sediment, streambank condition, and width to depth ratio WCIs have insignificant impacts, trail work is not expected to impact the stream connectivity to floodplains.
Flow/Hydrology					
Change in Peak/Base Flows	N	None	None	None	The proposed activities do not have the potential to affect the watershed hydrograph because no trees would be cut and the magnitude of the work is small relative to the subwatershed.
Drainage Network Increase	M	+*	+*	+*	See discussion below for analysis of this WCI.
Watershed Conditions					
Road Density and Location	N	None	None	None	The proposed action would not change the road system.
Disturbance History	N	None	None	None	The proposed action would not affect ECA because no trees would be cut.
Riparian Conservation Areas	M	-*	+*	+*	See discussion below for analysis of this WCI.
Disturbance Regime	N	None	None	None	The proposed action would not affect the subwatershed function and resiliency because no trees would be cut and the magnitude of the trail work is small relative to the subwatershed.
Integration of Species and Habitat Conditions	M	-*	+*	+*	See discussion below for analysis of this WCI.

Direct and Indirect Effects

Local Population Size and Growth and Survival WCIs

East Fork Weiser River Subwatershed (upper East Fork Weiser River): Trail work would be completed after spring peak flows during low flows and prior to August 15, which is the start of the bull trout spawning period. The work would be completed by hand and is expected to occur primarily outside the wetted stream width. Instream work would be minimized to the extent possible. Erosion control and sediment plume mitigation measures would minimize sediment delivery to the stream, however, some sediment delivery is likely unavoidable.

A natural waterfall is located approximately 0.16 mile (844 feet) downstream from the trail crossing (Figure 13). The natural waterfall is approximately five feet high and is likely a fish passage barrier to some life stages of fish, particularly in low flows. The waterfall has not been verified as a fish passage barrier however the closest observation of a bull trout to the trail crossings was immediately below the waterfall (T. Giambra, personal observation, 2014). Bull trout have not been observed above the waterfall. An electrofishing survey completed in 2014 did not find fish in either the mainstem or the tributary above the waterfall to the trail crossings. An eDNA sample collected above the waterfall in 2015 did not detect bull trout or any other fish species (Carim *et al.* 2015, unpublished data; USDA Forest Service Fisheries Information Database 2015, unpublished data). Effects from hardening the trail approaches may affect but are not likely to adversely affect bull trout and critical habitat because both an electrofishing survey and an eDNA sample did not find bull trout in that section of river. Given bull trout have not been documented above the potential barrier, the closest observation of bull trout to the crossing is 0.16 miles downstream, all work will be completed prior to August 15th, and that there is minimal expected sediment delivery (especially over 800 feet downstream where bull trout presence is possible), there will be no direct impacts to bull trout.

Figure 13. Natural waterfall downstream from the proposed trail #212 crossing on the East Fork Weiser River.

Sediment/Turbidity and Substrate Embeddedness WCIs

Vegetation removal and ground disturbance increase the erodibility of forest soils and, consequently, increase the amount of soil available for transport and the likelihood of transport downslope and into streams. Once in streams, fine sediment (particles smaller than 6.3 millimeters in diameter) may be transported farther downstream or deposited in slow water areas and behind obstructions, locally altering

fish habitat conditions. In particular, fine sediment has been shown to fill the interstitial spaces among larger streambed particles, which can eliminate the living space for various microorganisms, aquatic macroinvertebrates, and juvenile fish. Potential problems associated with excessive sediment have been recognized in a variety of salmonid species and at all life stages, from possible suffocation and entrapment of incubating embryos (Irving and Bjornn 1984; Tagart 1984); through loss of summer rearing and overwintering cover for juveniles (Hillman *et al.* 1987; Griffith and Smith 1993); to reduced availability of invertebrate food for resident adults (Bjornn *et al.* 1977; Alexander and Hansen 1986).

Hardening the approaches to an existing stream crossing on the East Fork Weiser River and one crossing on a tributary stream may deliver a small amount of sediment to the stream from ground disturbance near the channels when rocks are placed in the ground in the temporary timeframe, but it's not expected 800 feet downstream where bull trout are present (below the barrier). The work would be completed by hand during low flows prior to August 15 to avoid any potential impacts during the bull trout spawning period. In-stream work would be minimized to the extent possible. Erosion control and sediment plume mitigation measures would minimize sediment delivery to the stream, however, some sediment delivery is likely unavoidable. The amount of sediment delivered to the stream from hardening the approaches is not expected to be measurable at either the local or the subwatershed scale with implementation of PDFs and erosion control measures, such as straw wattles, and the relatively small scope of the activity. The trail reroute would be expected to incrementally decrease sediment delivery to the East Fork Weiser River tributary stream by directing water off the trail. The sediment/turbidity WCI would be maintained in all three timeframes at both the site-specific and subwatershed scales.

Width to Depth Ratio WCI

This indicator would be maintained. Hardening the approaches of the trail is expected to maintain the trail integrity and would reduce the potential for widening of the channel at the crossings. This would maintain width to depth ratio in all three timeframes.

Streambank Condition WCI

Streambank condition would be maintained. There would be some disturbance to the streambanks in the immediate vicinity of the crossings during installation of the hardened approaches in the temporary timeframe. However, in in all three timeframes, hardening the approaches at the crossings is expected to reduce disturbance to the streambanks from trail use.

Drainage Network Increase WCI

There would be a negligible improvement to the drainage network from the trail reroute. Currently, the location of the trail is resulting in erosion and sediment delivery to an unnamed tributary to the East Fork Weiser River. The trail reroute would be designed to direct water off the trail to minimize erosion. This would incrementally improve the drainage network and maintain this WCI at both the site-specific and subwatershed scale.

Riparian Conservation Areas WCI

RCAs would be maintained in all timeframes. Temporary, localized effects to streambank condition, sediment/turbidity and width to depth ratio are expected from construction of the hardened approaches. However, these WCIs and the drainage network increase would be incrementally improved in the short- and long-term timeframes. Hardening the approaches is expected to minimize streambank disturbance from trail use, reduce sediment delivery to the stream and maintain the width to depth ratio. The trail reroute is expected to reduce sediment delivery to the stream by improving water drainage. The trail reroute would not affect stream shading or LWD because it would be designed to avoid cutting large trees although some brush and small trees may need to be cut.

Integration of Habitat and Species WCI

This WCI would be maintained at both the site-specific and subwatershed scales. No direct effects to bull trout are expected because they have not been found in the vicinity of the proposed activities. Temporary effects to sediment, streambank condition and RCAs are expected. Negligible improvements to habitat in

the short- and long-term timeframes are expected from hardening approaches of the trail crossings and rerouting the trail in the RCA.

Bull Trout PBF Effects
Table 14 identifies a crosswalk of the Forest Plan WCIs and bull trout PBFs. Many of the PBFs relate to multiple WCIs. The trail currently exists and is being used by non-motorized users.

Potential impacts from project activities on the PBFs of bull trout critical habitat are sediment/substrate embeddedness, chemical contaminants/nutrients, streambank stability, width to depth ratio, drainage network increase and RCAs (related PBFs 1, 2, 3, 4, 5, 6, 7 & 8). The other PBFs will not be impacted from the project. These potential impacts could affect the quality of critical habitat. However, because impacts are considered insignificant and would not be meaningfully detected, measured, or evaluated, the effects to critical habitat will also be discountable/insignificant.

There will be no effects to critical habitat in the Middle Fork Weiser River drainage because none is designated.

Cumulative Effects
Cumulative effects (50 CFR 402.02) are effects of state or private activities that are reasonably certain to occur in the watershed where the Federal action occurs.

No state land occurs within the analysis area. Private land occurs at the mouth of the East Fork Weiser River approximately 14 miles downstream from the project area. Activities on private land could impact any of the WCIs. However, potential effects from the proposed action are not expected to overlap in space with potential activities on private land. Therefore, there would be no cumulative effects from implementation of the proposed action.

