Attachment P1-3

Draft Reclamation and Revegetation Plan

ATTACHMENT P1-3
DRAFT RECLAMATION AND REVEGETATION PLAN

Draft Reclamation and Revegetation Plan

Boardman to Hemingway Transmission Line Project

1221 West Idaho Street
Boise, Idaho 83702

September 2018; July 2020 (Modified by Oregon Department of Energy during ASC – PO Phase)

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ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
FWS	U.S. Fish and Wildlife Service
GPS	global positioning system
IPC	Idaho Power Company
kV	kilovolt
OAR	Oregon Administrative Rule
ODA	Oregon Department of Agriculture
ODOE	Oregon Department of Energy
OHV	off-highway vehicle
Project	Boardman to Hemingway Transmission Line Project
RL	reclamation level
ROW	right-of-way
RZ	reclamation zone
T&E	threatened and endangered
TVES	Terrestrial Visual Encounter Surveys
USFS	United States Forest Service

Agency Review Process

The agency review process outlined in this section aligns with the OAR 345-025-0016 agency consultation process applicable to monitoring and mitigation plans.

To afford an adequate opportunity for applicable local, state and federal agencies to review the draft plan prior to finalization and implementation, and any future plan amendments, the certificate holder shall implement the following agency review process.

Step 1: Certificate Holder's Update of Draft Plan or Future Plan Amendment: The certificate holder may develop one Reclamation and Revegetation Plan to cover all construction and operational activities for the entire facility; or, may develop individual plans per county, segment or phase, construction or operation, as best suited for the facility. Based on the draft Reclamation and Revegetation Plan included as Attachment P1-3 of the Final Order on the ASC, the certificate holder shall update the draft plan(s) based on facility design. If the plan(s) are amended following finalization, the certificate holder shall clearly identify and provide basis for any proposed changes.

Step 2: Certificate Holder and Department Coordination on Appropriate Review Agencies and Agency Review Conference Call(s): Prior to submission of the updated draft plan, or any future amended plans, the certificate holder shall coordinate with the Department's Compliance Officer to identify the appropriate federal, state and local agencies to be involved in the plan review process. In this instance, "appropriate" federal agencies are based on landownership where facility construction and operation would result in temporary or permanent disturbance. "Appropriate" state agencies would include Oregon Department of Agriculture and Oregon Department of Fish and Wildlife; "appropriate" local agencies refers to the County Planning Department, Public Works Department and Weed Department, or other county departments with expertise in revegetation. Once appropriate federal, state and local agency contacts are identified by the Department and certificate holder, the Department's Compliance Officer will initiate coordination between agencies to schedule review/planning conference call(s). The Department and certificate holder may agree to schedule separate conference calls per county.

The intent of the conference call(s) are to provide the certificate holder, or its contractor, an opportunity to describe details of the updated draft or amended plan; and, agency plan review schedule. Agencies may provide initial feedback on requirements to be included in the plan during the call, or may provide written comments during the 14-day comment period. The Department will request that any comments provided be supported by an analysis and local, state or federal regulatory requirement (citation).

The certificate holder may coordinate with appropriate review agencies, in advance of or outside of the established agency review process; however, this established agency review process is necessary under OAR 345-025-0016 and may result in more efficient plan finalization and amendment if managed in a consolidated process, utilizing the Department's Compliance Officer as the lead Point of Contact.

Step 3: Agency Review Process: Either with, or prior to, the agency conference call(s), the certificate holder shall distribute electronic copies of the draft, or future amended, plan(s) requesting that the Department coordinate agency review comments within 14-days of receipt, or as otherwise determined feasible. See Section 5.0 of the plan for an example of details to be finalized during the agency review process. Following the 14-day agency review period, the Department will consolidate comments and recommendations into the draft, or amended, plan(s), using a Microsoft Word version of the plan provided by certificate holder. Within 14-days of receipt of the agency review comments, the certificate holder shall provide an updated final version of the plan, incorporating any applicable regulatory requirements, as identified during agency review or must provide reasons supporting exclusion of recommended requirements.

Final plans will be distributed to applicable review agencies by the Department, including the certificate holder's assessment of any exclusions of agency recommendations, and a description of their opportunity for dispute resolution.

Step 4: Dispute Resolution: If any review agency considers the final, or amended, plan(s) not to adhere to applicable state, federal or local laws, Council rules, Council order, or site certificate condition or warranty, the review agency may submit a written request of the potential violation to the Department's Compliance Officer or Council Secretary, requesting Council review during a regularly scheduled Council meeting. The Council would, as the governing body, review the violation claim and determine, through Council vote, whether the claim of violation is warranted and identify any necessary corrective actions.

1.0 INTRODUCTION

This Attachment to Exhibit P1 of Idaho Power Company's (IPC's) application for site certificate contains information describing the framework for application of reclamation and revegetation actions on lands disturbed by the Boardman to Hemingway Transmission Line Project (Project).

Specifically, this Reclamation and Revegetation Plan (hereafter referred to as the Reclamation Plan) describes existing habitat types within the Site Boundary; reclamation zones (RZ); reclamation levels (RL) based on the type, duration, and level of disturbance; and finally, preferred reclamation and monitoring methods. The Final Reclamation and Revegetation Plan will include site-specific treatments, identify seed mixes for use in specific habitat types, address atypical situations, and be subject to agency approval on public lands. The Final Reclamation Plan will be a framework for the subsequent development of site-specific treatment plans.

The Project area, or Site Boundary, as defined in Oregon Administrative Rule (OAR) 345-001-0010(55) includes "the perimeter of the site of a proposed energy facility, its related or supporting facilities, all temporary laydown and staging areas, and all corridors and micrositing corridors proposed by the applicant." The Site Boundary for this Project includes the following related and supporting facilities in Oregon:

- The Proposed Route, consisting of 270.8 miles of new 500-kilovolt (kV) electric transmission line, removal of 12 miles of existing 69-kV transmission line, rebuilding of 0.9 mile of a 230-kV transmission line, and rebuilding of 1.1 miles of an existing 138-kV transmission line;
- Four alternatives that each could replace a portion of the Proposed Route, including the West of Bombing Range Road Alternative 1 (3.7 miles), West of Bombing Range Road Alternative 2 (3.7 miles), Morgan Lake Alternative (18.5 miles), and Double Mountain Alternative (7.4 miles);
- One proposed 20-acre station (Longhorn Station);
- Ten communication station sites of less than ¼ acre each and two alternative communication station sites;
- Permanent access roads for the Proposed Route, including 206.3 miles of new roads and 223.2 miles of existing roads requiring substantial modification, and for the Alternative Routes including 30.2 miles of new roads and 22.7 miles of existing roads requiring substantial modification; and
- Thirty temporary multi-use areas and 299 pulling and tensioning sites of which four will have light-duty fly yards within the pulling and tensioning sites.

The Project features are fully described in Exhibit B and the Site Boundary for each Project feature is described in Exhibit C, Table C-24. The location of the Project features and the Site Boundary is outlined in Exhibit C.

1.1 Purpose

The purpose of this Reclamation Plan is to provide a framework for reclamation treatments to be applied to areas impacted by Project construction, operation, and maintenance activities. This Reclamation Plan will describe and recommend construction and reclamation treatment actions that will meet the goals and objectives for land health standards under the applicable authorities, described below in Section 2.0 – Applicable Rules and Statutes; it will also provide requirements for implementing and monitoring reclamation, and will meet the reclamation success standards described in Section 6.4.

Important actions in mitigating the effects associated with the Project include (1) minimizing to the greatest degree practicable the effects associated with right-of-way (ROW) preparation and the construction of facilities, and (2) stabilizing disturbed areas to facilitate eventual desirable plant revegetation for the purpose of maintaining a safe and stable landscape that meets the desired outcomes of land management plans. The procedures outlined in this Plan will assist in:

- Restoring plant communities and associated wildlife habitat and range;
- Preventing substantial increases in noxious weeds in the Project area;
- Minimizing Project-related soil erosion; and
- Reducing visual impacts on sensitive areas caused by construction activities.

1.2 Responsible Parties

IPC will have the overall responsibility of ensuring implementation and monitoring of reclamation efforts for the Project.

The Construction Contractor(s) will be responsible for development of the Final Reclamation Plan. This Reclamation Plan will provide the Construction Contractor(s) the baseline and framework for developing the Final Reclamation Plan that addresses site-specific conditions for reclamation areas identified based on the final design layout of the Project. The Construction Contractor(s) will also be responsible for field-verifying habitat types within the Project disturbance area, identifying and mapping reclamation treatment and control monitoring sites, and collecting preconstruction qualitative and quantitative data at monitoring sites. Once postconstruction reclamation procedures are complete, the Construction Contractor(s) will be responsible for reclamation monitoring, reporting, and installing signage at each reclamation area to indicate that reclamation is in process.

On federal lands, the appropriate land management agency, including either the Bureau of Land Management (BLM) or the United States Forest Service (USFS), will be responsible for the review of the Final Reclamation Plan, on-the-ground reclamation activities, reclamation monitoring reports, and sign-off that reclamation has been completed to the conditions included in the Record of Decision and the ROW Grant.

The Oregon Department of Energy (ODOE) will review all reclamation activities on private, state, and federal lands under the agency's compliance monitoring program. The ODOE Compliance Officer will be responsible for the review of the Final Reclamation Plan, on-the-ground reclamation activities, reclamation monitoring reports, and sign-off that reclamation has been completed based on the success criteria of the Reclamation Plan.

Reclamation on agricultural lands will be coordinated with local landowners to best meet landowners' needs and management goals. An agricultural mitigation plan is included in ASC Attachment K-1 of Exhibit K.

Sensitive biological resources will be mapped in accordance with a Biological Monitoring Plan.

2.0 APPLICABLE RULES AND STATUES

This Reclamation Plan is intended to fulfill OARs requiring disclosure of methods used to mitigate for impacts to wildlife habitat, to monitor mitigation efforts, and to protect soil resources.

Specifically, OAR 345-021-0010(1)(p) requires Exhibit P1 to include:

> *(G) A description of any measures proposed by the applicant to avoid, reduce or mitigate the potential adverse impacts described in (F) in accordance with the ODFW mitigation goals described in OAR 635-415-0025 and a discussion of how the proposed measures would achieve those goals. (H) A description of the applicant's proposed monitoring plans to evaluate the success of the measures described in (G). Additionally, OAR 345-022-0022, requires that Exhibit I demonstrates that construction and operation of the Project, taking into account mitigation, will not result in significant adverse impact to soils.*

Authority for the reclamation practices defined in this Plan is provided under the following.

2.1 Endangered Species Act of 1973, as amended

Take of federally listed species is prohibited without specific exceptions or permits issued under Sections 7 or 10 of the Endangered Species Act (ESA). Under the ESA, the definition of "take" includes to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. The U.S. Fish and Wildlife Service (FWS) has further defined harm to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Federal agencies must consult with the FWS under Section 7 of the ESA on actions they authorize, fund, or carry out to ensure these actions are not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

2.2 Federal Land Policy and Management Act, Section 101(a)(8)

The Federal Land Policy and Management Act requires "public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition."

2.3 BLM National Sage-Grouse Habitat Conservation Strategy, Section 1.4.1

BLM's goal is to "Sustain or reestablish the integrity of the sagebrush biome to provide the amount, continuity, and quality of habitat that is necessary to maintain sustainable populations of sage-grouse and other sagebrush-dependent wildlife species" (BLM 2004).

2.4 BLM Oregon Standards for Rangeland Health and Guidelines for Livestock Grazing

The Standards for Rangeland Health, as applied in the State of Oregon, are: "to promote healthy sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions; and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands" (BLM 1997).

2.5 BLM Oregon, Vale Field Office, Southeastern Oregon Resource Management Plan

"Restore, protect, and enhance the diversity and distribution of desirable vegetation communities including perennial native and desirable introduced plant species. Provide for their continued existence and normal function in nutrient, water, and energy cycles" (BLM 2002).

2.6 BLM Oregon, Vale Field Office, Baker Resource Area Resource Management Plan

"Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences" (BLM 1989).

2.7 USFS, Wallowa-Whitman Land and Resource Management Plan

The Wallow-Whitman Land and Resource Management Plan establishes the following management goals: "To maintain native and desirable introduced or historic plant and animal species and communities. Maintain or enhance ecosystem function to provide for long-term integrity and productivity of biological communities. To provide habitat for viable populations of all existing native and desired nonnative vertebrate wildlife species and to maintain or enhance the overall quality of wildlife habitat across the Forest" (USFS 1990).

2.8 The Oregon Sage-Grouse Action Plan 2015, Section iii

"The overarching habitat goal is to maintain or enhance the distribution of sagebrush habitats in Oregon with the objective to retain greater than 70% of sage-grouse range as sagebrush habitat in advanced structural stages and to manage the remaining 30% (areas of juniper encroachment, non-sagebrush shrubland, and grassland) to increase available habitat within the range of the sage-grouse" (Sage-Grouse Conservation Partnership 2015).

3.0 OVERVIEW OF EXISTING ENVIRONMENTS

Reclamation actions will be specific to the setting and habitat types impacted by the Project.

3.1 Description of Vegetation

The Proposed Route crosses four ecoregions (Thorson et al. 2003). Starting in Morrow County, at the Longhorn Station, the route crosses approximately 34.8 miles of the Columbia Plateau ecoregion. Vegetation in this ecoregion is characterized by grasslands of bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg bluegrass (*Poa secunda*), and Idaho fescue (*Festuca idahoensis*), and associated sagebrush species (*Artemisia* sp.) (Thorson et al. 2003). Cheatgrass (*Bromus tectorum*) is common understory component. Major irrigation projects in the area have converted much of land along the route to poplar tree plantations and irrigated agriculture.

In Umatilla County, the route generally runs from west to east, crossing the Columbia Plateau, and rising into the Blue Mountains ecoregion. Vegetation in this portion of the Columbia Plateau ecoregion is similar to that found in Morrow County, supporting bunchgrass communities without the associated sagebrush species (Thorson et al. 2003). Dryland farming is common in this area. Generally, vegetation in the Blue Mountain ecoregion consists of a diverse shrub layer beneath an open canopy of ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*). Areas of mesic spruce-fir forest exist as the route crosses the Blue Mountains, in Union County (Thorson et al. 2003). In Baker County, the route descends as it runs to the southeast, passing through bunchgrass, sagebrush, bitterbrush (*Purshia tridentata*), and some

juniper (*Juniperus*) communities (Thorson et al. 2003). Again, irrigated agriculture is a major land use in the valleys of Baker County.

As the route leaves Baker County, it also leaves the Blue Mountains ecoregion, entering Malheur County and the Snake River Plain ecoregion (Thorson et al. 2003). Aside from irrigated agriculture, Wyoming big sagebrush (*Artemisia tridentata* subsp. *wyomingensis*), basin big sagebrush (*A. tridentata* subsp. *tridentata*), bluebunch wheatgrass, and cheatgrass are common (Thorson et al. 2003). In saline areas, shadscale (*Atriplex confertifolia*), greasewood (*Sarcobatus vermiculatus*), and saltgrass (*Distichlis spicata*) occur.

Before leaving Malheur County and entering Owyhee County, Idaho, to eventually terminate at the Hemingway Substation, the route crosses a small portion of the Northern Basin and Range ecoregion, before returning to the Snake River Plain, in Idaho. Northern Basin and Range ecoregion along this portion of the route is characterized by sagebrush steppe containing deep river canyons, barren lava fields, badlands, and tuffaceous outcrops (Thorson et al. 2003).

3.2 Grouping of Vegetation

IPC used data from the Terrestrial Visual Encounter Surveys (TVES) to identify the ecological systems and assign a habitat type and category based on vegetation characteristics. However, due to limitations on access to private lands, surveys have not been completed within the entire Site Boundary. Approximately 67 percent of the Site Boundary was surveyed for TVES (see Exhibit P1). In areas where survey information was not available due to unsigned right-of-entry agreements or changes in route alignment, biologists used desktop analysis methods to assign habitat type and category. Gap Analysis Project (or GAP) and aerial imagery interpretation were used to delineate habitat type and agency designated habitats (e.g., Oregon Department of Fish and Wildlife designated big game habitats), known occurrences of special status species, and conditions in adjacent surveyed areas were used to approximate the appropriate category type. Detailed descriptions of the modeling and criteria used to identify and categorize habitats within the Site Boundary are included in Attachment P1-1, Habitat Categorization Matrix, and Attachment P1-6, Habitat Mitigation Plan.

TVES and subsequent desktop analysis for the habitat categorization process identified various habitat types present within the Site Boundary. These habitat types were then assembled into RZs for purposes of this Reclamation Plan. Habitat types grouped into RZs are useful in presenting and describing reclamation methods used for specific habitat types. The extent of each habitat type within the Site Boundary is presented in Table 1. RZs are discussed in greater detail in Section 4.1 below.