Determination
Determination of the Middle Fork Weiser River Landscape Restoration Project on Columbia River bull trout (including critical habitat):

☐ No Effect
☒ May Affect, Not Likely to Adversely Affect
☐ May Affect, Likely to Adversely Affect

Rationale

- The activities in the Middle Fork Weiser River drainage cannot impact bull trout or their critical habitat because bull trout are absent and critical habitat doesn't exist.
- Direct impacts to individuals or redds will not occur because the EFWR at the crossing is not fish bearing. The closest they are documented is below a natural waterfall approximately 0.16 mile (844 feet) downstream from the trail. Hardening the approaches and designating the trail will not generate sediment that could be transported downstream into spawning habitat.
- Effects to relevant WCIs including sediment, substrate embeddedness, width to depth ratio, drainage network increase and RCAs are expected to be maintained in all three timeframes at both the site-specific and subwatershed scale with only discountable/insignificant negative impacts.
- There would be no effect to LWD, physical barriers or temperature.
- Work would occur during low flows prior to August 15 (which is considered to be the start of the bull trout spawning period).
- Work would be completed by hand. Sediment delivery to the stream would be minimized to the extent possible.
- The East Fork Weiser River critical habitat is often dry or nearly dry in the summer at the trail crossing.

- The trail and crossings already exist and only the approaches to the crossings would be hardened.
- Ten eDNA samples and five electrofishing surveys completed in 2017 were all negative for bull trout in No Business Creek.

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APPENDIX A Project Design Features/Mitigations

The PDFs/mitigation measures listed in Tables A-1 through A-10 are practices the IDT developed during this Project analysis to address site-specific environmental concerns and to meet Forest Plan Standards and Guidelines. Each feature or measure includes a description, the Objective, applicable Forest Plan Standard/Guideline (USDA Forest Service 2003a), the enforcement mechanism and person(s) responsible for enforcement, and an effectiveness rating with the basis for that rating.

The NEPA regulations (40 CFR 1508.20 Mitigation) state the following:

"Mitigation" includes

Avoiding the impact altogether by not taking a certain action or parts of an action.

Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

Compensating for the impact by replacing or providing substitute resources or environments.

Project design features were created to use design criteria to prevent the need of a mitigation measure.

Project design feature/mitigation effectiveness is rated as follows for this Project:

High—Highly effective (estimated at greater than 90%) at meeting the objective, and one or more of the following types of documentation or rationale is available:

- Research or literature
- Administrative studies
- Experience: professional judgment of an expert
- Fact: evident by logic or reason

Moderate – Moderately effective (estimated at 60% to 90%), and its effectiveness is supported either by evidence or logic. Implementation of this PDF or mitigation measure needs to be monitored, and it may be modified if needed to achieve its objective.

Low – Somewhat effective (estimated at less than 60%), but its effectiveness is not supported by substantial evidence or professional judgment indicates limited success in implementation or meeting objectives. Implementation of this PDF or mitigation measure needs to be monitored, and it may be modified if necessary to achieve its objective.

Appendix A. Project design features and mitigation measures.

Table A-1. Project design features and mitigation measures for wildlife.

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
	Wildlife				
1	Prior to any ground-disturbing activity, including but not limited to the construction of log landings, vehicle turnouts or parking areas, skid trails, or road construction and maintenance, road decommissioning and obliteration, and prescribed burning, the Wildlife Biologist or designated Wildlife Staff should conduct on-site surveys at least three times during a 7-day period in potential northern Idaho ground squirrel (NIDGS) (*Urocitellus brunneus*) habitat to determine the presence of NIDGS. Surveys would be conducted to identify the presence of NIDGS in or within harvest units and prescribed fire areas. The Wildlife Biologist would determine potential habitat areas to be surveyed based on GIS maps, aerial photos, and professional expertise. If occupied NIDGS sites are discovered, additional measures described below would be implemented to minimize potential effects: Mechanical thinning operations, skidding, decking, slash piling, and prescribed burning are prohibited in occupied NIDGS sites without approval by the Wildlife Biologist. If necessary, project activities may be shifted to a time period outside the NIDGS above-ground activity period (April 1 to August 15). If project activities are shifted to the fall season, wildlife staff would identify NIDGS dens with pin flags and coordinate all activities in these known sites. Fall activities would be allowed only if soil moisture levels are dry enough to prevent soil damage from machinery, as determined by the Sale Administrator, Soil Scientist, Wildlife Biologist, and Timber Management Assistant. If wet soil conditions prevent project activities in fall, the activities may be shifted to winter. This would require at least 18 inches of firm snow and/or 4 inches of frozen soil prior to activity approval by the Sale Administrator, Wildlife Biologist, and Timber Management Assistant. If project activities at any NIDGS site cannot be appropriately mitigated, that project unit and the associated project activities may be dropped from the timber sale. In harvest units where NIDGS are found, ground-disturbing activities should occur in the time period from September 1 through March 15.	Provide protection to Federally listed NIDGS, feeding sites, seasonal burrows, late summer estivation dens, and winter hibernacula.	HIGH: research, literature, Forest Plan, agency direction, logic	TEST01 TEST02 TEST03 TEST06 TEST12 TEST13 TEGU01 TEGU02 TEGU06 WIGU01	Timber Sale Contract, Wildlife Biologist, Soil Scientist, Timber Management Assistant, Sale Administrator, Burn Plan, Fire Management Officer

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Wildlife					
2	If occupied NIDGS sites are found adjacent to haul routes on National Forest System (NFS) lands, a speed limit of 15 mph would be recommended where determined necessary by the Wildlife Biologist. Monitoring would also be required. If speed limits or other protections are needed on county or State roads, the Forest Service would work with the appropriate agencies to resolve the issue.	Provide protection to Federally listed NIDGS from vehicle-caused mortality.	MODERATE: research, literature, Forest Plan, agency direction, logic	TEST01 TEST02 TEST03 TEST06 TEST12 TEGU01 TEGU02 TEGU06 WIGU01 WIGU04	Timber Sale Contract, Wildlife Biologist, Timber Management Assistant, Sale Administrator, Burn Plan, Fire Management Officer
3	In harvest units with known NIDGS sites, slash piles created from harvest activities must be removed from landings not later than March 15 of the year immediately following the harvest year in each of these units.	Provide protection to Federally listed NIDGS from direct mortality from slash piles, machinery, vehicles, or slash burns.	MODERATE: research, literature, Forest Plan, agency direction, logic	TEST01 TEST02 TEST03 TEST06 TEST12 TEGU01 TEGU02 TEGU06 WIGU01 WIGU04	Timber Sale Contract, Wildlife Biologist, Timber Management Assistant, Sale Administrator, Burn Plan, Fire Management Officer

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Wildlife					
4	Known northern goshawk nests would be protected within a 30-acre forested nest stand as determined by the Wildlife Biologist in coordination with the Sale Administrator and the Timber Management Assistant. All activities within these nest stands would be restricted to those approved by the Wildlife Biologist and coordinated with the Sale Administrator and the Timber Management Assistant. During operations, if a new northern goshawk nest is located, onsite activities would be halted until a survey by wildlife staff can determine if the nest is active. A 30-acre forested nest stand would be identified, as above. If the nest is active, harvest activities in that 30 acres would be halted until the end of the nesting season (March 1 to Sept. 30). Harvest activities may resume earlier than Sept. 30 if the Wildlife Biologist determines that the birds are no longer present. All identified northern goshawk nest stands would have a post-fledgling area of at least 600 acres and a foraging area of at least 6,000 acres identified by the Wildlife Biologist in consultation with the Timber Management Assistant. Within each post-fledgling area, five other nest stands would be identified by the Wildlife Biologist. These nest stands would have the same restrictions on human activities as noted above. The post-fledgling areas and foraging areas may have other activity restrictions applied from March 1 to Sept. 30, depending on site-specific information, and as determined by the Wildlife Biologist in coordination with the Sale Administrator and Timber Management Assistant. Refer to the Project record for nest site locations and associated units.	Provide protection to northern goshawk, nests, PFAs, and foraging areas.	HIGH: research, literature, Forest Plan, agency direction, logic	WIST02 WIST03 WIST04 WIST05 WIGU01 WIGU05 WIGU06 WIGU07 Forest Service General Technical Reports RM-217 and PNW-GTR-733 as required by the Forest Plan	Timber Sale Contract, Wildlife Biologist, Timber Management Assistant, Sale Administrator, Burn Plan, Fire Management Officer