Table 1. Habitat Types within the Site Boundary and Corresponding Reclamation Zone

Reclamation Zone	Percent of Site Boundary	Habitat Types Included in each Reclamation Zone
Shrubland	37	Desert Shrub Shrub-Steppe with Big Sage Shrub-Steppe without Big Sage
Grassland	18	Native Grasslands
Agriculture	8	Agriculture
Forest and Woodland	13	Douglas Fir / Mixed Grand Fir Ponderosa Pine Western Juniper / Mountain Mahogany Woodland Forested - Other

Reclamation Zone	Percent of Site Boundary	Habitat Types Included in each Reclamation Zone
Wetland / Riparian	1	Aquatic Bed Wetland Emergent Wetland Scrub-Shrub Wetland Forested Wetland Ponds and Lakes Ephemeral, Intermittent, and Perennial Stream Herbaceous Riparian Introduced Riparian Riparian Woodland and Shrubland
Other	23	Introduced Upland Vegetation and Burned Areas Developed / Disturbed Bare Ground, Cliffs, Talus

4.0 RECLAMATION PLAN METHODOLOGY

This section of the Reclamation Plan describes the process used to identify reclamation actions that will be required within areas subject to ground disturbance as a result of Project construction, operation, and maintenance. Reclamation will occur across all areas impacted by the Project unless occupied by a permanent structure, regardless of land ownership. The following discussion focuses on two key components: (1) identification of RZs, and (2) identification of RLs that have been used to designate or prescribe the required actions for each RZ. The implementation of the reclamation actions described in Section 5.0 – Reclamation Plan varies based on these two components, as well as the habitat types potentially affected.

4.1 Identification of Reclamation Zones

This Reclamation Plan identifies six RZs (RZ1 to RZ6), which are an aggregation of the habitat types listed in Table 1. Additionally, this Reclamation Plan describes the applicable reclamation actions for each RZ. While species composition will vary within the RZ, similar habitat types will likely be found within the designated zone that will support similar reclamation actions.

The following subsection describe each RZ applicable within the Site Boundary.

4.1.1 Reclamation Zone 1 – Shrublands (RZ1)

Reclamation Zone 1 (RZ1) includes shrubland habitat types, which is an aggregation of desert shrub, shrub-steppe with big sage, and shrub-steppe without big sage habitat types. Shrublands are the most common zone found within the Site Boundary, accounting for nearly 37 percent of the total cover. Over 84 percent of the Shrublands RZ is dominated by big sagebrush (*Artemisia*) species. Shrub-steppe without big sage and desert shrub habitat types account for 4 percent and 1 percent of the Site Boundary, respectively.

This zone is typically composed of a variety of low, shrubby, and woody vegetation, with a limited to moderate grass understory (NatureServe 2006). This zone is found throughout the Project, from 375 to 4,700 feet in elevation, and receives approximately 8 to 21 inches of rainfall annually (PRISM 2010). All reclamation actions described in Section 5.0 – Reclamation Plan with the exception of selective clearing are potentially applicable to this zone, dependent on site conditions.

4.1.2 Reclamation Zone 2 – Grasslands (RZ2)

Reclamation Zone 2 (RZ2) includes an aggregation of native grassland habitat types. Grasslands are the third most common RZ identified, occupying roughly 18 percent of the Site Boundary. The two most common grassland ecological systems found are the Columbia Basin foothill and canyon dry grassland (9 percent of the Site Boundary) and lower montane foothill and valley grassland (7 percent of the Site Boundary). These once-extensive grasslands have been largely converted to farmland and are now found in small fragments in isolated areas throughout the Site Boundary. Additionally, cheatgrass has invaded and converted many of these grasslands into invasive annual grasslands, which are included in the "Other" habitat type described below.

Within the Site Boundary, grasslands are typically found in both valley and montane environments ranging from 550 to 5,000 feet in elevation and receives approximately 10 to 32 inches of rainfall annually (PRISM 2010). All reclamation actions described in Section 5.0 – Reclamation Plan with the exception of selective clearing and vertical mulch are potentially applicable to this zone, dependent on site conditions.

4.1.3 Reclamation Zone 3 – Agriculture (RZ3)

Reclamation Zone 3 (RZ3) includes both irrigated and dry-land farming, which are important land uses within the Site Boundary. Agriculture, accounting for nearly 8 percent of the Site Boundary, is typically found from approximately 300 to 3,900 feet in elevation, and receives approximately 8 to 15 inches of rainfall annually (PRISM 2010). All reclamation actions described in Section 5.0 – Reclamation Plan with the exception of selective clearing and vertical mulch are potentially applicable to this zone, dependent on site conditions.

4.1.4 Reclamation Zone 4 – Forest and Woodland (RZ4)

Reclamation Zone 4 (RZ4) includes an aggregation of all forested habitats crossed by the Project and accounts for 13 percent of the Site Boundary. Forest and woodlands are mostly made up of mixed grand fir and Douglas-fir forest (47 percent of the Forest and Woodland RZ) with lesser amounts of ponderosa pine forest and juniper woodlands. These mixed grand fir/Douglas-fir forest are common in the Blue Mountains and are found on drier sites, lacking the characteristic mesic understory of wetter grand fir forest types. Ponderosa pine is a common component on warmer sites in this RZ. Other seral species found in this type are lodgepole pine, western larch, and western white pine (NatureServe 2006).

Forested habitats in the Site Boundary are found in the Blue Mountains in Umatilla and Union counties, from just south of La Grande to south and east of Pendleton. Logging and other disturbance such as grazing are common in these habitat types. Juniper woodlands are mostly found in Baker County west of the town of Durkee. Forest and woodland habitats typically range from 1,900 to 8,800 feet in elevation, and receive approximately 22 to 36 inches of rainfall annually (PRISM 2010). All reclamation actions described in Section 5.0 – Reclamation Plan are potentially applicable to this zone, dependent on site conditions.

4.1.5 Reclamation Zone 5 – Wetland and Riparian (RZ5)

Reclamation Zone 5 (RZ5) is composed of wetland and riparian habitat types. These types account for 1 percent of the Site Boundary. This is a minor RZ limited in extent by available moisture that is found mostly along stream banks and adjacent to springs and seeps. While not commonly found, these types provide highly important fish and wildlife and livestock habitat. Forested, scrub-shrub, and herbaceous wetland and riparian habitats are all present in the Site Boundary.

In wetland and riparian areas, reclamation actions associated with the other RZs may not be applicable due to site-specific conditions requiring modification from standard actions or as a

result of agency coordination. In these more sensitive areas, the appropriate land management agency and ODOE or the Construction Contractor(s) must coordinate on reclamation actions to be applied and in some cases the land management agency may require additional, detailed planting plans to accommodate riparian habitats and land management agency objectives.

Permanent impacts to wetland habitats are regulated by the U.S. Army Corps of Engineers and are discussed in detail in Exhibit J.

4.1.6 Reclamation Zone 6 – Other (RZ6)

Reclamation Zone 6 (RZ6) includes an aggregation of disturbed and developed areas and areas dominated by invasive annual and perennial plant species, and is the second most prominent RZ, accounting for 23 percent of the Site Boundary. This zone is typically dominated by invasive plant species or seeded nonnative plants capable of existing in disturbed environments. Introduced forbland and introduced annual and perennial grasslands are the main habitat types of this zone, and together account for 90 percent of the total cover within RZ6. Restoration of these communities to a native plant dominated community is generally not possible as changes in soils and chronic disturbance have altered site potential. This zone is found across a wide range of sites with elevations ranging from approximately 300 to 4,100 feet, receiving from approximately 9 to 31 inches of rainfall annually (PRISM 2010). All reclamation actions described in Section 5.0 – Reclamation Plan with the exception of selective clearing and vertical mulch are potentially applicable to this zone, dependent on site conditions.

Several substrate-dominated natural communities are included under “Other” in Table 1, including cliffs, canyons, and ash and tuff badlands. These sparsely vegetated types are generally found in Malheur County in small, isolated pockets scattered among the sagebrush steppe and shrubland and may require site-specific reclamation plans due to the unique nature of these sites.

4.2 Identification of Reclamation Levels

Determination of RLs that prescribe the types of required actions were based on (1) the type(s) of construction activity, facility features, and the area of associated disturbance; (2) the duration of disturbance (temporary or permanent) associated with these features; and (3) the type of disturbance associated with each activity as described below.

4.2.1 Types of Construction Activities and Facility Features

As presented in Exhibit B, Project Description, major activities associated with the construction of the Project will include, but are not limited to, the following tasks:

- Surveying the transmission centerline, other project features, and work areas;
- Upgrading or constructing temporary and permanent access roads;
- Clearing and grading activities for the ROW, tower sites, multi-use areas, substations, and regeneration sites;
- Developing the Longhorn Station;
- Excavating foundations;
- Installing foundations;
- Assembling and erecting towers with temporary and permanent pad sites;
- Stringing conductors and ground wires;
- Installing communication stations and distribution lines;

- Installing counterpoise (tower grounds) where needed; and
- Conducting cleanup and reclamation of affected areas.

The area disturbed by construction, operation, and maintenance of major facility features will vary as presented in Exhibit B, Project Description. For example, the extent of disturbance associated with bladed access roads will likely be much greater than the disturbance associated with primitive access roads. Likewise, construction disturbance at a tower location will typically be greater than operational and maintenance disturbance for the same tower site.

4.2.2 Disturbance Duration

This Reclamation Plan identifies two broad types of disturbance duration, as defined below.

4.2.2.1 Permanent

Permanent impacts are defined as those impacts that will exist for the entire life of the Project. Permanent impacts would occur along access roads, communication stations, Longhorn Station, and tower sites, as well as within the permanent ROW and vegetative maintenance zones along portions of the Project that cross forested/woodland habitats.

4.2.2.2 Temporary

Temporary impacts are those impacts that will last for a time less than the life of the Project; these include temporary impacts associated with permanent access roads, multi-use areas, pulling and tensioning sites, light-duty fly yards, areas around tower pads, and around the Longhorn Station. Temporary impacts during operation would result from the periodic disturbance associated with inspection and maintenance of the line; temporary impacts associated with retirement of the Project would be similar to those described for construction.

4.2.3 Disturbance Level

This Reclamation Plan defines four broad disturbance levels based on activities associated with construction, operation, and maintenance of Project facilities. Disturbance levels will be considered in the identification of RLs and implementation of specific reclamation practices. In general, the amount of ground disturbance increases with each disturbance level.

4.2.3.1 Disturbance Level 1 (D1) – No New Disturbance

D1 areas include existing access roads and previously disturbed locations that do not require further improvement (vegetation removal or grading) that will remain permanent (in place) after Project construction is complete.

4.2.3.2 Disturbance Level 2 (D2) – Primitive

In D2 areas, disturbance is caused by access to the Project site or construction activities in a work area that requires the clearing of large woody vegetation and other obstructions to improve or provide suitable access for equipment and vehicles. Most woody shrub vegetation is removed and soils are compacted, but no surface soil is removed (i.e., no blading of topsoil), preserving vegetation roots wherever practical to facilitate plant reestablishment. These roads are commonly called “two track” or “overland travel” roads. Examples include new access roads where overland access may be used in the construction of facilities, or in some areas where roads may be improved for access (selective tree and brush clearing). These roads are not intended for use as all-weather roads.

4.2.3.3 Disturbance Level 3 (D3) – Substantial Modification

In D3 areas, disturbance is caused by access to the Project site or construction activities within a work area that requires improving access for equipment and vehicles. Activities resulting in this type of disturbance may include: (1) increasing the width of the existing road prism; (2) changing

the existing road alignment; (3) using materials inconsistent with the existing road surface; and/or (4) changing the existing road profile in a way that would alter vehicle use patterns.

Repairs using existing road surface materials within the existing road prism that would not change the road profile or alter the vehicle use patterns are considered substantial modifications if they comprise greater than 20 percent of the road surface area defined by road prism width and longitudinal distance over a defined road segment.

4.2.3.4 Disturbance Level 4 (D4) – Bladed

Disturbance in D4 areas is caused by removing vegetation and displacement of soils. The soils are compacted and the surface soil is displaced (i.e., blading of topsoil). Some examples include construction of a new road prism across a steep side slope or over rough and uneven terrain, tower sites that require clearing and grading, multi-use areas requiring grading, some light-duty fly yards, and existing access roads that require improvements. These roads are designed to support heavy equipment and vehicular traffic.

4.2.4 Reclamation Levels

Four levels of reclamation (RL1 to RL4) have been identified for the Project based on the potential disturbance level (D1 through D4), and duration of disturbance (temporary or permanent). These RLs are described in the following subsections and summarized in Table 2.

Table 2. Disturbance Level, Disturbance Duration, and Associated Reclamation Level

Disturbance Level	Disturbance Duration	
	Temporary	**Permanent**
D1 – No New Disturbance	*Does Not Apply*	**RL1** – Minimal Level of Permanent Disturbance
D2 – Primitive	**RL2** – Low Level of Temporary Disturbance	**RL1** – Minimal Level of Permanent Disturbance
D3 – Substantial Modification	**RL3** – Moderate Level of Temporary Disturbance	**RL4** – Moderate / High Level of Permanent Disturbance
D4 – Bladed	*Does Not Apply*	**RL4** – Moderate / High Level of Permanent Disturbance

4.2.4.1 Reclamation Level 1 (RL1) – Minimal Level of Permanent Disturbance

Project activities in RL1 areas do not result in new disturbance, require minimal preconstruction treatment, and will normally require no postconstruction reclamation actions (outside of routine maintenance). Routine maintenance will include removal of woody vegetation within the transmission line ROW, which is described in Exhibit P1, Attachment P1-4, Vegetation Management Plan. RL1 can include an existing disturbance, such as an existing road.

4.2.4.2 Reclamation Level 2 (RL2) – Low Level of Temporary Disturbance

Project activities in RL2 areas are low level and temporary that will result in disturbance confined to overland construction, including vegetation crushing, and will require limited reclamation actions. RL2 can include temporary facilities such as pulling and tensioning sites and the temporary portions of structure work areas. Low-level temporary disturbance associated with permanent access roads not needing substantial modification or blading may also occur.

4.2.4.3 Reclamation Level 3 (RL3) – Moderate Level of Temporary Disturbance

Project activities in RL3 areas will result in moderate temporary disturbance, limited to clearing and cutting of vegetation. RL3 can include temporary facilities such as pulling and tensioning sites and the temporary portions of structure work areas. Moderate-level temporary disturbance

associated with permanent access roads may also occur. RL3 is distinguished from RL2 by a higher level of construction disturbance.

4.2.4.4 Reclamation Level 4 (RL4) – Moderate / High Level of Permanent Disturbance

Project activities in RL4 areas will result in a moderate to high level of permanent disturbance (e.g., blading). Reclamation actions will be minimal because RL4 areas will be permanently occupied by Project components and facilities. RL4 applies to rebuilt existing roads, new access roads that will serve for maintenance and operation of the transmission line, regeneration stations, and the permanent portions of the structure pads. In RL4 locations, seeding and alternative seeding will be applied where appropriate and replacement of soils and vertical mulch will be limited.

For RL2 through RL4, pretreatment of existing noxious weed occurrences may be required before construction to prevent infestation and spread.

Table 3 identifies the various RLs to be applied for each of the related and supporting facilities and associated disturbance levels and durations. In general, the order of disturbance levels from least to greatest is overland drive-and-crush, overland clear-and-cut, and blade-and-shape. RL does not imply level of effort to meet reclamation success criteria. For instance, a RL2 in native shrub-steppe habitat may require more time and effort to meet success criteria than a RL3 in an introduced upland vegetation habitat.

Table 3. Construction Component and Reclamation Level

Construction Component	Disturbance Level	Disturbance Duration		Reclamation Level
		Temporary	Permanent	
Structure work areas	**D2** – Primitive	●		RL2 – Low Level of Temporary Disturbance
	D3 – Substantial Modification	●		RL3 – Moderate Level of Temporary Disturbance
	D4 – Bladed		●	RL4 – Moderate / High Level of Permanent Disturbance
Pulling and tensioning sites, multi-use areas, and other ancillary facilities that result in temporary disturbance	**D2** – Primitive	●		RL2 – Low Level of Temporary Disturbance
	D3 – Substantial Modification	●		RL3 **–** Moderate Level of Temporary Disturbance
Longhorn Station, communication sites, and other ancillary facilities that result in permanent (long-term) disturbance	**D2** – Primitive		●	RL1 – Minimal Level of Permanent Disturbance
	D3 – Substantial Modification		●	RL4 – Moderate / High Level of Permanent Disturbance
	D4 – Bladed		●	RL4 – Moderate / High Level of Permanent Disturbance

Construction Component	Disturbance Level	Disturbance Duration		Reclamation Level
		Temporary	Permanent	
Existing paved roads, access roads (no improvement)	**D1** – No New Disturbance		●	RL1 – Minimal Level of Permanent Disturbance
Existing access road (with improvements)	**D2** – Primitive		●	RL1 – Minimal Level of Permanent Disturbance
	D2 – Primitive	●		RL2 – Low Level of Temporary Disturbance
	D3 – Substantial Modification		●	RL4 – Moderate / High Level of Permanent Disturbance
	D3 – Substantial Modification	●		RL3 – Moderate Level of Temporary Disturbance
	D4 – Bladed		●	RL4 – Moderate / High Level of Permanent Disturbance
New access road	**D2** – Primitive		●	RL1 – Minimal Level of Permanent Disturbance
	D2 – Primitive	●		RL2 – Low Level of Temporary Disturbance
	D3 – Substantial Modification		●	RL4 – Moderate / High Level of Permanent Disturbance
	D3 – Substantial Modification	●		RL3 – Moderate Level of Temporary Disturbance
	D4 – Bladed		●	RL4 – Moderate / High Level of Permanent Disturbance

5.0 RECLAMATION PLAN

This section presents reclamation actions specifically required for each level of reclamation (RL1 to RL4 as described in Section 4.2.4 – Reclamation Levels) within the reclamation zones previously discussed (RZ1 to RZ6 as described in Section 4.1 – Identification of Reclamation Zones).

Reclamation actions are physical treatments and activities that will occur throughout each phase of the Project and are specific to RL, as identified in Table 4. Table 4 presents pre- and post-construction reclamation actions for each RZ and RL. Table 3, which identifies the RLs for various construction components, is to be used in conjunction with Table 4 to determine appropriate site-specific reclamation actions.