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Wildlife					
5	Any temporary roads or closed NFS roads physically opened for access to project activities that would remain open during elk rifle season would be blocked with a temporary gate or other physical closure during use and until once again permanently closed or obliterated following management activities.	Minimize negative effects on wildlife; ensure contractors and employees do not have unfair advantage during hunting seasons; minimize damage to native surface roads that could result in increased erosion and sediment delivery.	HIGH: research, literature, Forest Plan, agency direction, logic	TEST01 WIST02 WIST03 WIGU01 WIGU02 WIGU05 WIGU06 WIGU08 WIGU13 SWST04	Timber Sale Contract, Wildlife Biologist, Sale Administrator, Engineering Contract Administrator
6	In areas closed to public motorized access, prohibit contractors and their employees from access with motorized vehicles for purposes other than implementing contract or other authorized FS activities.	Minimize negative effects on wildlife; ensure contractors and employees do not have unfair advantage during hunting seasons.	HIGH: research, literature, Forest Plan, agency direction, logic	TEST01 WIST02 WIST03 WIGU01 WIGU02 WIGU05 WIGU06 WIGU08 WIGU13	Timber Sale Contract, Wildlife Biologist, Sale Administrator, Burn Plan, Fire Management Officer

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Wildlife					
7	Prior to any ground-disturbing activity, including, but not limited to, the construction of log landings, vehicle turnouts or parking areas, skid trails, road construction or maintenance, and prescribed fire, the Wildlife Biologist, or designated Wildlife Staff, must conduct onsite surveys to identify threatened, endangered, proposed, or candidate species; Management Indicator Species (MIS); or Sensitive species presence. In particular, spring surveys would be used to identify wildlife reproduction sites, such as elk calving, deer fawning, mammal denning, and bird nesting. Project activities may be altered to protect the wildlife species, as practicable, using measures approved by the Wildlife Biologist, following coordination with the Timber Management Assistant, Fire Management Officer, and Sale Administrator. Mitigate management actions within known nesting or denning sites of MIS or Sensitive Species if those actions would disrupt the reproductive success of those sites during the nesting or denning period. Timing restrictions may apply for habitat protections required by the Migratory Bird Treaty Act, as directed by the Wildlife Biologist.	Minimize negative effects on wildlife, especially during reproductive periods.	MODERATE: Forest Plan, agency direction, logic	TEST06 TEST12 TEST13 WIST03	Timber Sale Contract, Wildlife Biologist, Sale Administrator, Burn Plan, Fire Management Officer
8	Provide a radius of two elk sight distances (total of 400 feet) of vegetation (where available and practicable) to protect mineral licks and elk wallows. No harvest or prescribed burning would be allowed in these sites, without approval by the Wildlife Biologist. Exact boundaries of each protected site would be identified by the Wildlife Biologist, following coordination with the Timber Management Assistant, Fire Management Officer, and Sale Administrator.	Minimize negative effects on wildlife, address big game vulnerability to hunting mortality, and to provide adequate habitat security.	HIGH: research, literature, Forest Plan, agency direction, logic	WIGU13	Timber Sale Contract, Wildlife Biologist, Sale Administrator, Burn Plan, Fire Management Officer
9	During timber harvest, retain existing snags with the following stipulations: Timber contract provision would specify to leave standing dead trees. Snags would not be cut without permission of the Sale Administrator unless there is a safety or emergency situation.	Ensure habitat for snag-dependent species.	MODERATE: research, literature, administrative studies, logic	WIGU01	Timber Sale Layout, Contract, Administrator, Wildlife Biologist

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
	Wildlife				
10	All activities within great grey owl nesting and rearing sites would be restricted to those approved by the Wildlife Biologist and coordinated with the Sale Administrator/TMA. A site specific silvicultural prescription will be developed by the Wildlife biologist in coordination with the District Silviculturalist, for forested stands where known great gray owl nesting and rearing sites existed. These forested stands are generally located in PVGs 6, 9, and 10 that are immediately adjacent to meadows (including wet meadows, dry meadows or other nonforested openings). Habitat requirements for the great gray owl considered within the prescription include but are not limited to timing restrictions, DWD, number of snags per acre, snag size class, conifer encroachment into opening, condition of forested stand, forest stand structure, tree species composition, and forest size class. Prior to any ground-disturbing activity, including, but not limited to, the construction of log landings, vehicle turnouts or parking areas, skid trails, road construction or maintenance, and prescribed fire, the Wildlife Biologist, or designated Wildlife Staff, must conduct onsite surveys to identify whether the great grey owl nest stand is active. During operations, if a new great grey owl nest is located, onsite activities would be halted until a survey by Wildlife Staff can determine if the nest is active.	Minimize negative effects on wildlife, especially during reproductive periods.	HIGH: research, literature, Forest Plan, agency direction, logic	TEST12 WIGO01 WIGO02 WIGO03 WIGO04 WIOB01 WIOB03 WIOB07 WIOB09 WIST01 WIST02 WIST03 WIST04 WIGU01 WIGU05	Timber Sale Contract, Wildlife Biologist, Sale Administrator, Burn Plan, Fire Management Officer

Table A-2. Project design features and mitigation measures for botanical resources.

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Botanical Resources					
11	Prior to any ground-disturbing activity, including but not limited to, the construction of log landings, biomass storage, vehicle turnouts or parking areas, skid trails, road construction or maintenance, and prescribed fire, the Forest Botanist or designated staff must conduct on-site surveys where rare plant habitat occurs to identify Sensitive plant populations. Project activities may be altered to protect the rare species, using measures approved by the Forest Botanist and coordinated with the Timber Management Assistant, Fire Management Officer, and Sale Administrator.	Maintain or restore occupied rare plant habitat.	MODERATE: Forest Plan, agency direction, logic	TEST06 TEST12 TEST13 WIST03, BTST01 BTGU01	Timber Sale Contract, Wildlife Biologist, Sale Administrator, Burn Plan, Fire Management Officer, Forest Botanist
12	All existing rare plant populations within the activity area would be designated for protection by a Botanical Specialist prior to project implementation.	Avoid risk to rare plant sites.	HIGH: logic	BTGU01	Forest Botanist

Table A-3. Project design features and mitigation measures for Soil, Water, Riparian and Aquatic Resources (SWRA).

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
13	The Project IDT has selected Option 2, as directed in the Forest Plan, Appendix B (USDA Forest Service 2003a), in the step down process for Riparian Conservation Areas (RCAs). Option 2 uses two site-potential tree heights (240 feet) for perennial streams and intermittent streams providing fish habitat. One site-potential tree height (120 feet) would be applied to intermittent streams not providing seasonal fish habitat, springs, ponds, lakes, and wetlands. A 30-foot RCA distance would be applied to seeps. Any previously unmapped RCA discovered during implementation would be delineated. Limited equipment use and harvest would be allowed in the outer half of RCAs in stands identified and approved for RCA thinning as described in the RCA Thinning Guidelines (Appendix 5, FEIS). Project design features would still apply to minimize ground disturbance. No mechanized equipment, new skid trails, temporary roads, or landings would be allowed within RCAs unless evaluated and approved by the Fisheries Biologist or Hydrologist. The Hydrologist, Soil Scientist and /or Fisheries Biologist would provide required mitigations to maintain watershed condition indicators, including but not limited to chipping the landing material, rehabilitating skid trails and landings within the same year of use, and leaving trees cut during landing construction on the site as CWD. The RCA treatment prescriptions would be developed by the Silviculturist, Fisheries Biologist, and Hydrologist to ensure riparian functions and watershed condition indicators are maintained. The Wildlife Biologist would also provide input for wet meadow treatments. Site specific wildlife (MBTA) timing restrictions may also apply (April 15 – July 30). Any RCAs discovered during layout may be considered for treatment if they meet the intent of RCA treatments, maximum RCA treatment acres analyzed or would not be surpassed, and all project design features and restrictions can be adhered to.	Maintain riparian function.	HIGH: experience, logic, Belt et al. 1992, McDade et al. 1990, Gregory et al. 1991	SWST01 SWST04 SWST10	Sale Administrator, Timber Sale Contract Provision, Fisheries Biologist or Hydrologist

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
14	Prohibit yarding of logs across perennial and intermittent streams unless fully suspended above the stream channel. Minimize skyline corridors and require full suspension within RCAs (including landslides and landslide-prone areas). Sale Administrator would coordinate with Fisheries Biologist and/or Hydrologist prior to identifying skyline corridors where felling of trees would be necessary within RCAs. These trees would be left in place outside of harvest units.	Maintain channel integrity.	HIGH: logic, experience	SWST10	Design and Layout, Contract, Administrator
15	No storage of fuel or refueling within RCAs unless approved by a Fisheries Biologist and/or Hydrologist. Unattended equipment should not be parked in RCAs. Timber sale contract provisions (as well as other contracts) shall require a spill response plan be included in the contract to meet state Best Management Practices (BMPs).	Minimize potential for fuel spill in stream.	HIGH: logic	SWST01 SWST04 SWST11	Sale Administrator, Harvest Inspector, Timber Sale Contract Provision, Fisheries Biologist or Hydrologist
16	No active ignition of prescribed fire in inner RCAs unless approved by Fisheries Biologist and/or Hydrologist. Instances where active ignition may occur could include areas that would minimize severity and intensity and where active ignition could take the place of fire line construction. Noncommercial thinning treatments (limbing and noncommercial understory thinning by hand) in outer RCAs would only occur in areas where prescribed fire is expected to be implemented and would not occur within riparian vegetation. No ladder fuel treatment would occur within the inner RCA unless approved by the Fisheries Biologist and/or Hydrologist. Slash produced by these treatments would be lopped and scattered or hand piled as directed by the Fisheries Biologist, Soil Scientist and/or Hydrologist. Site specific wildlife (MBTA) timing restrictions may apply (April 15 – July 30). No construction of mechanical fireline shall occur in RCAs, and handline should be minimized. Promptly reclaim all fireline following burn activities. Reclamation activities shall include, but are not limited to, placing waterbars, pulling material removed (including mineral soil) back onto fireline, and pulling slash as available onto the surface. Also see project design feature (PDF) #39. All burn plans and associated treatments shall be annually reviewed by district resource specialists. Additional site-specific concerns regarding prescribed fire treatments would be addressed at that time.	Minimize loss of shade to perennial stream channels.	HIGH: experience	SWST01 SWST04 SWST07 FMGU06	Fuels Specialist, Burn Boss, Fisheries Biologist, or Hydrologist, Contracting Officer's Representative, Soil Scientist

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
17	When constructing or reconstructing roads within RCAs or installing culverts on intermittent or ephemeral channels use wood straw, jute matting, or other erosion-control measures as deemed necessary by the Fisheries Biologist or Hydrologist. Add gravel or surface 100 feet of new or reconstructed roads on either side of intermittent and perennial streams where necessary.	Minimize sediment delivery to channel.	HIGH: experience, logic, Burroughs and King 1989, Foltz 2007	SWST01 SWST04	Timber Sale Contract, Sale Administrator, Harvest Inspector Fisheries Biologist, Hydrologist, Engineering Representative
18	Roads identified for obliteration, including unauthorized roads used as temporary roads as well as those being obliterated for soil and water restoration, would be decompacted to the depth of compaction, recontoured, blended with the surrounding terrain, seeded with native seed (where need is identified), and provided with a minimum of 50% to maximum of 80% ground cover (vegetation transplants at a rate of 15 per 100 linear feet, natural mulch, coarse woody debris (CWD), and agricultural or wood straw, in that order of preference) to an extent deemed necessary by a Fisheries Biologist and/or Hydrologist. In addition to the above treatment, stream crossings would receive planted vegetation plugs and additional ground cover to an extent deemed necessary by a Fisheries Biologist and/or Hydrologist, to reduce erosion, facilitate recovery of soil biological function and stabilize streambanks. Retained travelway would be effectively closed at entrance to prevent unauthorized use. Winterize temporary roads that would be retained until reforestation and biomass activities are completed. Install drainage features to control runoff and reduce erosion; *these features should be inspected annually after each winter to ensure they are still effective for the life of the road (less than 3 years).* Newly constructed temporary roads would not require vegetation transplants. Temporary roads would be fully obliterated within 3 years of harvest unless otherwise agreed to in writing.	Minimize sediment delivery to channel and rehabilitate riparian area; reduce levels of total soil resource commitment.	HIGH: experience, logic, Burroughs and King 1989, Foltz 2007; experience, local monitoring	SWST01 SWST04 SWST03(b) SWST08	For Temporary Roads–Sale Administrator and/or Harvest Inspector For All Roads–Timber Sale Contract Provisions, Hydrologist, Soil Scientist, Fisheries Biologist, Wildlife Biologist

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
19	If snow conditions allow, use a snow bridge as an alternative to road construction and culvert placement. Where a temporary culvert is needed in a temporary road, it would be removed within the same field season unless approved by the Fisheries Biologist and/or Hydrologist.	Minimize sediment delivery to channel and rehabilitate riparian area; reduce levels of total soil resource commitment.	HIGH: experience, logic, Burroughs and King 1989, Foltz 2007, experience, local monitoring	SWST01 SWST04 SWST03(b) SWST08	Sale Administrator, Harvest Inspector Timber Sale Contract Provisions
20	Closed Maintenance Level (ML) 1 roads temporarily opened for vegetation management that are proposed to return to ML 1 closure would have: entrance recontoured, crossings removed, cut and fill recontoured at stream crossings, vegetation transplants at crossings, drainage features installed and scarifying and reseeding to promote revegetation when vegetation management actions are completed. The PDFs for culvert replacements would be applied to culvert installations and post-treatment culvert removal on re-constructed closed ML 1 roads (described above and in the Project Biological Assessment, located in the Project record). Roads not identified for long-term closure that may be needed for administrative use in the more immediate future would be closed by installing water bars as needed, where needed, and physically closing to prohibit motorized use.	Reduce long term sediment production.	HIGH: logic, experience, local monitoring, Foltz and Maillard 2003	SWST01 SWST04 SWST08	Fisheries Biologist, Soil Scientist, Hydrologist, Engineering Representative
21	All new permanent road construction and reconstruction where cuts and fills are disturbed would require placing slash windrows and/or erosion control measures (e.g., hydroseeding and mulching) where erosion is identified as a concern, such as within contributing areas at all perennial and intermittent crossings and exposed steep cutslopes. Add gravel or surface 100 feet on either side of intermittent and perennial channels on all new construction except where it is determined that existing shallow, rocky soils would provide sufficient protection from erosion. Spot rocking and armored dips would also be incorporated into road designs by project engineers.	Reduce long term sediment production.	HIGH: experience, logic, Belt et al. 1992	SWST01 SWST04 SWST08	Engineer, Hydrologist, Soil Scientist, Fisheries Biologist