Table 4. Reclamation Action Identification

Reclamation Activity	RZ 1 (Shrublands)				RZ 2 (Grasslands)				RZ 3 (Agriculture)				RZ 4 (Forest and Woodland)				RZ 5 (Wetlands and Riparian)				RZ 6 (Other)			
	RL 1	RL 2	RL 3	RL 4	RL 1	RL 2	RL 3	RL 4	RL 1	RL 2	RL 3	RL 4	RL 1	RL 2	RL 3	RL 4	RL 1	RL 2	RL 3	RL 4	RL 1	RL 2	RL 3	RL 4
PRECONSTRUCTION ACTIONS																								
Noxious weed plan implementation	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Selective clearing			●	●											●	●			●	●				
Topsoil segregation			●				●				●				●				●				●	
Reclamation monitoring site selection			●				●				●				●				●				●	
POSTCONSTRUCTION ACTIONS																								
Noxious weed plan implementation	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Management of waste materials	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Earthworks			●	●			●	●			●	●			●	●			●	●			●	●
Topsoil replacement			●				●				●				●				●				●	
Seeding		●	●	●		●	●	●		●	●	●		●	●	●		●	●	●		●	●	●
Alternative seeding		●	●	●		●	●	●		●	●	●		●	●	●		●	●	●		●	●	●
Vertical mulch replacement			●												●				●					
Signage		●	●			●	●			●	●			●	●			●	●			●	●	
Reclamation monitoring (general and site-specific)		●	●	●		●	●	●		●	●	●		●	●	●		●	●	●		●	●	●

Notes:
RL – Reclamation level
RZ – Reclamation zone

If a variance to the expected disturbance level for a particular construction component is required due to unforeseen environmental or engineering constraints, Table 3 provides direction for determining the revised RL, which can then be used to identify the appropriate reclamation actions per Table 4.

These reclamation actions will facilitate resource protection during construction, enhance recovery for areas temporarily disturbed by Project construction, and promote the re-establishment of vegetation in disturbed areas.

Pre-Construction Agency Consultation

The Construction Contractor(s) will coordinate with the appropriate land management agency and ODOE or landowner(s) during the development of the Final Reclamation Plan. This coordination will include the following:

- Development of site-specific reclamation treatments where disturbance occurs,
- Determining desirable species for each reclamation zone to be included in Table 6 of this plan,
- Determining appropriate seed mixes for each reclamation zone, and
- Delineation of the geographic extent in which each seed mix will be distributed within the areas disturbed by construction.

The Construction Contractor(s) and appropriate land management agency and ODOE, or landowner(s) coordination will occur during the preconstruction phase of the Project to ensure the proper amount of each seed mix can be purchased and is available when needed. The goal of identifying site-specific reclamation treatments will be achieved through analysis of existing data and ground verification of habitat types documented during TVES surveys in areas subject to Project-related ground disturbance. In particular, habitat types important to threatened and endangered (T&E) species may require additional reclamation actions to mitigate disturbance impacts associated with the Project and maximize the probability of reclamation success.

The Construction Contractor(s) will also coordinate with the appropriate land management agency and ODOE on the methods to be used for: field-verification of habitat types within the Project disturbance area, identifying and mapping reclamation treatment and control monitoring sites, and collecting preconstruction qualitative and quantitative data at monitoring sites.

5.1 ROW Preparation and Preconstruction Actions

Preconstruction actions are those that occur before construction of the Project is initiated, and includes activities associated with ROW preparation. ROW preparation includes general site preparation involving flagging of the ROW boundaries, construction areas and sensitive resources (wetlands, T&E plants, cultural) to avoid accidental entry into these areas. It also includes identification and pre-treatment of noxious weed infestations located within proposed Project disturbance footprint (see Exhibit P1, Attachment P1-5, Noxious Weed Plan) and storage areas for windrowed plant and soil materials. Monitoring sites will be established, as described in Section 6.2.2 – Site-Specific Reclamation Monitoring.

Preconstruction actions will focus on protection of environmentally sensitive areas and resources identified for preservation, monitoring site selection and baseline data collection, and identification and pretreatment of noxious weed infestations located within proposed Project disturbance. Preconstruction actions and ROW preparation are the responsibility of the Construction Contractor(s).

Disturbance related to Project construction may begin only after all ROW preparation and

preconstruction actions have been completed.

5.1.1 Noxious Weed Plan Implementation

Noxious weeds and invasive plant species will be managed in conformance with the Noxious Weed Plan (Exhibit P1, Attachment P1-5). Specific measures and agency directives will be detailed in the Noxious Weed Plan once finalized, as well as information regarding noxious weed control measures and monitoring requirements. Noxious weed treatment and monitoring will continue following Project construction.

5.1.2 Monitoring Site Selection

As discussed below in Section 6.2.2 – Site-Specific Reclamation Monitoring, preliminary monitoring site locations will be established along the ROW. A single monitoring site includes

both a treatment site and a control site. The treatment site is an area expected to be disturbed during construction and that will be revegetated. The control site will be paired with the treatment site, meaning the control site will be in the vicinity of the treatment site and will have the same general slope, aspect, and habitat type as the treatment site (prior to disturbance).

Monitoring sites will be selected for each of the habitat types expected to be subject to Project-related surface disturbance as described below in Section 6.1 – Monitoring Requirements.

5.1.3 Selective Clearing

Selective clearing is the normal practice for mitigating impacts in areas where trees or brush of high densities have been cleared due to Project activities. Selective clearing is to be considered in shrubland (RZ1) or forest and woodland RZ (RZ4) areas of the Project. See the Vegetation Management Plan (Exhibit P1, Attachment P1-4) for further discussion of vegetation management.

5.1.4 Topsoil Segregation

Ground disturbance will be avoided and minimized where practical; however, even with avoidance and minimization of disturbance, there will still be extensive areas of temporary soil disturbance resulting from construction of the Project. The Final Reclamation Plan will identify locations where the management of topsoil is warranted (e.g., stripping off the topsoil layer and storing it separately from subsoils), such as areas where topsoil currently supports native plant species or in areas that are important to private landowners (e.g., agricultural soils). Generally, the topsoil layer is considered the upper 6 to 12 inches of soil, but this can vary by soil type, and soils deeper than 12 inches may need to be considered as “topsoil” in certain agricultural areas. Furthermore, top soils in dry shrubland and desert-like environments may be much thinner than 6 inches in many instances.

Topsoil segregation includes the separation of topsoil from subsoil. Topsoil contains organic material, including the seeds of plants growing on the site. Topsoil segregation will be performed where earthworks cause disturbance to vegetation and soil. Topsoil will be set aside for postconstruction replacement. The goal of this activity is to maintain the biological, chemical, and physical integrity of the topsoil and subsoil (where appropriate).

If topsoil is removed, care will be taken to ensure it is not mixed with the underlying subsoil. Topsoil will be stored in a separate stockpile. It will be returned to the area from which it was taken and will not be spread in adjacent areas. If topsoil is not suitable for backfill, it will be spread in other previously disturbed areas or transported to a predetermined off-site disposal area.

Additionally, subsurface soils and waste rock will be spread where practicable and in proximity to the disturbance (within the ROW). This material will be spread uniformly to match existing contours and covered with topsoil, when available, and re-seeded. Large rocks excavated during foundation work will be kept separate from topsoil during construction and during surface preparation as part of restoration. These rocks will be moved to designated on-site locations.

5.2 Postconstruction Reclamation Actions

Postconstruction reclamation actions occur after Project construction has terminated, and primarily focus on stabilizing permanent use areas and restoring temporary areas to allow revegetation. Postconstruction reclamation actions that may be used are defined below and are organized by their sequence of implementation. The Construction Contractor(s) will incorporate the reclamation actions identified in the Final Reclamation Plan that will be reviewed and

approved by the appropriate land management agency and ODOE, or landowner, before postconstruction actions commence.

If reclamation actions identified below cannot be implemented following construction, appropriate interim erosion control measures as proposed by the Construction Contractor(s) and approved by the appropriate land management agency, ODOE, landowner, and/or discussed in the Erosion and Sediment Control Plan (ESCP [discussed in Exhibit I, Soil Protection]), will be installed until revegetation can occur.

5.2.1 Management of Waste Materials

Management of waste materials will be performed in conformance with the Spill Prevention, Containment, and Countermeasures Plan (see Exhibit I, Soil Protection). Final cleanup will ensure all construction areas are free of construction debris including, but not limited to, assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices will be left in place.

5.2.2 Earthworks

Earthwork activities will include the re-establishment of slope stability, surface stability, desired topographic diversity, and drainage features. Subsurface soils and waste rock will be spread where practicable and in proximity to the disturbance (within the ROW). This material will be spread uniformly to match existing contours and covered with topsoil, when available, and re-seeded. Earthwork activities will include re-contouring, to the extent feasible, of areas that are not needed for operation and maintenance of the Project. Temporarily disturbed lands within the ROW will be re-contoured to match surrounding landscapes. Re-contouring will emphasize restoration of the existing drainage patterns and landform to preconstruction conditions, to the extent practicable. Structure pads and permanent access roads may be reseeded to reduce pad and road erosion, but these permanent features will not be re-contoured. Earthwork activities will also include application of appropriate hydrologic stabilization methods and soil erosion measures in conformance with the ESCP (see Exhibit I, Soil Protection).

Detrimental soil disturbance such as compaction, erosion, puddling, and displacement will be minimized through implementing measures identified in the ESCP. Measures may include road ripping, frequent water bars, cross-ditching (e.g., rolling dips), or other methods to reduce compaction while preventing gully formation. Ripping pattern will be altered to a crossing, diagonal, or undulating pattern of tine paths to avoid concentrated runoff patterns that can lead to gullies.

5.2.3 Topsoil Replacement

Areas within the ROW, laydown or staging yards, and other areas of extensive vehicle travel and material storage may contain compacted soils. These soils will be de-compacted on a case-by-case basis. In areas of droughty soils, the soil surfaces will be mulched and stabilized to minimize wind erosion and to conserve soil moisture in accordance with the ESCP. Topsoil and subsurface soils will be replaced in the proper order during reclamation.

5.2.4 Seeding

Seeding involves planting new seed of native or desirable introduced plant species to establish desired self-perpetuating plant communities within Project-affected areas. It is important to establish a species composition, diversity, structure, and total ground cover appropriate for the desired habitat type to meet the objectives of the BLM and USFS Resource Management Plans on public lands. As stated above, the BLM (2002) plan states that action on BLM lands should “Restore, protect, and enhance the diversity and distribution of desirable vegetation communities including perennial native and desirable introduced plant species.” While native

plant communities are generally preferred, in some cases, as determined by the appropriate land management agency, ODOE, or landowner, desirable introduced species may be recommended in seed mixes as a treatment to improve chances of reclamation success where the RZ(s) contain large quantities of invasive species such as cheatgrass or medusahead (*Taeniatherum caput-medusae*), or where there are other limiting factors such as precipitation variability or limited ecological site potential. Under these circumstances, a desirable introduced species seed mix may provide optimal ground cover and long-term protection against annual plant establishment. This treatment is identified as alternative seeding in this Reclamation Plan and is discussed in Section 5.2.5.

In addition to restoring temporarily disturbed areas, IPC will re-seed some permanently disturbed areas. To minimize potential damage from wildland fires, IPC will not reseed areas within a 20-foot radius around structures. Additionally, as stated in the Vegetation Management Plan (Exhibit P1, Attachment P1-4), brush and grass will be cleared around wood poles to help protect structures from range fires.

Appendix A – Preliminary Agency-Approved Seed Mixes includes a list of approved seed mixes provided by the BLM and USFS. These preliminary seed mixes were provided to IPC in a memo from Susan Fritts of the BLM, dated December 16, 2015. The objective of these seed mixes is to provide native or desirable introduced vegetation to compete with invasive and noxious weeds as well as reclaim continuous habitat for wildlife and pollinators species. The seed mixes presented in Appendix A are intended for rehabilitation of sites disturbed during Project construction and are not intended for mitigation of impacts to wetlands or traditional foods. Furthermore, in areas where the preconstruction vegetation is dominated by invasive annual species such as cheatgrass, a desirable introduced species mix has been developed to keep noxious weeds from invading, this mix is not intended to provide habitat for wildlife or pollinators. Soils with exposed or shallow bedrock may require adaptive seed mixtures and implementation of revegetation practices (i.e., fertilization, mulching, monitoring) to enhance revegetation success. Revegetation of areas with extensive rock outcrop may not be possible.

Because the Project crosses four ecoregions, botanists and wildlife biologists from the BLM and USFS designed these seed mixes to be used across each ecoregion and general vegetation community while still tailoring the mixes to be site appropriate. Information from *Natural Vegetation of Oregon and Washington* (Franklin and Dyrness 1973), BFI Native Seed, LLC, Natural Resource Conservation Service, as well as professional experience helped determine the seed mixes. Agency-approved seed mixes will be applied Project-wide, except in agricultural areas, to the appropriate habitat type, unless directed otherwise by the land management agency and/or landowner. The Construction Contractor(s) or weed specialist may recommend modified seeding application rates and timing of implementation to achieve site-specific weed management objectives. Final seed mixes will be determined by soil type and site-specific conditions and will be provided to the Construction Contractor(s) by a BLM or USFS specialist or landowner.

It is important to consider the source of seed used for revegetation. Seed that is genetically adapted to a particular ecoregion will have a much higher success rate in that ecoregion; however, ecoregion-specific seed is not always readily available. Wildland seed collection is a method of increasing seed supply that may be considered if commercially harvested seed is not available.

Before construction begins, the Construction Contractor(s) will produce the Final Reclamation Plan in coordination with the appropriate land management agency, ODOE, or landowner. The Final Reclamation Plan will specifically correlate agency-approved seed mixes to Project-identified RZs and habitat types.

Reclamation seeding methods will include broadcast seeding, drill seeding, or hydroseeding/hydromulching (or a combination of methods). Seeding methods will be chosen based on the type of seed, disturbance level, soil type, terrain, and precipitation levels for the area to be reclaimed. Seeding methods will be reviewed and approved by the land management agency or private landowner.

Broadcast seeding will apply the seed directly on the ground surface. The type of broadcast spreader will depend on the size of the area to be seeded, and the terrain. Seed will be placed in direct contact with the soil, ideally at a depth of approximately 0.5 to 1 inch deep. It will then be covered by raking or dragging a chain or harrow over the seed bed to remove air pockets. Studies have shown that good soil-to-seed contact is required for successful seed germination (Pyke et al. 2015).

Drill seeding will be used on areas of sufficient size with moderate or favorable terrain to accommodate mechanical equipment. Drill seeding provides the advantage of planting the seed at a uniform depth. This is important because seeds buried too deeply either germinate and die before reaching the surface or they may become dormant until they reach enough light to stimulate germination (Pyke et al. 2015).

Hydroseeding, which is the spraying of seeds and water onto the ground surface, or hydroseeding/hydromulching, which is the spraying of seeds, mulch, and water, may be implemented on steeper slopes. Tackifier may be added to facilitate adherence of hydromulch to slopes greater than 25 percent or on sandy or other highly erodible soils.

IPC may use soil amendments (e.g., fertilizer, wood or straw mulches, tackifying agents, or soil stabilizing emulsions) on a case-by-case basis. Straw, hay, mulch, gravel, seed, and other imported materials must be certified weed-free. If certified weed-free materials are not available, then alternative materials will be used with agency approval.

To help limit the spread and establishment of noxious weed species in disturbed areas, desired vegetation must be established promptly after disturbance. IPC will rehabilitate disturbed areas as soon as possible after ground-disturbing construction and operations and maintenance activities and during the optimal period. If areas are not immediately seeded after construction due to weather or scheduling constraints, all noxious weeds will be controlled before seeding. Appropriate herbicides will be used to ensure fall seedings are not affected by residual herbicides.

Additionally, to promote recolonization by T&E plant species and reduce competition between T&E and other plant species, the Construction Contractor(s) will prepare the site-specific revegetation, reseeding, and soil stabilization plans for all areas disturbed by construction or maintenance within 100 feet of mapped T&E plant occurrences. The site-specific plans will be approved by the BLM, USFS, or Oregon Department of Agriculture (ODA) Authorized Officer or his/her designated representative prior to implementation. The plans will be designed to ensure T&E plant species are not disadvantaged. The plans will include proposed seed mixes, seeding application rates, seeding methodologies, seeding timeframes, and any other revegetation or soil stabilization techniques (e.g., natural recolonization, alternative seeding, supplemental planting, supplemental watering, supplemental mulch, surface pocking, the use of soil stabilizers). The seed mixes will be developed in consultation with the BLM, USFS, or ODA botanist, favor the T&E plant species, and be based on site-specific vegetation found on the undisturbed areas adjacent to the areas to be revegetated or reseeded.

5.2.5 Alternative Seeding

Alternative seeding is employed to establish ground cover in disturbed or weed-infested areas by seeding of nonnative grasses and/or forbs. While nonnative species are generally not

desirable, they provide soil cover, stabilization, and a source of organic litter until other vegetation can become established in areas where systems have crossed abiotic and biotic thresholds to an alternative successional state and are unable to recover to their original state (Pyke et al. 2015). Similar to regular seeding, alternative seeding mix compositions and seeding methods will be determined prior to construction through Construction Contractor(s) coordination with the applicable land management agency, ODOE, or landowner.

5.2.6 Vertical Mulch/Slash

Vertical mulch/slash is brush and tree limbs less than 6 inches in diameter removed during woody vegetation removal operations. Vertical mulch/slash is not entirely in contact with the soil surface; rather, parts of the mulch rise above the surface. Removed and stored trees and shrubs are the sources of vertical mulch/slash. For cleared areas, vegetation windrowed to the outside of the disturbance boundary will be replaced back onto the site. Additionally, during topsoil segregation, small rocks will be incorporated and vegetation combined as vertical mulch.