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
22	Install culvert or other crossing structures on natural channels after spring peak flows; the Fisheries Biologist or Hydrologist would determine when dewatering the channel is necessary. For permanent culverts, incorporate elements of the natural channel, such as substrate size and gradient, when reconstructing the channel where fish habitat or potential fish habitat exists. The following permits shall be acquired prior to project implementation: Variance letter to exceed turbidity levels from Idaho Department of Environmental Quality, Stream Channel Alternation Permit from Idaho Department of Water Resources. In addition, a 404 Dredge and Fill Permit would be obtained from the United States Army Corps of Engineers.	Minimize effects on fish and fish habitat.	HIGH: logic, experience	NA	Fisheries Biologist Hydrologist, Engineering Representative
23	Stream channels shall be dewatered prior to in-stream work with heavy machinery. The stream would likely be diverted using a temporary corrugated plastic or metal pipe and a temporary cofferdam. If water drafting is necessary, screen opening size would be the standard 3/32-inch or smaller (as required by the Forest Plan; USDA Forest Service 2003a). The culvert design team would specify stockpiling and staging areas; access to the site would be via an established roadway. Some trees may have to be felled within the RCA to complete construction; however, the number of trees cut shall be minimized to the extent possible and felled trees will be left intact as CWD/Large Woody Debris (LWD).	Minimize effects on fish and fish habitat.	HIGH: logic, experience	NA	Fisheries Biologist Contract Administrator, Hydrologist, Engineering Representative
24	Block nets shall be installed, and fish observed within the project area would be cleared from the area using dipping, seining, and/or electrofishing methods. Fish would be transported to an unaffected portion of the creek above the in-stream work and released. Block nets would be removed after fish removal.	Minimize effects on fish and fish habitat.	HIGH: logic, experience	NA	Fisheries Biologist, Engineering Representative, Contract Administrator
25	During culvert installation activities on natural channels, a spill-containment kit would be available on-site that would accommodate potential spills from the equipment used during implementation. No fuels would be stored in RCAs unless there is no other alternative. Refueling or servicing of vehicles or equipment would not take place in RCAs. All equipment would be in good repair and free of leakage of lubricant, fuels, coolants, and hydraulic fluid. In-stream work with heavy machinery would be minimized to the extent possible. Detectable sheens shall be reported to the Environmental Protection Agency, and any spills over 25 gallons shall be reported to Idaho Department of Environmental Quality.	Minimize effects on water quality.	HIGH: logic, experience	SWST01 SWST04 SWST11	Contract Administrator, Hydrologist, Fisheries Biologist, Engineering Representative

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
26	During culvert installation and construction of new trail crossings, Sedimats or similar containment system would be placed within the natural channel to collect released fine sediments and minimize effects on downstream segments. These would be removed from the channel at the conclusion of Project activities. Sediment-control measures may also include erosion-control matting, mulch, straw wattles, straw bales, and/or slash. The culvert/bridge installation and associated activities would be conducted in a manner that would minimize the potential for input of additional fine sediment or effecting riparian habitat; the Forest Service shall design a site-specific erosion-control plan that suits the contracted activity. For Aquatic Organism Passage (AOP) culverts, stream simulation material would be washed (i.e., sprayed with water using pump and hose setup), to set fine material prior to reintroduction of flow. Flow would slowly be reintroduced into the streambed to minimize loss of downstream surface water and to minimize turbidity.	Minimize effects on water quality.	HIGH: logic, experience	FRST05	Contract Administrator, Hydrologist, Fisheries Biologist, Soil Scientist, Engineering Representative
27	Culvert replacement/removal site rehabilitation may include seeding and mulching disturbed areas and planting with native vegetation. Straw wattles may also be used to stabilize the road fill. All project-related materials and waste shall be removed from the site when construction is complete.	Reduce erosion.	HIGH: logic, experience	NA	Contract Administrator, Hydrologist, Fisheries Biologist, Engineering Representative
28	During installation of the vault toilets, if located in RCAs, follow programmatic consultation.	Reduce erosion.	HIGH: logic, experience	NA	Contract Administrator, Hydrologist, Fisheries Biologist, Engineering Representative
29	Locate and approve water drafting sites prior to use. The project Fisheries Biologist and/or Hydrologist must approve the sites. No vehicles allowed in stream courses at any time for the purpose of withdrawing water. Drafting hoses would be required to be fitted with screens with a 3/32-inch mesh.	Minimize impacts to stream channels, RCAs, and fisheries.	HIGH: logic, experience	SWST01	Contract Administrator, Engineering Representative, Fisheries Biologist, Hydrologist

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
30	New trail crossings (including fords and bridges) associated with the trail reroutes would be designed to allow passage of all aquatic organisms and shall comply with SWST08. Armor potential erosion sites (e.g., trail approaches) with appropriate rock or other erosion-control measure. Select the site for the crossing to minimize effects on aquatic resources. Follow bridge/culvert project design features outlined above if the crossing would involve a bridge.	Allow passage of and minimize effects on aquatic organisms.	HIGH: logic, experience	SWST08	Fisheries Biologist, Hydrologist, Recreation Specialist, Contract Administrator
31	Utilize all applicable BMPs and Soil Water Conservation Practices for harvest and road activities.	Reduce/limit levels of soil disturbance, erosion and potential sedimentation ; meet requirements of State of Idaho Non-point Source Pollution Management Plan; maintain water quality and associated beneficial uses.	HIGH: National Core BMP Technical Guide, Vol. I (FS-990a); local monitoring	SWST01 SWST02 SWST03 SWST04 SWGU08	Timber Sale Design and Layout, Sale Administrator

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
32	<u>Ground-Based Harvesting</u> Specific soil impacts from harvest activities will be judged according to monitoring definitions set forth in the national Forest Soil Disturbance Monitoring Protocol (FSDMP). Areal soil impacts within units will be considered within the primary context of maintaining hillslope soil hydrologic function, captured in the Forest Plan. **All ground-based harvesting use cases** Ground-based mechanized harvesting equipment will be considered only when: • Soil moistures are sufficiently low that unacceptable soil rutting, displacement, and compaction, per national soil monitoring protocol indicators (FSDMP), would not occur OR • Soil is frozen to a depth of 6 inches, OR • Soil is armored with minimum 8 inches of packed snow, OR • Soil is armored with minimum 16 inches of unpacked snow OR • Soil moisture is below 20% (determined when soil is dry to the touch and does not form a ball when pressure is applied by hand) The Forest Service will determine when these conditions exist. *In addition,* **Feller-buncher (or other noncabled harvesting systems)** • Harvesting equipment is allowed to traffic portions of units up to 35% slope • On fine-textured soils, harvesting equipment may traffic up to 45% slope for short distances (<200 feet) to accommodate stepped hillslope terrain. Longer distances (>200 feet) may be allowed with approval of the Forest Service Soil Scientist. **Off-Road Jammer** • Where ground-based harvesting equipment is restricted, logs will be winched to designated skid trails or processing areas.	Minimize soil disturbance from heavy machinery.	HIGH: logic, experience, local monitoring, Cambi 2015, Reeves 2011, Powers et al. 2005, Page-Dumroese et al. 2009a, 2009b	SWST02	Timber Sale Design and Layout, Soil Scientist, Timber Sale Administrator, Timber Sale Contract,

33	<u>Skid Trails and Skidding</u> Specific soil impacts from skidding activities will be judged according to monitoring definitions set forth in the national FSDMP. Areal soil impacts within units will be considered within the primary context of maintaining hillslope soil hydrologic function, as described in the Forest Plan. Reuse of relict skid trails and landings should be favored. Terrain and landing locations should be considered when planning new skid trail types and locations. Constructed skid trails are physically akin to temporary roads and, therefore, should be kept to a minimum, with consideration given to other log-retrieval options including nonconstructed skid trails and skyline systems. **All skidding use cases** • All skid trails must be designated and preapproved by the Forest Service before timber-felling operations begin • Skidding equipment must remain on skid trails <u>Soil Moisture Requirements</u> o Soil moistures must be sufficiently low that unacceptable soil rutting, displacement, and compaction, per national FSDMP indicators, would not occur OR o Soil must be frozen to a depth of 6 inches, OR o Soil must be armored with minimum 8 inches of packed snow, OR o Soil must be armored with minimum 16 inches of unpacked snow OR o Soil moisture must be below 20% (determined when soil is dry to the touch and does not form a ball when pressure is applied by hand) The Forest Service will determine when the above conditions exist. *In addition to the above,* **Skidding on nonconstructed skid trails** • Trails will be spaced an average minimum distance of 100 feet • Skidding allowed on slopes up to 35% • On fine-textured soils, skidding may be allowed up to 45% slope for short distances (< 200 feet) to accommodate stepped hillslope terrain and as an alternative to constructed skid trails, with approval of Soil Scientist **Skidding on constructed skid trails** • Construction (i.e., benching) of skid trails allowed when harvesting hillslopes up to 45% slope gradient • Constructed trails will not exceed 30% road grade, except for short distances. Steeper constructed skid trail grades may be approved by Soil Scientist	Minimize potential for detrimental soil disturbance from heavy machinery.	HIGH: logic, experience, local monitoring, Cambi 2015, Reeves et al. 2011; Powers et al. 2005	SWST02	Timber Sale Design and Layout, Sale Administrator, Soil Scientist

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
	• Constructed trails will be spaced an average minimum distance of 200 feet **Off-trail skidding** • In units where hand felling is required specifically for oversized trees, the Soil Scientist may approve limited use of skidding tractors off of designated trails to skid these oversized trees on hillslopes less than 35%. • In units where residue retention is favored, the Soil Scientist may approve use of mechanized travel off of designated trails to redistribute harvest cull materials. These instances should be in alignment with Forest Plan Standards for maximum allowable soil detrimental disturbance (USDA Forest Service 2003a).				

34	<u>Harvest Activity Impact Remediation</u> *Remediation will occur within 1 year following harvest activities.* Areas of relict soil compaction outside of designated skid trail network and identified during implementation are candidates for remediation, as determined by the Forest Service. Constructed skid trails, landings, and temporary road surfaces will be considered total soil resource commitment (not detrimental soil disturbance) until remediated. **Decompaction/Subsoiling** Subsoiling is inherently destructive to the soil profile and should be implemented judiciously for the primary purpose of restoring soil porosity and reducing soil strength. Compaction—directly observed or inferred from the number of passes by machinery—will be the primary determinant of the depth and extent of subsoiling in all instances. Unless otherwise agreed in writing (i.e., some landings may be retained as dispersed camping sites): • Subsoiling techniques will emphasize slight lifting and fracturing, not plowing or mixing, to a maximum depth of 16 inches and spanning the entire width of the compacted surface. Constructed skid trails, landings, and temporary road surfaces will be decompacted in full and recontoured in to natural slope profile. Exceptions to decompacting and recontouring may be permitted, per the Soil Scientist, due to operational infeasibility. *Skid trail and landings will be rehabilitated within 1 year of completion of harvest in that unit.* • Nonconstructed skid trails will be fully subsoiled to a minimum distance of 200 feet from landings UNLESS o Impacts are mainly limited to track ruts and the centerline of the skid road is not compacted and still vegetated. In these instances, subsoil only within defined track ruts. o Subsoiling would fracture the roots of tree greater than 8 inches diameter breast height. This is typically defined by the tree drip line, or a set radius around such trees would be determined by the Forest Service. **Soil Displacement Rehab** Displaced mineral soil will be pulled back according to the below. On slopes greater than 35% this pull back must be completed by hand. • When mechanical soil displacement exposes one-half of the vertical thickness of the mineral soil surface horizon, OR • in ruts with berms longer than 10 feet	Drive post-disturbance soil recovery; minimize newly created or existing areas of total soil resource commitment and detrimental disturbance.	HIGH: Research, logic, experience, local monitoring, Certini 2005, Powers et al. 2005, Han et al. 2009		Timber Sale Administrator, Timber Sale contract, Soil Scientist
34	**Soil Cover**				

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
	• Forest residues should be replaced as protective cover on *all disturbed components of the harvest system network* at loads and distributions resembling the PVG being managed. When in doubt, cover should 50-80%, OR the minimum amount necessary to inhibit overland flow. • Soil cover remediation should favor harvest residue recycling (PDF 35) to enable integrated soils/fuels/ecology objectives, as coordinated with fuels colleagues. • Coarse woody debris objectives (PDF 38) will be met. On skid trails coarse wood shall be arranged leaving a 3 to 6-foot opening every 100 feet (+/- 20 feet) at existing trails if available. • On landings used to process wood chips, depth of residual chip material should not exceed 4 inches prior to obliteration. o Waterbar if needed.				

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
35	<u>Harvest Residue Recycling</u> *This 'demonstration' PDF will be favored in implementation, with candidate units predetermined during layout.* Harvest waste byproducts intended for large landing pile burns will be sorted at landings into fine (<4 inch) and coarse (>4 inch) residues for the following uses. This PDF will not substitute for CWD objectives and requirements (PDF 38). **Coarse residues** would be made available to public for firewood at sorting location, or transported to other publically accessible location as needed (e.g., via service contract) **Fine materials** will be redistributed within units *as soil-building substrate for subsequent broadcast burn*, according to the following: • Determination of candidate units will proceed in collaboration with Fuels Management Specialist, Soil Scientist, and Timber Management Assistant. • Soil Scientist may approve mechanized travel off of designated trails in service of this specific PDF provided Forest Plan Standards for maximum allowable soil detrimental disturbance are met (SWST04). • Target loading rates of returned material will be determined according to PVG and integrated fire/soils/ecology objectives. • Residues should be scattered, not piled, unevenly, in manner that facilitates subsequent broadcast burn. • Residues should be scattered preferentially across harvested openings when possible. • Residue mats near base of leave trees should be avoided to preserve shallow live roots during broadcast burn.	Increase stand resilience by buffering belowground moisture and temperature conditions (TRGO01). Increase ecological use of prescribed fire (FMOB02, FMOB04). Divert harvest byproducts from burn piles and towards value-added products (TRBO03). Enhance soil-hydrologic processes soil C sequestration (SWOB03 SWOB16).	HIGH Logic Experience Hungerford 1980 Jurgensen et al. 1997	FMGU03 TRGU02 SWST04	Timber Sale Design and Layout, Soil Scientist, Fuels Management Specialist

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
36	Cable Yarding Remediation Reclaim disturbed skyline/cable corridors by pulling soil berms back to original configuration and scattering slash (as available) on all areas of soil disturbance to provide for minimum of 50% to a maximum of 80% effective cover where available. Ensure that surface runoff is not directly channeled into skyline corridors from landing areas. Rehabilitation will be done within one calendar year of harvest.	Reduce potential for erosion, rutting, and detrimental soil disturbance in corridors; facilitate revegetation.	HIGH: logic, experience, local monitoring	SWST01 SWST04 SWGU05	Timber Sale Administrator, Timber Sale Contract
37	Improve road drainage (installing water bars/dips, cleaning relief culverts, etc.) as needed on all roads used for harvest activities pre-haul, during, and post-haul. Minimize disturbance to existing vegetated ditch lines if already properly draining to avoid undue soil disturbance that could increase ditch erosion and sedimentation into streams.	Reduce road-related sediment inputs; improve road surface conditions.	HIGH: logic, experience, Burroughs and King 1989	SWST01 SWST04 SWGU08	Project Engineer, Timber Sale Road Package, Contract Provision