5.2.7 Signage

Reclamation areas will require informational signs to prevent further human disturbance within these recovering areas. Signs stating “Restoration in Progress – No Vehicle Traffic Allowed,” or similar, will be installed as necessary at locations where the ROW intersects permanent access roads to deter vehicular damage to the site. The Construction Contractor(s) will provide reclamation signs and t-posts. Sign locations will be provided by the appropriate land managing agency and ODOE to the Construction Contractor(s) following completion of postconstruction reclamation procedures and prior to the initiation of reclamation monitoring.

5.2.8 Reclamation Monitoring

Monitoring will be initiated prior to construction and will continue through the postconstruction phases of the Project. Monitoring data will be documented and reported to facilitate revised reclamation strategies, if applicable. Revised strategies will be implemented as needed. Evaluation of reclamation success will be based on criteria as described in Section 6.4 – Reclamation Goals and Success Standards.

Reclamation monitoring and reporting will be conducted as described below in Section 6.2 – Monitoring Methods.

5.3 Modifications and Field Changes

The reclamation actions described in this Reclamation Plan will be incorporated into the Final Reclamation Plan, to be developed by the Construction Contractor(s) and subject to the approval of the appropriate land management agency, ODOE, or landowner.

Adjustments to RLs or actions by the Construction Contractor(s) may be necessary if Project conditions change (e.g., disturbance levels change at a specific tower work site, access roads change based on Project needs, etc.).

This Reclamation Plan is intended to provide flexibility with respect to construction and unknown constraints that may be encountered in the field. Changes to the original disturbance level or duration, previously described, will be documented by the Construction Contractor(s) and will be reassessed to ensure appropriate reclamation actions are implemented.

6.0 RECLAMATION SUCCESS STANDARDS, MONITORING, AND MAINTENANCE

Postconstruction reclamation monitoring is required to ensure soil protection is achieved, to evaluate reclamation success of reclaimed areas associated with the construction of Project facilities, to identify the need for adaptive management measures, and to make a final determination regarding reclamation success to release IPC (and the Construction Contractor(s) by contractual obligation) from further monitoring and reclamation actions. Reclamation success standards will be used by the appropriate land management agency and ODOE to determine if the implemented reclamation actions have adequately achieved the goals and objectives provided in the Final Reclamation Plan, with consideration for local site conditions.

The monitoring practices include standard techniques for monitoring sites, data collection, as well as the quantitative (numerical) and qualitative (descriptive) measures to be used in monitoring reclamation success. Specific monitoring requirements, including the site-specific data analysis protocol, will be developed by the Construction Contractor(s), in coordination with the appropriate land management agency and ODOE prior to the start of construction activities. Data will be collected as described below at both the treatment and control sites upon establishment of monitoring sites during preconstruction activities. The data will provide a baseline for comparison to post construction conditions and allow decision makers to make more accurate conclusions pertaining to reclamation success based on site-specific conditions, such as habitat type and climatic conditions.

Reclamation monitoring will be conducted every 1 to 2 years until vegetation is established in a similar species composition as the paired control site, and then will extend to a frequency of every 5 to 10 years (depending on habitat vegetation) until the vegetation reaches the same maturity as the paired control site. The first annual monitoring event will occur during the first growing season after reclamation actions occur. When it is determined that an area of the Project has been successfully reclaimed at any point during monitoring by satisfying all success criteria (as defined in Section 6.4 – Reclamation Success Standards), IPC will request concurrence from ODOE. If ODOE concurs, IPC will conclude that it has no further obligation to perform reclamation activities in that area of the Project, however, noxious weed monitoring will continue for the life of the Project. If, after 5 years of monitoring, some sites (e.g. grasslands) have not attained the success criteria or if at any point during the annual/bi-annual monitoring it is clear that reclamation cannot be successful (including private landowner denial of reclamation activities), IPC will coordinate with ODOE regarding appropriate steps forward. At this point, IPC may suggest additional reclamation techniques or strategies or monitoring, or IPC may propose mitigation to compensate for any permanent habitat loss.

The Construction Contractor(s) or third-party contractor will prepare and submit a Reclamation Monitoring Report for the entire Project length to IPC, the appropriate land management agency, and ODOE on an annual/bi-annual basis (as described above, based on habitat vegetation) following completion of each phase of construction. Annual/bi-annual reporting will continue until reclamation areas have satisfied all success criteria. The purpose of the Reclamation Monitoring Report is to provide a summary and status update on progress toward meeting reclamation goals and success standards as described in the Final Reclamation Plan. Because construction and reclamation activities will occur in phases, the monitoring report will also be organized by construction phase. The Reclamation Monitoring Report will, at a minimum, include:

- A reiteration of reclamation goals and success standards as described in the Final Reclamation Plan;
- A description of the monitoring practices implemented;

- A list and map identifying the location of all reclamation areas including their associated geographic information systems data;
- A presentation of the reclamation monitoring data collected;
- A discussion of the demonstrated or lack of demonstrated progress toward the success standards;
- A discussion of adaptive management;
- A proposed list of sites to be released from further monitoring; and
- Site-specific recommendations for remedial actions, as appropriate.

Adaptive management may be necessary to determine appropriate remedial actions, based on monitoring observations from any year, for sites that have not demonstrated progress toward reclamation success standards. If required, implementation of remedial actions will be determined by the appropriate land management agency and ODOE based on the monitoring data and annual report. Annual/bi-annual reports will be submitted with a summary of monitoring data, observations, and the overall trend toward reclamation for each habitat type. The appropriate land management agency and ODOE will release IPC from further reclamation and monitoring requirements for specific areas upon acceptance of the annual monitoring report documenting that reclamation success criteria have been met, as discussed above.

Monitoring reclamation activities and remedial measures on disturbed private lands (e.g., agricultural lands) will be determined based on agreements made between the landowner and IPC. Monitoring of agricultural lands is not proposed; restoration of agricultural lands will be considered complete upon replacement of disturbed soils and seeding or planting of crops.

6.1 Monitoring Requirements

Monitoring requirements will vary according to RL as shown in Table 5. RL1 areas (e.g., maintenance of the ROW, existing roads) are permanent disturbance areas that will not require reclamation monitoring. However, all areas disturbed by Project construction will follow measures for noxious weed control as applicable and specified in the Noxious Weed Plan (Exhibit P1, Attachment P1-5).

RL2, RL3, and RL4 are disturbance areas that will require reclamation actions and subsequent reclamation monitoring efforts. Reclamation monitoring includes both general reclamation monitoring and site-specific reclamation monitoring as described in Section 6.2.

The specific location of monitoring sites associated with these different activities will be in key areas and these sites will be reviewed and approved by the appropriate land management agency and ODOE prior to initiation of construction activities. Once monitoring sites have been approved, the Construction Contractor(s) will establish the sites in the field, and baseline data (e.g., photo points, biometrics, and soil conditions) will be collected. The Construction Contractor(s) will conduct annual monitoring following postconstruction activities as described in Section 6.0.

Table 5. Reclamation Monitoring Requirements

Construction Component	Disturbance Level	Disturbance Duration		Reclamation Level	Monitoring
		Temporary	Permanent		
Structure work areas	**D2** – Primitive	●		RL2	General
	D3 – Substantial Modification	●		RL3	General, Site-specific
	D4 – Bladed		●	RL4	General

Construction Component	Disturbance Level	Disturbance Duration		Reclamation Level	Monitoring
		Temporary	Permanent		
Pulling and tensioning sites, multi-use areas, and other ancillary facilities that result in temporary disturbance	**D2** – Primitive	●		RL2	General
	D3 – Substantial Modification	●		RL3	General, Site-specific
Longhorn Station, communication sites and other ancillary facilities that result in permanent (long-term) disturbance	**D2** – Primitive		●	RL1	General
	D3 – Substantial Modification		●	RL4	General
	D4 – Bladed		●	RL4	General
Existing paved roads, access roads (no improvement)	**D1** – No New Disturbance		●	RL1	Not Required
Existing access roads (with improvements)	**D2** – Primitive		●	RL1	Not Required
	D2 – Primitive	●		RL2	General
	D3 – Substantial Modification		●	RL4	General
	D3 – Substantial Modification	●		RL3	General, Site-specific
	D4 – Bladed		●	RL4	General
New access roads	**D2** – Primitive		●	RL1	General
	D2 – Primitive	●		RL2	General
	D3 – Substantial Modification		●	RL4	General
	D3 – Substantial Modification	●		RL3	General, Site-specific
	D4 – Bladed		●	RL4	General

6.2 Monitoring Methods

Identification and establishment of monitoring sites will be accomplished prior to ground-disturbing activities. Identification of monitoring sites (both a treatment site and control site) will include the collection of baseline data for comparison with subsequent postconstruction monitoring. Postconstruction annual monitoring and collection of data will be conducted during the growing season after reclamation actions occur for each phase of construction.

An annual Reclamation Monitoring Report will be prepared by the Construction Contractor(s) and provided to IPC, the appropriate land management agency, and ODOE for review and discussion of reclamation conditions. The annual report will include geographic information systems data as part of the deliverable.

Construction activities will result in varying disturbance levels that will require two types of monitoring:

1. **General reclamation monitoring**. General field reconnaissance (windshield survey) and reporting of conditions in areas disturbed during construction where reclamation actions have been implemented.
2. **Site-specific reclamation monitoring**. Detailed field data collection and reporting at designated reclamation monitoring sites as identified in the Final Reclamation Plan.

A description of the activities associated with these two monitoring methods (practices), and how these practices will be assigned to areas affected by construction of the transmission line and associated facilities, is presented below. The Construction Contractor(s) will consult with the appropriate land management agency and ODOE to adapt these practices, as needed, to meet localized conditions and concerns.

6.2.1 General Reclamation Monitoring

A general field review of the transmission line layout, where accessible by vehicle and right-of-entry is granted, will be conducted in conjunction with annual site-specific reclamation monitoring. The intent of this review is to document overall recovery conditions associated with the Project. Conditions of concern warranting documentation may include establishment of noxious weed populations resulting from Project construction, a lack of desirable vegetation cover, soil compaction, or lack of soil parent material due to erosion. In lieu of establishing monitoring sites, documentation may include establishing single photo points at locations agreed upon with the appropriate land management agency and ODOE and/or recording the apparent cause of unsuccessful reclamation. Site locations may be documented by noting the direction and estimated distance to the nearest transmission line tower (by number) or global positioning system (GPS) coordinates.

Adaptive management actions may be implemented based on findings of general reclamation monitoring as recommended by the appropriate land management agency and ODOE and described in Section 6.5 – Adaptive Management and Site Release. Each annual visit will be used to assess designated general reclamation monitoring locations and document new locations where appropriate.

6.2.2 Site-Specific Reclamation Monitoring

Preliminary site-specific reclamation monitoring locations will be established prior to ground-disturbing activities within areas that will be disturbed by the Project. Site identification will be based on habitat type and habitat category previously identified during the TVES survey, as well as agency recommendation. A single monitoring site includes both a treatment site and a control site. The treatment site is an area expected to be disturbed during construction that will be reclaimed. The control site will be paired with the treatment site, meaning the control site will be in the vicinity of the treatment site and will have the same general slope, aspect, and habitat type as the treatment site (prior to disturbance). A control site may be paired with multiple treatment sites provided there is a high degree of similarity between sites.

Monitoring Site Selection Criteria

Sites will be selected prior to disturbance for each of the reclamation zones and habitat types traversed by the Project, in accordance with the processes identified below.

- Site selection will be prioritized to include T&E plant species occurrences and locations with high visual resource values.
- At least one paired monitoring site will be established for each area of disturbance affecting T&E plants.

- The final number of monitoring sites per habitat will be based on the extent and diversity of vegetation within each habitat type, with an anticipated average of two to five paired monitoring sites per habitat type.
- Selection of monitoring sites will be stratified based on proportions of each habitat type subject to reclamation activities (e.g., if 40 percent of the total area subject to disturbance and subsequent reclamation activities is sagebrush, then 40 percent of the total number of monitoring sites will be located in sagebrush).
- Selection of monitoring sites shall be further stratified based on the presence of noxious weeds, nonnative, or invasive species infestations (e.g., if the total habitat type area is approximately 70 percent cheatgrass, approximately 70 percent of the monitoring sites will be located in cheatgrass-infested areas, and approximately 30 percent of the monitoring sites will be located in noninfested areas).

Final determination of monitoring sites will be approved by the appropriate land management agency and ODOE prior to construction. Cooperation with the Construction Contractor(s) may be necessary prior to construction if changes to construction work area(s) affect the location(s) of the preliminary monitoring site(s).

For each monitoring site, paired transects will be installed and documented as treatment or control for quantitative monitoring. In general, the treatment transect will be placed within an affected area (normally within the immediate ROW), and the control transect will be placed immediately adjacent to the ROW, on undisturbed ground if on public lands. If control plots are on private land, they will be installed within the private land easement. Transect size and quantity will be determined based on the final footprint of disturbed areas, in cooperation with the appropriate land management agency and ODOE. Transect pairs will be sized and oriented in a similar manner, for consistency, unless terrain or construction conditions require deviation. In addition, the location of monitoring sites will avoid areas susceptible to future human disturbance (off-highway vehicles [OHV], transmission line maintenance, planned future utilities), where possible, to preserve the integrity of each monitoring site for the duration of the monitoring period. IPC may consider additional protections (including fencing, signage, or landowner agreements) to maintain effectiveness of monitoring sites.

Once monitoring site locations are finalized, photo points will be established prior to any construction-related disturbance. Photo points will be marked by a metal pin or metal T-post and location recorded with GPS technology to ensure that subsequent photographs are taken from the same location. The cardinal direction of photographs taken will be recorded to allow duplication, to the extent possible, of the same view during annual monitoring events. Photographs will be taken at each photo point (1) when the photo point is established, (2) when initial reclamation efforts have been completed, and (3) during each annual monitoring visit. Photo points will be collected at the same time of year for each year of monitoring, and with the same camera, if possible. Each photo point will include:

- A close-up photograph (0.5-meter by 0.5-meter photo plot) depicting soil surface characteristics and amount of vegetation and litter; and
- A general overview photograph of the site and/or photographs depicting north, south, east, and west views.

Site-specific reclamation monitoring sites will be examined annually, and a variety of vegetation data will be collected including quantitative and descriptive information. Parameters that will be used to measure reclamation success are presented in Section 6.4 – Reclamation Goals and Success Standards. Reclamation monitoring sites will also assess noxious weed, nonnative, and invasive species establishment that may require remedial actions such as removal or

treatment. However, it should be noted that postconstruction monitoring for Project-related impacts to noxious weeds might occur independently of reclamation monitoring, as outlined in Exhibit P1, Attachment P1-5, Noxious Weed Plan.

Reclamation monitoring will also include the consideration of erosion control as a key indicator to measure the trend toward reclamation success (where applicable), and remedial actions may be taken in conjunction with monitoring efforts to control erosion, as needed. These remedial actions will also follow requirements as stipulated in the ESCP discussed in Exhibit I, Soil Protection. In conjunction with, and complementary to, reclamation monitoring, IPC is responsible for monitoring to ensure soil protection is achieved, and providing a monitoring report on reseeding success and/or other methods to stabilize soils to the appropriate land management agency and ODOE annually until it has been determined that an area of the Project has satisfied all success criteria and/or IPC has been released from reclamation obligations (as described above).

6.3 Data Collection

All data collected in support of the Reclamation and Revegetation Plan will be made available to ODOE and its cooperating agencies.

The collection of baseline data during preconstruction establishment of treatment and control monitoring sites and annual postconstruction reclamation monitoring will include both quantitative (numerical) and qualitative (descriptive) data collection. Quantitative monitoring will document the trend and degree of change at each site, and qualitative monitoring will enable investigation of potential reasons for reclamation success or lack thereof and identification of unanticipated issues. Additional baseline data to be collected during preconstruction establishment of treatment and control sites will include the collection of site characteristics that are not expected to change throughout the monitoring period. In addition to the qualitative and quantitative data described below, information to be collected and/or recorded during the initial establishment of monitoring sites may include GPS location, slope, aspect, elevation, soil type, current habitat type, and existing disturbances.

Reclamation monitoring for the Project will use vegetation as the main indicator of recovery, but observations of soil conditions, such as of compaction, rutting, and erosion, will also be documented and considered when assessing progress toward functionality. Measurements and descriptions will be accompanied by photographs that will be used to visually document the status of recovery at all monitoring sites. Sampling points will be mapped and relocated using GPS technology. Photo points and field notes will be the primary methods of qualitative monitoring for the Project. A protocol for taking photographs and a standardized data-recording form (likely electronic form) will be developed by the reclamation subcontractor and approved by the appropriate land management agency and ODOE to ensure consistency of monitoring. Qualitative and quantitative information to be obtained during general reclamation monitoring and site-specific monitoring is described in detail below.

For disturbed areas affecting T&E species, at a minimum, photographs from permanent photo points, percent cover of T&E species within the affected areas, and noxious weed presence and treatment data will be collected and reported. Reclamation monitoring in T&E plant occurrences will be conducted during the blooming period for the species of interest.

6.3.1 Baseline Information

Site characteristics that are not expected to change throughout the monitoring period will be collected during the initial visit. These characteristics should be as similar as possible between

control and treatment (i.e., paired) sites. Data to be collected and recorded during the establishment of control and treatment sites may include the following:

- *Location.* Record the location of control and treatment sites and photo points with a GPS.
- *Slope.* Slope of the control and treatment sites will be recorded. This may include a range if slope is not generally uniform throughout the monitoring site.
- *Aspect.* Record the aspect of the control and treatment sites (cardinal direction the site faces).
- *Elevation.* Record the elevation of the control and treatment sites.
- *Soil type.* Record the soil type(s) based on Natural Resources Conservation Service-mapped soil type.
- *Current habitat type.* Record the current habitat type using a field key such as NatureServe (2006). Ecological site information may also be recorded as it provides insight on site potential, productivity, successional patterns, and management implications.

6.3.2 Qualitative (Descriptive) Information

Qualitative data collection will occur annually for both general and site-specific monitoring. The goal of qualitative monitoring is to describe site conditions and assess the need for remedial actions to ensure sites are progressing toward the success standards as established in this plan by the reclamation subcontractor in consultation with the appropriate land management agency and ODOE. The Project area typically has unpredictable weather patterns that may affect reclamation success. Comparing annual qualitative evaluations within similarly disturbed areas in the same habitat type will allow for identification of sites that are demonstrating a comparative lack of reclamation success and may require remedial action. Any non-Project-related disturbances that could affect reclamation will also be documented and described during the collection of qualitative information.

Reclamation success may be assessed by the presence or condition of certain site characteristics that encourage recruitment of native vegetation. If reclamation actions for a given site are implemented successfully, they will contribute to the stabilization of soils, native species seedling or seedbank recruitment, and prevention of noxious weeds establishment. The following items should be considered when creating a qualitative monitoring worksheet for use during monitoring:

- *Waste materials management.* Is the site free of trash and construction material? Is the area free of undesirable materials that may inhibit reclamation success?
- *Evidence of soil stabilization and lack of erosion.* Describe visible signs of soil erosion such as rock pedestals, overland flow patterns, and the formation of rills or gullies. Indicators that soils have not stabilized and erosion is negatively affecting reclamation success include rills greater than 2 inches, sheet flow, head cutting in drainages, eroded slopes occurring on or adjacent to reclaimed areas, and any signs showing accelerated erosion is occurring and soils are not being held by plants on site.
- *Occurrence of noxious weeds.* Noxious weeds compete with native species, and relatively high abundances can have negative effects on site conditions. Are noxious weeds on site both the treatment and control site? Are they inhibiting reclamation success beyond their level of influence at the control site?
- *Evidence of wildlife use.* Wildlife presence can indicate that habitat conditions are improving; however, concentrated or prolonged herbivory can negatively affect

reclamation success if unmanaged. Are wildlife species over-browsing the site? Are wildlife using the site for cover, bedding, or feeding?

- *Livestock use.* Livestock can affect site conditions. Are livestock present on the site? Are livestock trails, prints, and scat present?
- *Recreation and other human-use.* Recreation and other human-use can affect site conditions. Are human trails, trash, or other items that indicate use?
- *Visual appearance.* Does the visual appearance compare similarly to surrounding habitats? Visual comparison with general patterns of established vegetation documented during preconstruction conditions or as observed in the control site will help to determine whether large bare areas are indicative of site conditions or simply a result of the innate patchiness of the habitat type.
- *Plant vigor.* Do mature plants and seedlings appear healthy? Are there signs of decadence, or are plants in poor, fair, good, or excellent condition?
- *Evidence of good reproductive capability and success.* Is seed production evident? Are flowers or seed stalks evident? Are seedlings present? Is vegetative reproduction occurring (e.g., rhizomes and tillers)? How does the number of flowering plants and seedlings compare to the control site or the expectations of the particular seed mix utilized for reclamation?

Each of these site characteristics will help determine trends that relate to reclamation success.

6.3.3 Quantitative (Numerical) Information

Desirable vegetation cover and composition will be quantitatively assessed at site-specific reclamation monitoring sites during annual monitoring to determine if there is progress toward reclamation success standards based on comparison with preconstruction treatment site conditions and the paired control site. Quantitative assessment will enable early identification of potential reclamation issues, and ensure that vegetation establishment of affected areas is occurring as expected based on climatic trends for the area. The following items should be considered when establishing a quantitative monitoring methodology:

- *Plant species list.* Record a complete plant list for each monitoring site. This provides a relative measure of diversity at the site. Each species should be categorized by its growth habitat (e.g., shrub, herbaceous forb, graminoid) and native status (e.g., native, nonnative, or listed as a noxious weed). T&E species will be indicated as such.
- *Total canopy cover.* A line-point intercept method (Herrick et al. 2005) is a rapid and accurate method for quantifying cover, including vegetation, litter, bare soil, rocks, and biotic crusts. This method provides measures for foliar cover, basal cover, and bare ground.
- *Vegetation type structure and composition.* Indicate percent cover of plant species by growth habitat and native status. This will allow for an assessment of whether treatment sites are trending toward achievement of the target habitat type structure and composition.
- *Percent cover of dominant species.* The percent cover for the species with the highest percent cover at each monitoring site will be reported. This information will enable comparison with the control site and provide an indicator of whether the treatment site is developing similar proportional cover of desirable dominant species.
- *Percent cover of T&E species.* The percent cover for T&E species will be recorded, regardless of whether they are most numerous or not, based on the line-point intercept method.

- *Percent cover of weed species.* The percent foliar cover of weed species will be recorded. This will allow an assessment of whether percent cover of weed species at treatment sites are being maintained at a level equal to or less than control sites.

Diversity, composition, and cover data will be recorded on standard field data sheets (likely electronic forms) to be developed by the Construction Contractor(s) and approved by the appropriate land management agency and ODOE.

6.4 Reclamation Success Standards

Reclamation success, as presented in this Reclamation Plan, is defined by the progression of vegetation and soils toward control site and/or preconstruction conditions. Once reclamation success standards have been met, established vegetation is anticipated to contribute to the maintenance and functionality of the community to ensure continued success after monitoring has concluded.

IPC will be responsible for monitoring reclamation efforts for the Project. Reclamation success will be evaluated by the Construction Contractor(s) and approved by the appropriate land management agency and ODOE by comparing treatment sites to control sites in terms of desirable species cover. The Construction Contractor(s) shall prioritize native perennial bunchgrass as desirable species cover. Reclamation of treatment sites will be considered successful if each site is within a specified percentage of the mean native species cover of the paired control site. Control sites will be representative areas that exhibit the same target habitat type located adjacent to, or near the Project-affected treatment sites. Control sites will be selected with the same slope, aspect, and elevation as treatment sites, to the extent practicable. The establishment of control sites within vegetation undisturbed by the Project will allow comparisons between the reclamation progress of the treatment site and sites undisturbed by the Project. Reclamation success is highly dependent on habitat type, environmental conditions (e.g., annual precipitation), avoidance of future disturbance, and proper implementation of reclamation actions. Recovery from construction disturbance activities such as clearing and grading in semi-arid and arid climactic zones in which the Project is located does not typically occur quickly.

Therefore, reclamation monitoring will assess the progress toward reclamation success standards presented in Table 6. Success standards will be developed based on preconstruction data collected at each monitoring site and/or data collected at each control site.

Table 6 presents preliminary reclamation monitoring success standards for each reclamation zone identified in Section 4.1 of this Plan. These standards will be considered the minimum requirement for each reclamation zone. Every reclamation zone includes a range of habitat types that will need to be considered to determine final reclamation standards for each monitoring site identified.

Table 6. Preliminary Reclamation Monitoring Success Standards

Reclamation Zone	Percent Desirable Vegetation Cover[1]
RZ1 – Shrublands	50
RZ2 – Grasslands	70/ 30
RZ3 – Agriculture	60
RZ4 – Forest and Woodland	50
RZ5 – Wetland and Riparian	70
RZ6 – Other	60

[1] As described in Section 6.3.3. above.

During finalization of the plan, the Construction Contractor and review agencies shall establish

the desirable vegetation for each reclamation zone. While the success standards identified in Table 6 are preliminary, it is noted that the certificate holder commits to compensatory mitigation in its Habitat Mitigation Plan (Attachment P1-6) for temporary impacts to habitat categories 2 through 4, and that in combination with the above-minimum success standards could fully mitigate the temporary impact. Prior to construction, if Table 6 success criteria is selected, certificate holder shall demonstrate to the Department and ODFW, through letter memo with tables and narrative, that the combination of the above success criteria and compensatory mitigation included in the HMP fully mitigate temporary impacts in accordance with the applicable habitat category mitigation goal. If certificate holder intends to remove acres from its compensatory mitigation sites once revegetation success has been achieved, or cannot demonstrate that combined revegetation and compensatory mitigation for temporary impacts satisfies the applicable habitat category mitigation goal, the agency preferred success criteria, as presented below shall apply to revegetation under this plan and Table 6 shall be removed from the final plan:

Agency Preferred Success Criteria:

- For all Reclamation Zones, % cover of desirable vegetation (native grasses, forbs, shrubs, and trees) is equal or better than percent cover at paired control site
- For RZ1 – Shrublands, in addition to the above criteria, 15% sagebrush cover

Reclamation monitoring success standards will be based on quantitative data collected (discussed in Section 6.3 – Data Collection above) during preconstruction baseline surveys at treatment and control sites. Percent cover for both sites will be compared to ensure that preconstruction baseline conditions are similar to the control site within a particular habitat type. Any major differences will be noted and discussed in the annual monitoring report. Success

standards may be adjusted based on differences between the treatment and control site. Any adjustments to reclamation success standards will require the approval of the appropriate land management agency and ODOE.

After determining that the treatment and control sites are comparable, future reclamation success, based on percent cover measurements, will be compared against cover values collected at the control site. For example, if a treatment site is determined to be within the shrubland reclamation zone, the corresponding control site should also be within the shrubland reclamation zone. If certificate holder maintains acres for temporary habitat impacts in its compensatory mitigation sites (Attachment P1-6 Habitat Mitigation Plan) for the life of the facility, the treatment site will be considered a reclamation success once the percent desirable cover reaches a total of 50 percent of the control site's total vegetation cover [see Table 6]). As described above, if certificate holder intends to remove acres from its compensatory mitigation sites (Attachment P1-6 Habitat Mitigation Plan) once revegetation success has been achieved, the above-referenced agency-preferred revegetation success criteria of equal or better conditions for monitoring sites compared to control sites shall apply.

If the annual monitoring report concludes (with agency concurrence) that typical environmental conditions, proper implementation of reclamation actions, and lack of disturbance is evident, reclamation success will be based on vegetation cover for each habitat type within the reclamation zone. If reclamation success is not evident by the last annual monitoring report (with agency concurrence), or if interim monitoring reports indicate that reclamation success is highly unlikely, adaptive management and/or remedial actions (Section 6.5 – Adaptive Management and Site Release) may be required.

6.5 Adaptive Management and Site Release

An adaptive management approach will allow frequent review and feedback on the progress of reclamation as a part of monitoring activities for the Project. Adaptive management greatly increases the potential for reclamation success by providing for early detection of problems and the opportunity to implement remedial actions to address these problems, if necessary. Effective monitoring is an essential element of adaptive management because it provides reliable feedback on the effects of reclamation actions. If adaptive management measures are determined to be necessary, monitoring data (both qualitative and quantitative) will provide information on reclamation components that are deficient, such as desirable vegetation cover, soil compaction, or lack of parent soil material due to erosion. Based on this information, appropriate remedial reclamation actions may include measures such as supplemental seeding, mulching, weed treatment, access control, herbivory prevention, and/or erosion control measures. Recommendations could also include waiting to determine if favorable germination/establishment conditions are expected such as ample seasonal moisture or favorable temperatures.

Progress toward reclamation success standards, as well as remedial/adaptive management actions (if necessary), will be identified in annual Reclamation Monitoring Reports.

Should remedial actions be required after year three, additional qualitative and quantitative monitoring in years four and five (as appropriate) will allow the effects of remedial action or climatic events to be discerned. Adaptive management actions to address unauthorized or excessive access, herbivory, or erosion may be appropriate on a case-by-case basis where feasible as early as year one or two, based on monitoring data analysis described in the annual Reclamation Monitoring Reports. Adaptive management actions such as supplemental planting or seeding may not be appropriate until analysis of year three monitoring data because in some situations it may take three growing seasons for plant establishment to stabilize, allowing for assessment of reclamation success. Recommendations for adaptive management actions will be included in the annual Reclamation Monitoring Report and implemented by IPC in

coordination with the appropriate land management agency and ODOE.

All adaptive management actions will be subject to the review and approval of the appropriate land management agency and ODOE. The Construction Contractor(s) will use all reasonable methods to help IPC ensure reclamation is progressing toward the success standards identified in Section 6.4 – Reclamation Goals and Success Standards. To the extent possible, IPC will tailor ROW easements to reduce potential land use conflicts within reclaimed areas by proposing access control (Exhibit B, Attachment B-5) and other means to regulate potentially disruptive land use activities. It is possible some sites will be incapable of supporting adequate vegetation to progress towards the success standards due to conflicting land management and/or environmental limitations not associated with the Project. For instance, reclamation may fail in areas with non-Project related disturbance such as unmanaged OHV access, grazing of domestic livestock, natural disasters such as fire or flooding, and/or construction of other projects. If reclamation failure is determined to be caused by these non-Project related disturbance, IPC will coordinate with ODOE regarding appropriate steps forward. IPC may suggest additional reclamation techniques or strategies or monitoring, or IPC may propose mitigation to compensate for any permanent habitat loss.

7.0 PLAN UPDATES

Once the preferred route is selected, final engineering is completed, and complete coverage of the Project area is conducted, a Final Reclamation Plan can be prepared. The Final Reclamation Plan will be updated prior to the start of construction. As the construction order and schedule are refined, the Final Reclamation Plan will be updated to include the schedule for baseline vegetation and weed surveys, identification of any areas for preconstruction noxious weed treatment, and provide a more detailed reclamation schedule and plan. Details specific to noxious weeds are presented in the Noxious Weed Plan (see Exhibit P1, Attachment P1-5).

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APPENDIX A
PRELIMINARY AGENCY-APPROVED SEED MIXES

The seeding rates in the table below are only provided for grasses being planted using a standard rangeland drill. If other methods of seeding are to be used, the seeding rate would likely need to be adjusted. Additional time is needed to develop seeding rates for forb and shrub species. In general, these species would compose a small portion of the seed mix and would be seeded at 0.1 pound per acre (lb./acre) or less. IPC may consider planting well established sagebrush plants and other shrubs acquired from reputable nurseries in areas where shrubs have been removed or crushed. Planting of established sagebrush plants and other shrubs will require site-specific consideration and coordination with ODOE.

Owyhee and Malheur Counties/Northern Basin and Range and Snake River Plain

Loamy Soil Mix

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Bluebunch wheatgrass	*Pseudoroegneria spicata*	50	7
Bottlebrush squirreltail	*Elymus elymoides*	20	2
Sandberg's bluegrass	*Poa secunda*	20	0.25
Basin wildrye	*Leymus cinereus*	5	1
Western yarrow	*Achillea millefolium*		
Basalt milkvetch	*Astragalus filipes*		
Sulfur buckwheat	*Eriogonum umbellatum*		
Bigseed biscuitroot	*Lomatium macrocarpum*		
Munro globemallow	*Sphaeralcea munroana*		
Wyoming sagebrush/ Basin big sagebrush[1]	*Artemisia tridentata* ssp. *tridentate /* ssp. *wyomingensis*		

Sandy Soil Mix

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Indian ricegrass	*Oryzopsis hymenoides*	50	6
Needle and thread	*Hesperostipa comata*	30	4
Bottlebrush squirreltail	*Elymus elymoides*	20	2
Monroe globemallow	*Sphaeralcea munroana*		
Tufted evening primrose	*Oenothera caespitosa*		
Smooth desert dandelion	*Malaxothrix glabrata*		
Fourwing saltbush	*Atriplex canescens*		
Rubber rabbit brush	*Ericameria nauseosa*		
Antelope bitterbrush	*Purshia tridentata*		

Riparian

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Baltic rush	*Juncus balticus*	80	1
Spike rush	*Eleocharis palustris*	20	3

Southern Baker County/Blue Mountains

Wyoming Sagebrush Mix

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Bluebunch wheatgrass	*Pseudoroegneria spicata*	50	7
Idaho fescue[2]	*Festuca idahoensis*		
Bottlebrush squirreltail	*Elymus elymoides*	20	2
Sandberg's bluegrass	*Poa secunda*	15	0.25
Small fescue	*Vulpia macrostachys*	5	0.10
Basin wildrye	*Leymus cinereus*	5	1
Western yarrow	*Achilea millefolium*		
Basalt milkvetch	*Astragalus filipes*		
Parsnipflower buckwheat	*Eriogonum heracleoides*		
Bigseed biscuitroot	*Lomatium macrocarpum*		
Monroe globemallow	*Sphaeralcea munroana*		
Arrowleaf balsamroot	*Balsamorhiza sagittata*		
Hoary aster	*Machaeranthera canescens*		
Wyoming sagebrush	*Artemisia tridentata* ssp. *wyomingensis*		
Three tip sagebrush[3]	*Artemisia tripartita*		
Curl-leaf mountain mahogany[3]	*Cercocarpus ledifolius*		

Mountain Sagebrush Mix

Same as Wyoming sagebrush mix but replace Wyoming sagebrush with Mountain sagebrush

Riparian

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Nevada rush	*Juncus nevadensis*	60	1
Spike rush	*Eleocharis palustris*	40	3