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
38	<u>Coarse Woody Debris</u> Retain total amounts of CWD as evenly distributed as possible in the tonnages and diameters described below and in 6-foot or greater lengths (if tonnages and/or sizes are unavailable, then assure that trends toward desired conditions are achieved). Total tonnage is measured following the completion of all activities and must retain the percentages of the large-sized CWD (greater than 15-inch diameter) identified in the Forest Plan (Forest Plan, Appendix A, page A-9, Table A-9; USDA Forest Service 2003a). • For PVGs 2 and 5: retain CWD in amounts of 4–14 tons per acre with at least 75% of the tonnage provided from CWD that is greater than 15 inches in diameter. • For PVGs 3, 4, and 6: retain CWD in amounts of 4–14 tons per acre with at least 65% of the tonnage provided from CWD that is greater than 15 inches in diameter. • For PVG 7: retain CWD in amounts of 5–19 tons per acre with at least 50% of the tonnage provided from CWD that is greater than 15 inches in diameter. • For PVGs 8, 9, and 10: retain CWD in amounts of 5–19 tons per acre with at least 25% of the tonnage provided from CWD that is greater than 15 inches in diameter. • For PVG 11: retain CWD in amounts of 4–14 tons per acre with at least 25% of the tonnage provided from CWD that is greater than 15 inches in diameter. If needed for meeting CWD tonnages, all available cull material over 8 inches large-end diameter and longer than 6 feet or other noncommercial material (e.g., decked firewood) shall be utilized to meet the CWD requirement. Preference should be given to larger-diameter material to meet these requirements. A contract provision requiring CWD to be returned from the log landing to the harvest unit would be utilized in tractor units where CWD deficiencies are identified prior to contract preparation.	Maintain CWD for long-term site productivity and for wildlife species.	HIGH: Graham et al. 1991, 1994	SWST04	Timber Sale Contract, Administrator, Soil Scientist

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
39	<u>Prescribed Fire</u> Prescribed burn activities should employ the following techniques to minimize the degree and extent of soil damage: • **Broadcast burn** techniques should favor low soil burn severity by promoting incomplete forest floor consumption, and avoiding prolonged (>6 hour) smoldering of matted fuel beds greater than 3 inches thick. Some incidental moderate soil burn severity is expected and acceptable provided it is not spatially extensive. When shallow root mortality risks meeting landscape ecology objectives, or when fuel loading is heavy (>10 trees/acre 0-10 inch CWD), broadcast burns should be timed to co-occur with >20% mineral soil moisture. • **Pile burning** generally results in moderate to high soil burn severity based on pile size diameter. To minimize their effects within treatment units, piles should be <10 feet in diameter and well dispersed. Larger piles on landings should be decked on logs to create an insulating air cushion, or subsequent burn scars restored according to TSRC restoration guidelines. • **Site Preparation** burns that entail near-complete combustion of postharvest forest residues over extensive areas are generally inconsistent with Forest Plan and regional soil quality Standards on soil cover, nutrient losses, and thermal impacts. This site preparation technique will only be permitted with approval of Soil Scientist. • **CWD** will be retained at the desired condition or maintained at existing levels if presently below the desired condition (see descriptions by PVG above), as much as practicable. • **Fireline reclamation** will occur following burn activities. Reclamation activities would include, but are not limited to, pulling all material removed for fireline construction back onto fireline (including mineral soil as available), pulling available slash onto the surface to achieve a minimum 50% ground cover of the disturbed soil, and constructing waterbars as necessary.	Maintain CWD for long-term site productivity and for wildlife species.	HIGH: Certini 2005, Busse 2014, Graham et al. 1991, 1994	SWST04	Prescriptions for Prescribed Burn, Fuels Specialist, Soil Scientist

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Soil, Water, Riparian and Aquatic Resources					
40	<u>Landslide Prone (LSP) Terrain</u> Management activities located on clusters of high- and moderate-risk landslide prone areas (per PNF LSP map) or on other susceptible landforms (field-verified by Soil Scientist if possible), will maintain landform stability in the following ways: • Limit harvested gap openings to 20 meters diameter between clumps of established conifers. • Avoid any pile burning and root mortality from broadcast burning (PDF 39). • Favor longer-lived species such as ponderosa pine and Douglas-fir, where ecologically appropriate. • Avoid road and skid trail construction on LSP areas, and avoid concentrating water onto LSP areas from road drainage.	Reduce potential for landslides by avoiding earthwork and favoring root reinforce-ment.	HIGH: Moos et al. 2016, Roering et al. 2003, Sidle 1992, Shaub 2001, Burroughs and Thomas 1977, Megahan 1977	TRST05 SWST12 SWGU04	Road Layout and Road Design Package, Timber Sale Layout and Marking, Prescriptions for Prescribed Burn, Soil Scientist, Fuels Specialist

Table A-4. Project design features and mitigation measures for rangeland.

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Rangeland					
43	Protect range improvements such as fencing and water troughs from prescribed fire.	Protect improvements.	HIGH: logic	N/A	Fuels Specialist, Burn plan.
44	Per "The Payette National Forest Noxious Weed and Poisonous Plant Control Program EA and DN", treat populations of noxious weeds found in the planning area. Control measures may include spraying, biological controls, or other methods as needed (USDA Forest Service 1987).	Control noxious weeds.	HIGH: fact, experience	NPST10 NPGU01 NPGU05	Range Specialist
45	In order to prevent the potential spread of noxious weeds into the project or treatment areas, Forest Service contractors associated with project activities would clean all off-road equipment prior to entry onto the treatment area. When working in treatment areas identified as containing weed infestations, contractors would be required to clean equipment before leaving and moving to a new treatment area. This cleaning would remove plants, dirt, and material that may carry noxious weed seeds.	Limit the risk of new infestations of noxious weeds into the area.	HIGH: fact, experience	NPST03 NPST04 NPGU03	Timber sale contract, Administrator

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Rangeland					
46	Any materials such as mulches and straw used for rehabilitation, reclamation, etc., would be free of noxious weed seeds and comply with the 2003 “Weed Free Hay Order” against the use of noncertified hay, straw, or mulch. Materials not covered in the special order, which have the potential to contain noxious weed seed, would be inspected and determined to be weed seed-free before purchase and use. Certification that these materials are free of noxious weed seed would be done by qualified individuals, such as the Idaho Seed Lab, County Weed Supervisor, or Forest Service Noxious Weed Management Specialist.	Limit the risk of new infestations of noxious weeds into the area.	HIGH: fact, experience	NPST01 NPST02 NPST03 NPST06	Soil Scientist, Range Specialist.
47	Source sites for gravel and borrow materials would be inspected before materials are used or transported. If noxious weeds are present, they would be treated to prevent seed production before use or transport. The source would not be used if noxious weed species were present that are not currently found at the site unless effective treatment or other mitigation measures identified by the District Ranger are implemented. Written documentation of the inspection by county weed agents, Forest Service Noxious Weed Management Specialists, or other individuals who the Forest Service stipulates are qualified would be required before materials are used.	Limit the spread of noxious weeds in the Project area.	HIGH: fact, experience	NPST07 NPST08 NPGU02	Range Specialist, Botanist, Engineer, Administrator.

Table A-5. Project design features and mitigation measures for threatened, endangered, proposed, candidate, and sensitive species.

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Threatened, Endangered, Proposed, Candidate Species and Region 4 Sensitive Species					
48	Ground-disturbing activities would be stopped in any areas where previously unknown listed or sensitive fish, wildlife, or botanical species are discovered until a Fisheries Biologist, Wildlife Biologist, or Botanist, respectively, reviews the affected area and prescribes appropriate mitigation to ensure protection of the species.	Provide protection to threatened, endangered, and sensitive species.	MODERATE: logic	TEST01 TEST02 TEST03 TEST06 TEST12 TEST13 TEGU01 TEGU02 TEGU06 WIST02 WIST03 WIST06 WIGU01 WIGU05 WIGU06 WIGU07	Fish Biologist, Wildlife Biologist, Botanist, Sale Administrator, Burn Plan, Fire Management Officer.

Table A-6. Project design features and mitigation measures for forested vegetation.