Northern Baker, Union, and Morrow Counties/Blue Mountains

Warm/Hot Forests

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Bluebunch wheatgrass	*Pseudoroegneria spicata*	60	9
Sandberg's bluegrass	*Poa secunda*	20	0.3
Prairie Junegrass	*Koeleria macrantha*	20	0.15
Penstemon	*Penstemon* sp.		
Oregon sunshine	*Eriophyllum lanatum*		
Western yarrow	*Achillea millefolium*		
Tailcup lupine	*Lupinus caudatus*		
Heartleaf arnica	*Arnica cordifolia*		
Larkspur	*Delphinum* sp.		
Hoary aster	*Machaeranthera canescens*		
Missouri goldenrod	*Solidago missouriensis*		

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Mountain monardella	*Monardella odoratissima*		
Hollyleaved barberry[4]	*Mahonia aquifolium*		

Warm/Hot Forests Riparian

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Blue wildrye	*Elymus glacus*	50	5
Western wheatgrass	*Pascopyrum smithii*	50	5

Cool Forests

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Blue wildrye	*Elymus glacus*	33	4
Mountain brome	*Bromus marginatus*	33	6
Pinegrass	*Calamagrostis rubescens*	33	0.25
Heartleaf arnica	*Armica cordifolia*		
Thickstem aster	*Eurybia integrifolia*		
Missouri goldenrod	*Solidago missouriensis*		
Aster	*Aster foliaceous*		
Snowberry[4]	*Symphoricarpos albus*		
Dwarf rose[4]	*Rosa gymnocarpa*		
Prickly currant[4]	*Ribes lacustre*		

Cool Forest Riparian

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Blue wildrye	*Elymus glacus*	50	4
Mountain brome	*Bromus marginatus*	50	6

Umatilla County/Columbia Basin

Loamy Soils

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Bluebunch wheatgrass	*Pseudoroegneria spicata*	50	7
Bottlebrush squirreltail	*Festuca idahoensis*	15	1.5
Sandberg's bluegrass	*Poa secunda*	15	0.25
Thickspike wheatgrass	*Elymus lanceolatus* ssp. *lanceolatus*	20	5
Wooly plantain	*Plantago patagonica*		
Narrow leaf milkweed	*Asclepias fascicularis*		
Silky lupine	*Lupinus sericeus*		
Common sunflower	*Helianthus annuus*		
Tiny trumpet	*Collomia linearis*		
Rubber rabbitbrush	*Ericameria nauseosa*		

Sandy Soils

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Bluebunch wheatgrass	*Pseudoroegneria spicata*	46	7
Indian ricegrass	*Oryzopsis hymenoides*	12	1
Sandberg's bluegrass	*Poa secunda*	12	0.25
Needle and thread	*Hesperostipa comata*	6	1
Bottlebrush squirreltail	*Elymus elymoides*	8	1
Sand dropseed	*Sporobolus cryptandrus*	6	0.025
Purple three awn	*Aristida purpurea*	10	0.5
Wooly plantain	*Plantago patagonica*		
Narrow leaf milkweed	*Asclepias fascicularis*		
Silky lupine	*Lupinus sericeus*		
Common sunflower	*Helianthus annuus*		
Tiny trumpet	*Collomia linearis*		
Rubber rabbitbrush	*Ericameria nauseosa*		

Riparian

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Baltic rush	*Juncus balticus*	80	1
Spike rush	*Eleocharis palustris*	20	3

Areas Dominated by Invasive Annual Species (throughout Project)

Under 4,000 feet Elevation

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Siberian wheatgrass/Vavilov[5]	*Agropyron fragile*	100	10

Over 4,000 feet Elevation

Common Name	Scientific Name	Percent Composition	Seeding Rate (lb./acre)
Crested wheatgrass/Ephraim[6]	*Agropyron cristatum*	100	10

Notes:
[1] Use of Wyoming sagebrush or Basin big sagebrush would depend on which species was present preconstruction.
[2] On moist north slopes, add Idaho fescue at a rate of 1 lb./acre and reduce bluebunch wheatgrass to 4 lb./acre.
[3] Species to be added site specifically.
[4] Species would be planted as one- or two-year seedlings into disturbed areas.
[5] Siberian wheatgrass will not be used for re-seeding on Forest Service-administered lands, unless otherwise approved by the U.S. Forest Service.
[6] Crested wheatgrass will not be used for re-seeding on Forest Service-administered lands, unless otherwise approved by the U.S. Forest Service.

Attachment P1-4

Draft Vegetation Management Plan

ATTACHMENT P1-4
VEGETATION MANAGEMENT PLAN

Vegetation Management Plan

Boardman to Hemingway Transmission Line Project

1221 West Idaho Street
Boise, Idaho 83702

September 2018

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ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
BLM	Bureau of Land Management
IPC	Idaho Power Company
kV	kilovolt
NERC	North American Electric Reliability Council
ODOE	Oregon Department of Energy
OSHA	U.S. Department of Labor Occupational Safety and Health Administration
Project	Boardman to Hemingway Transmission Line Project
ROW	right-of-way
TVES	Terrestrial Visual Encounter Surveys
TVMP	Transmission Vegetation Management Program
USFS	United States Forest Service

Agency Review Process

The agency review process outlined in this section aligns with the OAR 345-025-0016 agency consultation process applicable to monitoring and mitigation plans.

To afford an adequate opportunity for applicable local, state and federal agencies to review the draft plan prior to finalization and implementation, and any future plan amendments, the certificate holder shall implement the following agency review process.

Step 1: Certificate Holder's Update of Draft Plan or Future Plan Amendment: The certificate holder may develop one Right of Way Clearing Assessment to cover all construction activities for the entire facility; or, may develop individual plans per county, segment or phase, as best suited for facility construction. Based on the draft Right of Way Clearing Assessment included as Attachment K-2 of the Final Order on the ASC, the certificate holder shall update the draft plan(s) based on facility design and construction plans. If the plan(s) are amended following finalization, the certificate holder shall clearly identify and provide basis for any proposed changes.

Step 2: Certificate Holder and Department Coordination on Appropriate Review Agencies and Agency Review Conference Call(s): Prior to submission of the updated draft plan, or any future amended plans, the certificate holder shall coordinate with the Department's Compliance Officer to identify the appropriate federal, state and local agencies to be involved in the plan review process. Once appropriate federal, state and local agency contacts are identified by the Department and certificate holder, the Department's Compliance Officer will initiate coordination between agencies to schedule review/planning conference call(s). The Department and certificate holder may agree to schedule separate conference calls per county.

The intent of the conference call(s) are to provide the certificate holder, or its contractor, an opportunity to describe details of the updated draft or amended plan; and, agency plan review schedule. Agencies may provide initial feedback on requirements to be included in the plan during the call, or may provide written comments during the 14-day comment period. The Department will request that any comments provided be supported by an analysis and local, state or federal regulatory requirement (citation).

The certificate holder may coordinate with appropriate review agencies, in advance of or outside of the established agency review process; however, this established agency review process is necessary under OAR 345-025-0016 and may result in more efficient plan finalization and amendment if managed in a consolidated process, utilizing the Department's Compliance Officer as the lead Point of Contact.

Step 3: Agency Review Process: Either with, or prior to, the agency conference call(s), the certificate holder shall distribute electronic copies of the draft, or future amended, plan(s) requesting that the Department coordinate agency review comments within 14-days of receipt, or as otherwise determined feasible. Following the 14-day agency review period, the Department will consolidate comments and recommendations into the draft, or amended, plan(s), using a Microsoft Word version of the plan provided by certificate holder. Within 14-days of receipt of the agency review comments, the certificate holder shall provide an updated final version of the plan, incorporating any applicable regulatory requirements, as identified during agency review or must provide reasons supporting exclusion of recommended requirements. Final plans will be distributed to applicable review agencies by the Department, including the certificate holder's assessment of any exclusions of agency recommendations, and a description of their opportunity for dispute resolution.

Step 4: Dispute Resolution: If any review agency considers the final, or amended, plan(s) not to adhere to applicable state, federal or local laws, Council rules, Council order, or site certificate condition or warranty, the review agency may submit a written request of the potential violation to the Department's Compliance Officer or Council Secretary, requesting Council review during a regularly scheduled Council meeting. The Council would, as the governing body, review the violation claim and determine, through Council vote, whether the claim of violation is warranted and identify any necessary corrective actions.

1.0 INTRODUCTION

This Attachment to Exhibit P1 to Idaho Power Company's (IPC) Application for Site Certificate provides information on the Vegetation Management Plan that IPC will follow for the life of the Boardman to Hemingway Transmission Line Project (Project). The Project area, or Site Boundary, as defined in Oregon Administrative Rule 345-001-0010(55) includes "the perimeter of the site of a proposed energy facility, its related or supporting facilities, all temporary laydown and staging areas, and all corridors and micrositing corridors proposed by the applicant." The Site Boundary for this Project includes the following facilities in Oregon:

- The Proposed Route, consisting of 270.8 miles of new 500-kilovolt (kV) electric transmission line, removal of 12 miles of existing 69-kV transmission line, rebuilding of 0.9 mile of a 230-kV transmission line, and rebuilding of 1.1 miles of an existing 138-kV transmission line;
- Four alternatives that each could replace a portion of the Proposed Route, including the West of Bombing Range Road Alternative 1 (3.7 miles), West of Bombing Range Road Alternative 2 (3.7 miles), Morgan Lake Alternative (18.5 miles), and Double Mountain Alternative (7.4 miles);
- One proposed 20-acre station (Longhorn Station);
- Ten communication station sites of less than ¼ acre each and two alternative communication station sites;
- Permanent access roads for the Proposed Route, including 206.3 miles of new roads and 223.2 miles of existing roads requiring substantial modification, and for the Alternative Routes including 30.2 miles of new roads and 22.7 miles of existing roads requiring substantial modification; and
- Thirty temporary multi-use areas and 299 pulling and tensioning sites of which four will have light-duty fly yards within the pulling and tensioning sites.

The Project features are fully described in Exhibit B, and the Site Boundary for each Project feature is described in Exhibit C, Table C-24. The location of the Project features and the Site Boundary is outlined in Exhibit C. This Vegetation Management Plan includes a discussion of 1) the purpose, goals and objectives, 2) an overview of the vegetation community types within the Site Boundary where vegetation management will occur, and 3) methods of vegetation management.

1.1 Purpose

This Vegetation Management Plan describes the framework for the development of the final Vegetation Management Plan. The focus of this framework and the final Plan is to describe the methods in which vegetation along the transmission line will be managed during operation of the Project. The measures IPC will undertake to control noxious and invasive-plant species and prevent the introduction of these species within the Project Site Boundary are discussed in the Noxious Weed Management Plan (Exhibit P1, Attachment P1-5). The measures that will be taken to reclaim and revegetate areas that have been impacted by construction activities are discussed in the Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3).

This Plan is applicable Project-wide, and it is expected that modifications to this Plan will be made once final agreements are reached with the appropriate land management agencies and the Oregon Department of Energy (ODOE), as well as with counties and individual landowners. The final Vegetation Management Plan is intended to meet the applicable guidance contained in the Oregon Forest Practices Act (Oregon Administrative Rule Chapter 629), United States

Forest Service (USFS) Manual 2070 (USFS 2008) and 2900 (USFS 2011), as well as any applicable Bureau of Land Management (BLM) Resource Management Plans and local (i.e., county or city) management plans. Vegetation management specifications will follow those detailed in PacifiCorp's Transmission and Distribution Vegetation Management Program Specification Manual (Appendix A).

1.2 Goals and Objectives

IPC has two goals for conducting vegetation management during operation of the Project:

1. Access: IPC's access goal for conducting vegetation management is to maintain work areas adjacent to Project features but within the right-of-way (ROW), that will allow vehicle and equipment access; this access is necessary for operations, maintenance, and repair of the Project.
2. Safety/reliability: IPC's safety and reliability goal for vegetation maintenance is to maintain the safety and reliability of the transmission line, by preventing tall vegetation from coming into contact with conductors.

2.0 OVERVIEW OF EXISTING ENVIRONMENTS

Vegetation management activities may occur throughout the Project but will be heavily focused in forest and woodland areas, and forested riparian and forested wetlands where tall shrubs and trees may impact transmission lines and structures. IPC used data from the Terrestrial Visual Encounter Surveys (TVES) to identify the ecological systems and assign a habitat type and category based on vegetation characteristics. However, due to limitations on access to private lands, surveys have not been completed within the entire Site Boundary. Approximately 67 percent of the Site Boundary was surveyed for TVES (see Exhibit P1). In areas where survey information was not available due to unsigned right-of-entry agreements or changes in route alignment, biologists used desktop analysis methods to assign habitat type and category. The U.S Geological Service Gap Analysis Project data (USGS 2011) and aerial imagery interpretation were used to delineate habitat type and agency designated habitats (e.g., Oregon Department of Fish and Wildlife designated big game habitats). Known occurrences of special status species, and conditions in adjacent surveyed areas were used to approximate the appropriate category type. Detailed descriptions of the modeling and criteria used to identify and categorize habitats within the Site Boundary are included in Attachment P1-1, Habitat Categorization Matrix, and Attachment P1-6, Fish and Wildlife Habitat Mitigation Plan.

TVES and subsequent desktop analysis for the habitat categorization process identified various habitat types present within the Site Boundary. These habitat types were then assembled into vegetation cover types for purposes of this Vegetation Management Plan. Grouped cover types are useful in presenting and describing vegetation management methods used for specific habitat types, mainly forest and woodland. These vegetation cover types differ slightly from the "General Vegetation Type" identified as part of the habitat categorization process and are described below in Table 1.

The extent of each vegetation cover type and the habitat types included in each cover type within the Site Boundary are presented in Table 1. Descriptions of each cover type are provided in the Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3), but are described as Reclamation Zones in that plan. The vegetation cover types specific to the Vegetation Management Plan are described below.

Table 1. Vegetation Cover Types within the Site Boundary

Vegetation Cover Type	Percent of Site Boundary	Habitat Types Included in Each Vegetation Cover Type
Shrubland	37	Desert Shrub Shrub-Steppe with Big Sage Shrub-Steppe without Big Sage
Grassland	18	Native Grasslands
Agriculture	8	Agriculture
Forest and Woodland	13	Douglas-Fir / Grand Fir Ponderosa Pine Western Juniper / Mountain Mahogany Woodland Forested – Other
Wetland / Riparian	1	Emergent Wetland Scrub-Shrub Wetland Forested Wetland Aquatic Bed Wetland Ponds and Lakes Ephemeral, Intermittent, and Perennial Stream Herbaceous Riparian Introduced Riparian Riparian Woodland and Shrubland
Other	23	Introduced Upland Vegetation Developed / Disturbed Bare Ground, Cliffs, Talus

Forest and Woodland, where most vegetation management will occur, account for 11 percent of the Site Boundary. Forest and Woodland types are made up mostly of Douglas-fir (*Pseudotsuga menziesii*) forest and ponderosa pine (*Pinus ponderosa*) forest with lesser amounts of western juniper (*Juniperus occidentalis*) woodlands. Forested habitats are found predominantly in the Blue Mountains, in Umatilla and Union counties, from just south of La Grande to south and east of Pendleton. Small pockets of Douglas-fir forests are also mapped in the drainages and highest elevations southwest of the town of Durkee. Logging and other disturbance such as grazing is common in these cover types. Juniper woodlands are mostly found in Baker County northwest of Durkee to south of Weatherby.

Wetland and Riparian habitat occurs in 1 percent of the Site Boundary. These areas are found throughout the Site Boundary adjacent to rivers, springs, and seeps. Vegetation management may be required in forested wetland and riparian areas where trees and shrubs may grow sufficiently large to interfere with transmission lines and structures.

3.0 VEGETATION MANAGEMENT

General vegetation management strategies are described below, with specifications and methodologies detailed in the PacifiCorp Transmission and Distribution Vegetation Management Program Specification Manual (Appendix A).

IPC must maintain work areas adjacent to electrical transmission structures and along the ROW to allow access for vehicles and equipment necessary for operations, maintenance, and repair. Furthermore, vegetation management under the transmission line minimizes the potential for fires and power outages that can result when vegetation comes into contact with conductors.

Vegetation management is expected to be minimal for the Project, as the vast majority of the Project crosses through areas that contain low-growing vegetation cover types (e.g., grasslands and shrublands; Table 1). As these vegetation cover types will not grow to heights that could interfere with the transmission line, they will not be maintained or cleared under the line during operation of the Project. Forest and Woodlands make up 13 percent of the area within the Site Boundary and will account for the majority of the vegetation management activities. Some vegetation management may also be required in wetland/riparian areas that are dominated by trees or tall shrubs.

Vegetation management will be conducted in compliance with the American National Standards Institute (ANSI) Pruning Standards Best Management Practices for Utilities, Oregon Forest Products Act, the U.S. Department of Labor Occupational Safety and Health Administration (OSHA), North American Electric Reliability Council's (NERC) Standard FAC-003-3 Transmission Vegetation Management Program (TVMP)[1], and IPC's TVMP (Appendix A). The vegetation management program will accomplish the following tasks:

- Lines that are 138-kV, 161-kV, 230-kV, and above are patrolled, at a minimum cycle of once a year, to identify hazardous vegetation, within or adjacent to the ROW, that could fall in or onto transmission lines or associated facilities. Hazardous trees, snags, or "hot spots" are removed. Any trees that will become a clearance violation prior to the next scheduled maintenance cycle are evaluated, and trimmed or removed.
- Trim trees and tall shrubs to the extent that the clearance lasts for the duration of the cycle.
- Remove vegetation, as necessary, to provide required electrical clearance and improve access to facilities.
- Remove tall-growing vegetation within structures. Clear brush and grass around wood poles to help protect structures from range fires.
- Facilitate a low-growing plant community that stabilizes the site, inhibits the growth of tall-growing shrubs and trees, and provides habitat for wildlife.

Clearing of vegetation near Project components will be accomplished using manual (i.e., hand pulling, lopping by hand crews), and mechanical methods (i.e., chainsaws, weed trimmers, rakes, shovels, mowers, brush hooks, and Slash Buster [a track-driven machine]), or a combination of these methods. The specific methods depend on site-specific conditions, such as slope, access, size/extent of vegetation, previous agreements with landowners, and the presence of sensitive resources. In order to meet vegetation maintenance objectives, herbicides may also be used to control vegetation in selected areas as described in Section 3.3 of this Plan.

Forest and woodland habitats are concentrated in the portion of the Project that crosses the Blue Mountains, but are also found northwest of Durkee to south of Weatherby. Initial ROW clearing activities in forest and woodland habitats are detailed in Exhibit K, Attachment K-2 ROW Clearing Assessment. Unlike the portion of the Project that crosses low-lying vegetation (e.g., grasslands and shrublands), these forest and woodland habitats, as well as some wetland and riparian areas, contain vegetation that will need to be maintained within the ROW in order to maintain access, safety, and reliability of the Project. Maintenance of the ROW will require IPC to file with the Oregon Department of Forestry a Plan for an Alternate Practice under the Oregon

[1] FAC-003-1 requires transmission owners to prepare, and keep current, a formal TVMP. The TVMP shall include the transmission owner's objectives, practices, approved procedures, and work specifications. Available at: http://www.nerc.com/files/FAC-003-1.pdf

Forest Practices Act. IPC's Plan for an Alternate Practice is included in Exhibit BB, Attachment BB-1. The vegetation management that will be conducted along these forested and woodland portions of the Project is discussed in the following sub-section.

3.1 Right-of-Way Maintenance

Vegetation management practices along the ROW will be conducted in accordance with the TVMP in Appendix A. As stated above, these practices will comply with the standards set by the ANSI Pruning Standards Best Management Practices for Utilities, the Oregon Forest Products Act, and by OSHA and NERC requirements.

A wire-border zone method will be used during maintenance of the ROW in forested and woodland habitats to control tall vegetation and to ensure adequate ground-to-conductor clearances (Appendix A, Section 6.7.1.5.1). This method results in two zones of clearing and revegetation: the wire zone and the border zone. The wire zone includes the linear area along the ROW located under the wires as well as the area extending 10 feet outside of the outermost phase-conductor. After initial clearing, vegetation in the wire zone will be maintained to consist of native grasses, legumes, herbs, ferns, shrubs, and other low-growing vegetation that remain under approximately 5 feet tall at maturity. The border zone is the linear area along each side of the ROW extending from the edge of the wire zone to the edge of the ROW. Vegetation in the border zone will be maintained to consist of tall shrubs or short trees (up to 25 feet high at maturity), grasses, and forbs. These cover plants along the border zone benefit the ROW by competing with and excluding undesirable plants. No clearing will be conducted in areas where the height of mature trees will not come within 50 feet of the wires (e.g., a canyon or ravine crossing with high ground clearance at mid-span). Minimum clearance values are affected by circuit voltage, terrain, span length, ruling span length, conductor size and tension, anticipated wind conditions, and structure framing parameters. Figures 6.4a, 6.4b, and 6.5 in Appendix A illustrate specifications for the wire-border zones.

Transmission lines are inspected and cleared on long-term cycles; however, shorter clearing cycles may occur if conditions dictate out-of-cycle trimming is needed to maintain the wire-border zone objectives. During operations, vegetation growth will be monitored and managed to maintain the wire-border zone objectives. The methods for maintaining vegetation within the wire and border zones will be similar to those described above, with the exception that mechanical as opposed to manual methods will be employed due to the scope and extent of area to the treated.

In addition to the cyclical inspection cycles described above, Transmission Patrolmen patrol and inspect lines at a minimum once a year to identify any transmission defects and any vegetation hazards that may develop between the long-term clearing cycles. During these inspections, the Patrolman will identify hazardous vegetation, within or adjacent to the ROW, that could fall in or onto the transmission lines or associated facilities and cause an outage. The Patrolman will evaluate the hazardous vegetation as to the level of threat posed by categorizing the vegetation as an "imminent threat," "medium hazard," or "low hazard." Any issues found are reported to the grid operator and to vegetation management, and documented on an Emergency Tree Action Form. If possible, the Patrolman will take photos of the "imminent threat" vegetation for further evaluation by vegetation management staff.

Imminent threats are any vegetation issue that poses an imminent threat of causing a line outage and that has a high risk of failure in the next few days or weeks. These imminent threats are normally tall trees that have one or more drastic defects that could cause the tree to fail and fall in or onto transmission lines and cause an outage. An "imminent threat" could also be vegetation that is in good condition but that has grown so close to the transmission line that it could be brought into contact with the line through a combination of conductor sag and/or wind-

induced movement in the conductor or the vegetation. Hazards are any vegetation issue that poses a threat of causing a line outage, but that has either a low or medium risk of failure in the next month. These hazards are normally trees that have one or lesser defects that could cause the tree to fail and fall in or onto transmission lines and cause an outage.

On federal and state ground, IPC prefers to clear cut all tall-growing trees in the ROW. Clear-cut methods include crews that use chain saws, or track-driven machines such as Slash Buster and the Brontosaurus. On private property, removal is IPC's first choice, but if not approved, IPC will proceed to trim the trees. The typical trimming methods used are a top trim or side trim.

During tree- and shrub-trimming operations, strategies that minimize effects to wildlife will be used. Tree and shrub trimming will be avoided during the primary avian breeding season (April 1–July 15), especially in sensitive habitat (i.e., riparian). Upland habitat suitable to nesting migratory birds will be surveyed prior to ground clearing between April 1 and July 15 for active nests. A 100-foot no-construction-buffer around active nests will be implemented. No seasonal restrictions will be imposed on clearing upland habitat between July 15 and February 15. Ground clearance in riparian habitats will be allowed between August 1 and March 30, with the exception of a seasonal constraint for impacts to fisheries resources.

3.2 Slash and Debris Management

As the vast majority of the Project crosses through areas where little to no vegetation management will be conducted, substantial slash and debris is unlikely to be generated along most portions of the Project during operations. However, maintenance and construction along the portion of the Project that crosses forested and woodland areas could generate timber slash and debris. In general, this slash and debris can be either 1) chipped, with the chips scattered along the ROW or removed; 2) lopped and scattered on site; or 3) piled on site. IPC's preferred method for handling slash is to lop and scatter the slash on site, as long as the scattered material does not block access, represent a safety hazard, or adversely affect management goals for the area. The method for managing slash and debris in these areas will be determined based on the requirements and recommendations by the appropriate land management or regulatory agency and ODOE. Slash management strategies will be developed to minimize fuel loading and wildfire hazard.

3.3 Herbicide Use

On federally controlled lands, a Pesticide Use Proposal will be submitted prior to any application as recommended in the Final Environmental Impact Statement on Vegetation Treatments Using Herbicides on BLM Lands in Oregon (BLM 2010). The Pesticide Use Proposal will include the dates and locations of application, target species, herbicide, adjuvants, application rates and methods (e.g., spot spray vs. boom spray), and anticipated impacts to non-target species and susceptible areas. Private property will be sprayed only if written approval is obtained from the landowner. All herbicide applications will comply with U.S. Environmental Protection Agency label instructions; federal, state, and/or county regulations; permit stipulations; and landowner agreements. Herbicide contractors, certified and approved in the state of Oregon, will have current safety data sheets and will take all reasonable precautions to prevent spills.

Herbicide use near special status species and waterbodies will follow label requirements, state and federal law, and BLM and USFS recommendations. Only herbicides approved by the land-managing agency as safe to use in aquatic environments and reviewed by IPC for effectiveness will be used within 100 feet of aquatic resources, and no herbicides will be applied within 100 feet of known threatened and endangered plants or waterbodies during preconstruction activities. Areas of flowing water, wetlands, or other sensitive resources where herbicide use will be prohibited will be described in the Final Noxious Weed Plan and be identified on construction

maps and flagged. IPC will also comply with the Idaho and Oregon National Pollutant Discharge Elimination System permits related to the use of herbicides in and adjacent to waterbodies.

Care will be taken during transport and storage to minimize the potential for leaks. In the event of an herbicide spill, the spill will be promptly cleaned up by appropriately trained personnel, and contaminated materials will be transported to a disposal site that meets local, state, and federal requirements. If a spill occurs whose cleanup is beyond the capability of on-site equipment and personnel, an Emergency Response Contractor available to further contain and clean up the spill will be identified. Potential contractors will be identified prior to the start of construction activities. Emergency spill response kits will be maintained at all locations where hazardous materials, including herbicides and pesticides, are stored in sufficient quantities based on the amount of materials stored on-site. Spill kits will include materials to address spills both on land and into water. If a spill occurs, the applicator will report it in accordance with applicable laws and will contact Construction Contractor(s) supervisory personnel, the appropriate land management agency, and the ODOE. Spill preventive and containment measures or practices will be incorporated as described in Exhibit G, Materials Analysis, and Attachment G-4, Draft Spill Prevention, Control, and Countermeasures Plan.

Additional information pertaining to herbicide use is listed in the Noxious Weed Plan (Exhibit P1, Attachment P1-5).

4.0 PLAN UPDATES

Once the preferred route is selected and final engineering is completed, an updated Vegetation Management Plan will be prepared. The Vegetation Management Plan will be updated prior to the start of construction.

5.0 LITERATURE CITED

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APPENDIX A
PACIFICORP'S TRANSMISSION AND DISTRIBUTION VEGETATION MANAGEMENT PROGRAM SPECIFICATION MANUAL

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

Transmission & Distribution
Vegetation Management Program

Standard Operating Procedures

Revision	Status	Date	Author	Change Tracking
00	Issued for implementation	12/15/2008	R. H. Miller	Manual created
01	Reviewed/Updated	06/15/2012	R. H. Miller	1. Clarified language throughout 2. Revised Chapter 4 to reflect a process checklist used for project management. 3. Modified Clearance 2 to strictly reflect table 5 in IEEE 516-2003 Table 5. 4. Section 6.4.1 changed so that if contract utility foresters identify an imminent threat, they contact the appropriate line patrolmen to initiate the imminent threat procedure.
02	Reviewed/Updated	09/06/2013	R.H. Miller	1.Clarified language throughout. 2. Revised distribution action thresholds and clearance standards to accommodate three and four year cycles. 3. Modified transmission clearance requirements to accommodate FAC-003-02
03	Reviewed/Updated	06/24/2015	R.H. Miller	1. Clarified language 2. Brought specification manual into line with FAC-003-03
04	Reviewed/Updated	07/01/2015	R.H. Miller	1. Corrected Table of Contents 2. Updated Figures 2.1 and 6.6 with Rocky Mt. Power 3. Corrected reference to Table 2.2 4. Added substation inspection Section (2.6 and 4.2.4.6) 5. Clarified definition of interim work. 6. Clarified side work.
05	Reviewed/Updated`	06/01/2016	R.H. Miller	1. Changed document to "Standard Operating Procedures" 2. Clarified language 3. Chapter 2. a. Added "At Fault" tree crew caused outages language – Section 2.1.6 b. Added language to contact media – Section 2.4.2.1 c. Added language to contact legal – Section 2.4.2.2 d. Added language that mechanical cutting (Jarraff's and helicopters) to comply with ANSI A300. e. Added language for storm emergency response 2.10. f. Added language assigning responsibility for property damage to contractors 2.12. 4. Chapter 4 a. Added language to requiring rules be followed on hydroelectric facilities and communicate with plant manager – Section 4.2.4.7. b. Added language requiring limited visual hazard tree inspections around substations and transition stations – 4.2.4.8.

Revision	Status	Date	Author	Change Tracking
				c. Added language on working around schools – Section 4.2.7.1. d. Added language regarding working near mobile home parks and apartment complexes – Section 4.2.7.2. e. Simplified language on accounting for pruning in – Section 4.3.1 5. Chapter 5 a. Updated interim maintenance language – Section 5.3 b. Added a section on distribution herbicide maintenance – Section 5.5 c. Updated work thresholds and clearances – Table 5.1 d. Added table on interim work thresholds and clearances – Table 5.2 e. Added section on padmount transformers – Section 5.7. 6. Chapter 7 a. Added section on closed chain of custody – Section 7.1 b.

Approval: Steve Anderton, Managing Director, T&D Support Services Date: 06/01/2017

Transmission & Distribution
Vegetation Management Program

Standard Operating Procedures

June 1, 2017

PacifiCorp, Director, Vegetation Management
1407 West North Temple, Room 230
Salt Lake City, Utah 84116
801.220.2271

Transmission & Distribution
Vegetation Management Program

Standard Operating Procedures

Mission Statement:

Manage trees and vegetation around PacifiCorp's transmission and distribution facilities in a professional, cost effective and environmentally conscientious manner to provide safe, reliable and outstanding service to our customers.

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Figures and Tables

1. PROGRAM OVERVIEW

Trees growing into or near power lines are a concern for PacifiCorp because they can create safety and service reliability risks. Close growing branches can provide access for children and others to high-voltage lines, exposing them to the potential danger of serious injury or death due to electric contact. Branches touching power lines can spark and start fires and cause interruptions in electric supply. Trees whipped by winds or weighed down by rain or snow can interrupt power, which disrupts businesses, homes, and compromises critical community infrastructure, such as hospitals and emergency services.

Three major electric grid failures, including the catastrophic blackout on August 14, 2003, were initiated by tree-caused outages on transmission lines (U.S.-Canada Power System Outage Task Force 2003).

For these reasons and others, the National Electrical Safety Code (ANSI 2016) Section 2l8-A-l, states:

> *Trees which may damage ungrounded supply conductors should be pruned or removed. Note: Normal tree growth, the combined movement of trees and conductors under adverse weather conditions, voltage and sagging of conductors at elevated temperatures are among the factors to be considered in determining the extent of pruning required.*

PacifiCorp's distribution system averages scores of trees for every mile of line, any of which could potentially create problems. With that level of exposure, it is impossible to secure the system completely. Electric utilities, such as PacifiCorp, manage their systems to reduce electric supply and service reliability risks by clearing trees from power lines.

Often, particularly in the case of transmission lines, the best solution is to remove tall-growing trees in favor of low-growing species that will never interfere with the high-voltage lines. However, it is not always possible to remove conflicting trees. Trees that cannot be removed must be pruned to clear the utility space using modern, arboriculturally-sound pruning practices.

PacifiCorp's standard operating procedures cover the vegetation management program for both distribution and transmission facilities. It includes program descriptions, specifications and protocols for customer relations. Its intent is to provide direction for foresters as well as contract GF/supervisors, contract utility foresters and utility tree workers on PacifiCorp's system, and helps inform PacifiCorp employees about vegetation management.

1.1 Applicable References

The following standards and best practices shall be followed:

- *American National Standard for Tree Care Operations: ANSI A300 (Part 1) Pruning*
- *American National Standard for Tree Care Operations: ANSI A300 (Part 7) Integrated Vegetation Management*
- *American National Standard for Tree Care Operations: ANSI A300 (Part 9) Tree Risk Assessment.*

- *American National Standard for Arboricultural Operations ANSI Z133 Safety Requirements*

The following best practice should be followed:

- International Society of Arboriculture: *Best Management Practices, Utility Pruning of Trees*
- International Society of Arboriculture: *Best Management Practices, Integrated Vegetation Management*
- International Society of Arboriculture: *Best Management Practices, Tree Risk Assessment*
- Utility Arborist Association Best Management Practices: *Field Guide to Closed Chain of Custody for Herbicides in the Utility*

1.2 Professionalism

PacifiCorp employs a staff of professional foresters to manage its vegetation program and communicate effectively the community service it provides. Contractor front line managers, supervisors or general foreman (GFs) must be Society of Arboriculture (ISA) Certified Arborists and ISA Certified Utility Specialists. PacifiCorp promotes Board Certified Master Arborist credentials among its staff foresters.

1.2.1 Contract utility forester Qualifications

Contract utility foresters should have the following qualifications:

- Contract utility forester 1: No experience required. ISA certification and a certified applicator card not required. Maximum of 90 days in this position.
- Contract utility forester 2: Minimum of an associate's degree and up to two (2) years' experience. ISA certification and a certified applicators license required.
- Contract utility forester 3: Minimum of an associates degree and over two (2) years' experience. Certified applicator's license and ISA certification required.
- Contract utility forester 4: Minimum of a bachelor's degree or four (4) years' experience. Certified applicator's license, ISA certification and Utility Specialist certification are required.
- Contract utility forester 5: Minimum of a bachelor's degree and five (5) years' experience. Certified applicator's license, ISA certification and Utility Specialist certification are required. This is the preferred classification.

PacifiCorp vegetation management is founded on the industry's best practices, including systematic maintenance, scientifically-based pruning, tree removal, tree replacement, cover type conversion, herbicide use and tree growth regulator applications; as well as specialized tools and equipment. PacifiCorp is progressive in trying innovative methods, products and equipment in order to improve safety and productivity.

1.3 Tree Line USA

PacifiCorp has been a Tree Line USA recipient utility every year since 2002. Tree Line USA is an award from the National Arbor Day Foundation, which recognizes utilities for utilizing practices that protect America's urban forests. To qualify, utilities must apply scientifically-based tree care, conduct annual worker training, plant trees, and conduct public education, including participating in Arbor Day celebrations. Contract

employees should participate in annual worker training to cooperate with and help PacifiCorp continue to merit this award.