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Forest Vegetation and Timber					
49	Following harvest and prescribed burning operations, the larger aspen stands would be evaluated for the need to protect aspen regeneration from damage by cattle, deer, and elk. Possible protection measures would include temporary electric fencing or rough windrow fencing using felled aspen trees.	Protect aspen regeneration from large animal damage.	HIGH: experience, logic	VEGO04 VEGO05 VEGO06	Silviculturist and Wildlife Biologist would evaluate and implement with available resources or contracts.
50	Use the bark beetle (Scolytidae) contract provision for stands where substantial amounts of ponderosa pine would be harvested, if the proposed unit is near a plantation with a component of ponderosa pine.	Minimize bark beetle population buildup.	HIGH: experience, logic	TRGO01	Timber Sale Contract, Sale Administrator
51	Include a timber sale contract provision that requires firewood to be made accessible to the public by requiring firewood to be decked separate from slash piles and in locations where removal would be practical.	Provide firewood gathering opportunities for the public	HIGH: logic	TRGO04	Timber Sale Contract, Sale Administrator
52	In each treatment unit, CWD (tons per acre) shall be evaluated to ensure desired ranges based on PVG. If necessary, material would be left behind of the appropriate size classes to meet Standards (PDF 38). When CWD in the larger size classes is not available for retention in an activity area, smaller size classes may be utilized to meet desired conditions described in Forest Plan, Appendix A **(**USDA Forest Service 2003a). These smaller size classes should only be utilized when the resulting fire hazard risk would remain within defined fuels management objectives.	Maintain Forest Plan consistency.	MODERATE to HIGH: experience	VEGU03	Silviculturist Contract Administrator Fire Management Specialist Silvicultural Prescription Contract Burn Plan

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Forest Vegetation and Timber					
53	Management activities shall emphasize: Leaving all dead standing trees (snags), unless falling is necessary for safety. Retaining snags away from roads to reduce the potential for removal.	Maintain snags for long-term site productivity and wildlife species.	HIGH: experience	VEST01	Silviculturist Contract Administrator Fire Management Specialist Silvicultural Prescription Contract Burn Plan
54	Sufficient live trees of appropriate size should be retained for future CWD and snag recruitment where CWD or snag levels are below desired ranges (to meet Appendix A of the Forest Plan; USDA Forest Service 2003a).	Move toward desired CWD and snag levels.	MODERATE to HIGH: experience	VEGU03	Silviculturist Fire Management Specialist Silvicultural Prescription Burn Plan
55	Retain forest stands that meet the definition of large tree size class. Management actions are permitted in such stands as long as they would continue to meet the definition of a large tree size class stand.	Ensure movement toward desired tree size objectives defined in the Forest Plan for PVGs 2 and 5.	HIGH: experience		Silviculturist, Contract Administrator, Fire Management Specialist, Silvicultural Prescription, Contract, Burn Plan
56	Prior to decommissioning routes or completing long-term closure activities, approval by the District Timber Management Assistant or Silviculturist shall be obtained to ensure that utilization of these routes for access, haul, and/or skid trail is not necessary to complete any planned or proposed vegetation treatments.	Utilize existing routes to complete vegetation treatments.	MODERATE to HIGH: experience	N/A	Hydrologist/Soil Scientist/ District Timber Management Assistant

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Forest Vegetation and Timber					
57	All acres treated with mechanical or prescribed fire treatments require a silvicultural prescription.	Ensure movement toward desired conditions to meet stand objectives.	MODERATE: experience	N/A – Forest Service Manual/Handbook Direction	Silviculturist, Fire Management Specialist, Silvicultural Prescription, Burn Plan

Table A-7. Project design features and mitigation measures for legacy trees/old forest.

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Legacy Tree/Old Forest					
58	Ponderosa pine, western larch, and Douglas-fir that fit the definition of legacy trees should be retained during harvest. See Appendix 7 of this document for legacy tree guidelines for the Project.	Retain/maintain early seral legacy trees for ecological function, diversity and wildlife habitat.	HIGH: logic, experience	N/A—Appendix 7	Timber Sale Contract, Wildlife Biologist, TMA, Contract Administrator, Burn Plan, Fuels Specialist
59	Retain/maintain forest stands that meet the definition of old forest as defined in the Forest Plan, Appendix A (USDA Forest Service 2003a). Management actions are permitted in such stands as long as they would continue to meet the desired conditions	Retain/maintain old forest characteristics, such as legacy trees, snags, and CWD appropriate for the forest type.	HIGH: logic, experience	N/A – Appendix A of the Forest Plan	Silvicultural Prescription, Silviculturist, Wildlife Biologist

Table A-8. Project design features and mitigation measures for air quality.

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Air Quality					
60	Identify sensitive areas for smoke impacts and coordinate all burning with Montana/Idaho State Airshed Group.	Avoid smoke immersion into nonattainment or sensitive areas.	HIGH: logic, experience	ASGU02	Burn Plan, Fuels Specialist

Table A-9. Project Design Features and Mitigation Measures for Cultural Resources.

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Cultural Resources					
61	Project activities shall follow stipulations agreed to in Memoranda Of Agreement with the State Historic Preservation Office (SHPO) per 36CFR800.4 (b)(2). The stipulations shall include but are not limited to the following requirements prior to implementation of individual projects: • Avoid all cultural resource sites during project implementation unless alternative treatments are developed and agreed to by all consulting parties. • All known sites would be monitored and flagged prior to implementation to ensure avoidance. • If existing surveys are determined to be inadequate, inventories would be conducted according to the Secretary of the Interior's standards, and a secondary consultation with Idaho SHPO and appropriate SHPO approval would be required for: o Log and biomass landing construction o Proposed Timber Harvest Units o Prescribed fireline construction o Newly constructed temporary roads o Road decommissioning o Proposed recreation actions o Fish passage barrier improvements and associated road rehabilitation	Prevent damage to cultural resource sites.	HIGH: experience	N/A	Timber Sale Contract, Burn Plans, Forest Archaeologist Burn Boss, Contract Administrators

Table A-10. Project design features and mitigation measures for recreation and visual quality.

#	Project Design Feature	Objective	Effectiveness and Basis	Applicable Forest Plan Standard/Guide	Enforcement
Recreation and Visual Quality					
62	Ridgeline silhouettes should not have unnatural-appearing breaks along them.	Meet visual quality objectives.	MODERATE: logic	SCGU06	Layout Forester
63	Install adequate drainage structures in new trail construction and ensure sediment transport is minimized where trails are located within RCAs, as per Forest Service Trail Construction Specifications. Stream crossings shall comply with Forest Plan Standard SWST 08 (USDA Forest Service 2003a).	Provide water quality protection during trail construction.	HIGH: logic, experience	REST02	Recreation Staff, Engineer
64	Where necessary, restrict log hauling during periods of high recreation use, such as the opening day of big game hunting season.	Provide restrictions for public safety.	MODERATE: logic	N/A	Contract Administrator, Contract
65	During the week the Forest shall close and sign groomed snowmobile routes in the project area that are being used as timber hauling routes. The routes would be open to snowmobiles on Saturdays and Sundays. All log-hauling activity would be stopped after 10 pm on Friday and reopened Monday morning. If logging contractor vehicles are used to fuel or maintain equipment over the weekend, warning signs would be placed prominently so that snowmobilers would be aware that they may encounter vehicles on the road even on weekends. The Forest shall post reduced speed limits in the shared use areas. The Forest shall post signs and maps in parking and chain-up areas alerting snowmobiles coming into the logging area to the activities and potential hazards in the area. Contractors operating on groomed snowmobile routes should contact Adams County for required permits.	Ensure safety of snowmobilers during log hauling.	HIGH: Logic	REOB08 REOB20 REOB23 REGU23 REGU26	Contract Administrator, Contract
66	The Forest shall add protection measures for existing NFS trails in all timber sale contracts; annual operating plans for grazing, mining, and special use authorizations; and prescribed fire implementation documents; and reestablish any trail heads lost to these proposed activities.	Provide trail protection.	HIGH: Logic	REGU26	Inspection by Recreation Specialist