2. GENERAL PROCEDURES

General specifications cover safety, the environment, how to approach archeological sites, communication, tree growth rate definition, tree removal, mechanical and helicopter cutting, slash disposal, emergency disposal, facility inspection, property damage, freelance work and miscellaneous procedures.

2.1 Safety Federal and state OSHA requirements governing vegetation management activities shall be followed at all times. ANSI Z133.1 (ANSI 2012) and OSHA 1910.269, are examples of these requirements. Activities shall be conducted in a manner that minimizes both tree crew and public safety risks. Crews shall have functional radio or telephone communication on the job site at all times.

PacifiCorp's electrical system will continue in normal operations during routine vegetation management work. Contract employees shall be aware of the potential dangers and qualified to work in the vicinity of energized facilities. Contract personnel performing line clearance work shall hold one of the following designations as defined by ANSI Z13:

- Qualified Line Clearance Arborist
- Qualified Line Clearance Arborist Trainee

2.1.2 Holds and Clearances

Minimum approach clearances for qualified line clearance arborists specified in ANSI Z133 or PacifiCorp's *Accident Prevention Manual* (Joint Safety Committee 2003 [Table 2.1]), should not be compromised. If there is a difference in the distances required in the two standards, the greater of the two is operative. If work requires violating minimum approach distances, or if a crew leader determines conditions to be unsafe, crew leaders should contact their supervisor/GF before proceeding. The GF/supervisor should determine whether or not a clearance or hold is necessary at that work site.

A hold means deactivating automatic line reclosers on a circuit. It is intended to protect PacifiCorp facilities and should not be considered a safety measure. If, in the judgment of the crew leader, an energized line cannot be worked safely, the GF/supervisor should arrange a clearance. A clearance is de-energizing a line.

PacifiCorp does not issue holds or clearances to tree crews. Rather, the Company will issue holds or clearances to a journeyman lineman, who shall be present at the site during work. Holds require at least 48 hours' notice to dispatch, vegetation management and the district operations manager. In some cases, a clearance on transmission lines must be requested weeks or even months in advance. Customers do not need to be notified if a clearance is necessary to safely work trees from lines in an emergency.

Customers who will be affected by planned power outages associated with clearances must also receive 48 hours notice, except during emergency situations such as storm restoration work. De-energized lines; whether due to a planned outage, wind or storm damage, or some other reason; must be worked as if they are energized. If a line cannot be worked safely assuming it is energized, it must be grounded. Linemen must set the grounds and be present during work, and

give approval prior to tree crew members breaching minimum approach distances to ensure safety.

Figure 2-1 Emergency procedure for a tree on line incident.

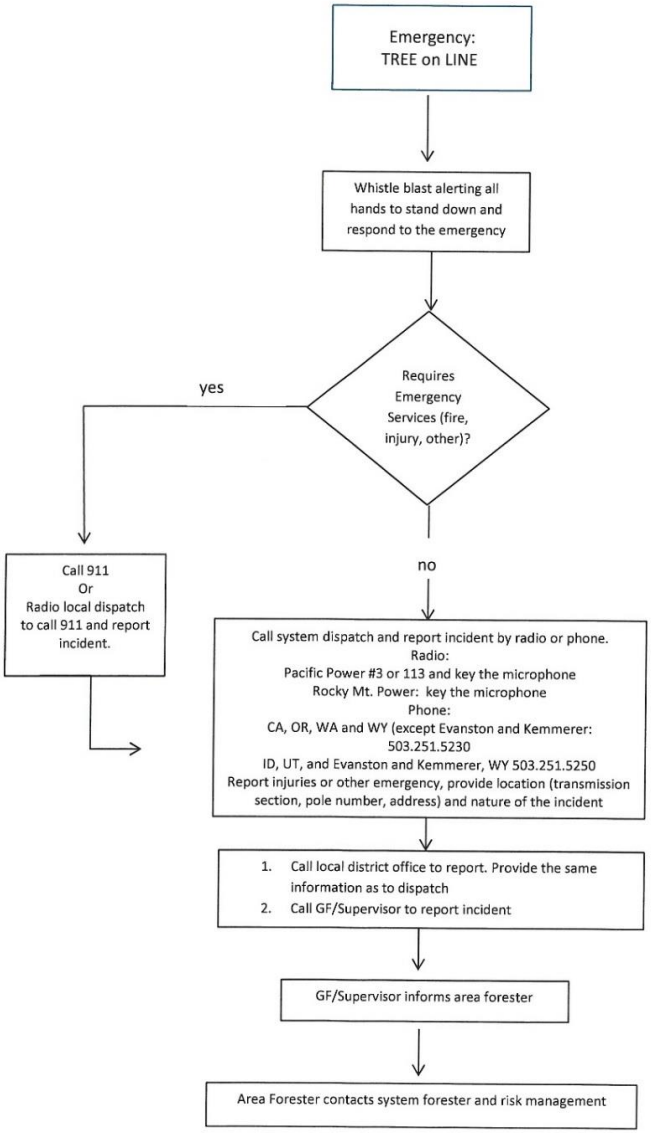

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Table 2-1 Minimum approach distances for qualified line-clearance arborists and line-clearance arborist trainees

Voltage Phase-to-Phase	Minimum Approach Dist.	Source
50-300 v	Avoid contact	APM/Z133
301-750 v	1 foot	APM/Z133
301 v-15 kV	2 feet, six inches	APM
15-46 kV	3 feet	APM/Z133
46-72 kV	4 feet, 2 inches	Z133
72-121 kV	4 feet, 6 inches	Z133
138-145 kV	5 feet, 2 inches	Z133
161-169 kV	6 feet	Z133
230-242 kV	7 feet 11 inches	Z133
345-362 kV	13 feet 2 inches	Z133
500-550 kV	19 feet	Z133

Note: APM is PacifiCorp's *Accident Prevention Manual* (Joint Safety Committee 2003). Z133 is the *American National Standard for Tree Care Operations*. Z133 distances are for sea level up to 5,000. Distances increase for elevations above 5,000 feet (ANSI 2012).

2.1.1 Emergencies

An emergency is major storm (as declared by PacifiCorp), or situation where vegetation has either caused or presents a clear, imminent threat of causing an outage, fire or public electric contact.

2.1.1.1 Whistles

Every crew member, supervisor/GF and forester shall carry a whistle at all times while on work sites. A whistle shall be used as an alarm, commanding all crew members to immediately stop work and respond to the emergency. Whistle blasts should also be used to initiate aerial rescue drills. Whistles are not to be used for non-emergency situations, such as getting another crew member's attention.

2.1.1.2 Tree on Line

If a tree or tree part accidentally falls onto an energized line, work shall stop immediately, and procedures outlined in Figure 2.1 followed.

2.1.2 Readily Climbable

Readily climbable trees have low limbs that are accessible from the ground and sufficiently strong and close together to support a child or average person so that the tree and can be accessed without using a ladder or special equipment. Access into a tree by a vehicle does not render a tree climbable.

Readily climbable trees pose a high risk when a main stem would allow a child or average person to climb either within arm's reach of an uninsulated, energized electric line or within such proximity to the electric line that the climber could be injured by direct or indirect contact. They are located near homes, schools, parks, businesses or other locations where people (particularly children) frequent.

If readily climbable trees are identified, within two weeks, steps shall be taken to reduce the safety risk by removing the tree or pruning it to specification clearances. If possible, branches should be removed to at least 8 feet above the ground or altering facility construction so energized lines can no longer be accessed through the tree.

2.1.3 Tree Houses

Tree houses built in trees growing near high voltage lines present possible electric safety risks. Safety risks in these cases could materialize if a tree house is sufficiently close to the conductors so that children or others may contact the line either directly or indirectly. Indirect contact may occur through any conductive object, including a tree or tree parts that are contacting power lines.

Tree houses built in trees growing in proximity to power lines must meet two criteria in order to remain where they are located. First, no part of the structure may be any closer than twice the minimum approach distances for persons other than qualified line-clearance arborists as specified in Table 2 of ANSI Z133 (Table 2.2). Second, the tree must be pruned so that it grows no closer than ANSI Z133 Table 2 (Table 2.2) distances, at least until the next scheduled work. Maximum line sag and sway should be taken into consideration. Tree houses that do not meet these conditions shall be removed within two weeks of their identification.

Tree house safety risks may be managed by changing facility construction so tree house clearances can be maintained. Facility reconfiguration for this purpose may be done at a property owner's request, provided they cover the expense of the facility modification.

2.1.4 Fire Protection

Federal, state and local fire protection laws and regulations shall be followed, and the contractor performing the work must obtain necessary work permits. Crews shall have all firefighting tools and equipment required by the responsible governmental agency. Contractors shall also adhere to fire restrictions concerning work hours, fire watch following work and other policies of the pertinent jurisdiction. Crews working in fire-prone rural areas should receive fire prevention and suppression training from the competent authorities.

2.1.5 At Fault Tree Crew-Caused Outages

Primary distribution and transmission outages caused by tree crews shall be assessed by a committee made up of the managing director of distribution and transmission support, director of vegetation management, business analyst and two contract representatives. The conduct of the subject crew during the incident will be compared to requirements in ANSI Z133, OSHA 1610.269, contractor safety rules and the PacifiCorp Accident Prevention Manual. Outages determined to be "at fault" by the majority of committee members will result in a credit to PacifiCorp from the contractor in an amount specified contractually.

2.2 Environment

Environmental respect is a MidAmerican Energy Holding Company core value, requiring strict adherence to all environmental rules and regulations.

2.2.1 Species of Concern

Tree work should not disturb or harm any rare, threatened, endangered, or protected plant or animal species. Nesting season work restrictions are examples of

important scheduling considerations necessary to accommodate threatened and endangered species. Prior to beginning projects on federal and state lands, PacifiCorp foresters shall contact the responsible agency to determine whether or not such species are present on the right-of-way. If there are, foresters should contact PacifiCorp environmental services for support.

All tree and brushwork shall conform to guidelines of the responsible governing agency. Field data inventories of threatened or endangered species may be on file in PacifiCorp district offices. PacifiCorp environmental services should be contacted whenever threatened and endangered species are identified.

2.2.2 Wetlands

Wetlands are lands where water saturation is the dominant factor determining the nature of soil development and the types of plant and animal communities present living in and on the soil (EPA 2004). Wetlands shall be worked by hand. Federal, State and local laws and regulations concerning wetlands shall be followed.

2.2.3 Stream Protection

Work shall not pollute water. Trees shall not be felled into streams or drainage ditches in a way that could obstruct or impair the flow of water, unless instructed otherwise by the responsible governing agency. Machine work shall not be performed within fifty feet of a stream. Soil or debris shall not be placed below the high water mark of streams, unless instructed otherwise by a responsible authority. Equipment shall use existing or designated stream crossings. State forestry or fish and wildlife agencies shall be contacted if tree removal in and around streams could cause erosion or if resulting exposure could increase water temperature. Federal and state laws and regulations shall be followed concerning stream protection.

2.2.4 Bird Protection

Migratory birds are protected by the *Migratory Bird Treaty Act of 1918* (16 USC 703-712). The act was most recently amended in 1998. All but a handful of bird species are protected under the act. Vegetation management's policy is that all bird species should be considered subject to the law's provisions. Foresters should provide annual training on bird protection to every tree crew.

The Migratory Bird Treaty Act prohibits removal of bird nests that have eggs or chicks, and killing protected species. Active nests may be disturbed in rare cases of urgent fire or electrical safety risk (in the judgment of the responsible Company regional forester). If tree crews identify a possible immediate risk, they should contact the regional forester for authorization. Foresters should consult PacifiCorp environmental services regarding whether or not work may be approved. If it may not, work should be postponed until after young have left the nest.

Eagle and colonial water bird nests (such as those of cormorants and herons) may not be disturbed regardless of whether or not they are active. Eagles are subject to additional protection insofar as it is illegal to disturb them near their nests or winter roosting sites.

Figure 2-2 Bird nest procedure

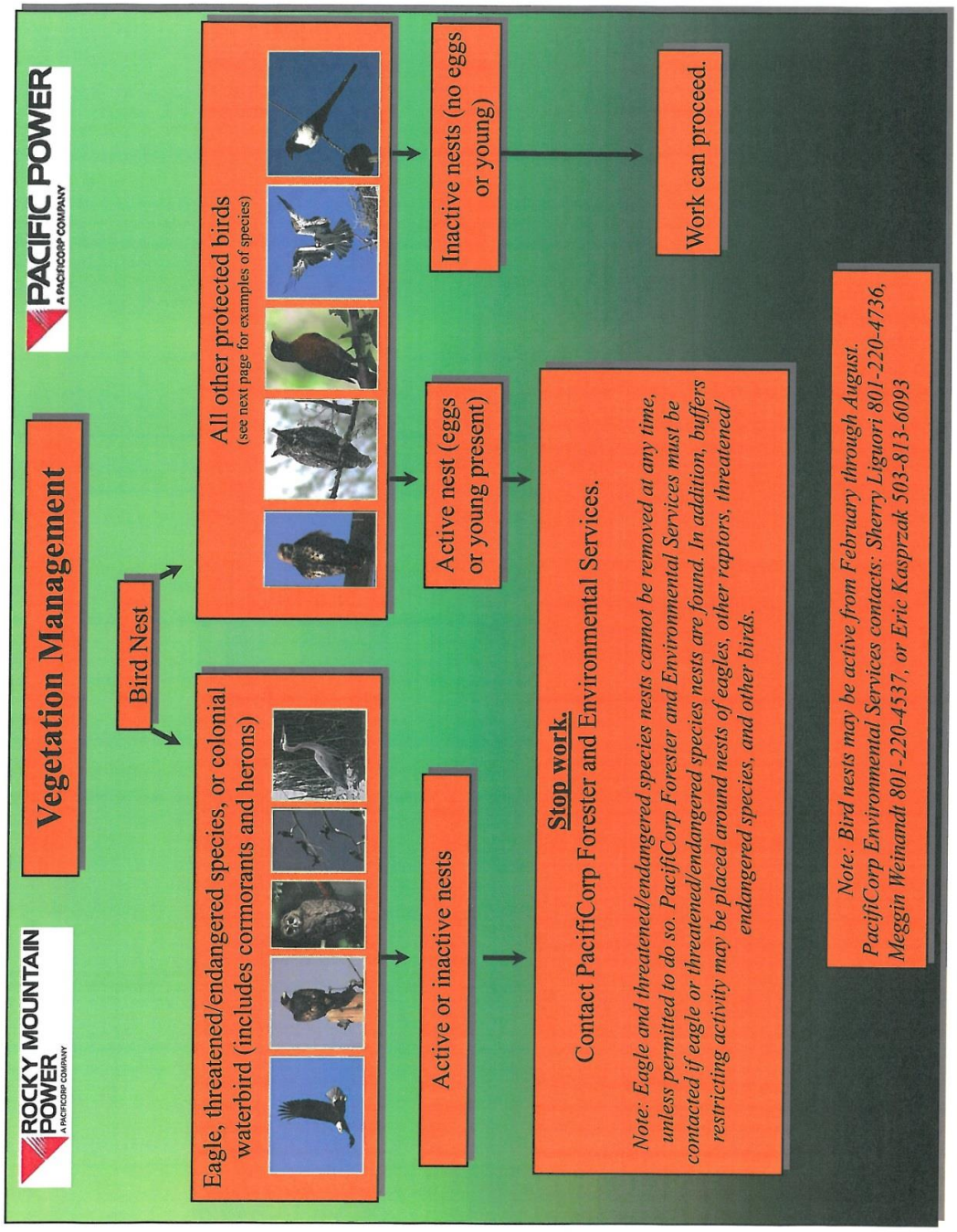


Table 2.2. Tree house clearances.

Tree houses may only be allowed in a tree if they are more than minimum distances from conductors and the tree can be pruned to kept to clearances specified in this table at all times. Specified tree clearances are those for persons other than qualified line-clearance arborists specified in Table 2 of ANSI Z133. Minimum tree house distances are twice ANSI Z133 Table 2 distances.

Voltage (kV phase to phase)	**Minimum Tree House Distance From Conductors (ft.-in)**	**Tree Clearance** (If tree house is built in a tree more than minimum distance from conductors)
0.31-0.75	20-00	10-00
0.751-15	20-00	10-00
15.1-36.0	20-00	10-00
36.1-50.0	20-00	10-00
50.1-72.5	21-06	10-09
72.6-121.0	24-08	12-04
138.0-145.0	26-04	13-02
161.0-196	28-00	14-00
230.0-242.0	32-10	16-05
345.0-362.0	40-10	20-05
500.0-550.0	53-04	26-08

Table 2.3. Work buffers around active nests of eagles and herons.

Species	**Work Buffer**
Herons	1000 feet
Owls	¼-mile
Hawks, ospreys, golden eagles	½-mile
Bald eagles	1 mile

Figure 2.3. Valuable archeological sites.

An ancient food storage structure along the Camp Williams-Four Corners 345 kV right-of-way in Southern Utah. This is an example of the type of valuable archeological site that needs to be identified and protected during vegetation management work.

Rich Buelte photo

Raptors (birds of prey) and herons require buffers around active nests to prevent them from being disturbed (Table 2.3), unless instructed otherwise by competent environmental or fish and wildlife authorities. In general, if a bird leaves a nest and does not return within an hour, it is being disturbed and the buffer should be increased. In these cases, environmental services should be contacted within 24 hours to monitor the nest and respond appropriately if the adults fail to return.

2.2.4.1 Reporting

Active bird nests and inactive eagle nests should be reported to the appropriate forester and environmental services following the procedure outlines in Figure 2.2. Anyone working in vegetation management encountering a dead bird should report it to environmental services.

2.2.5 Spills

To prepare for accidental spills, absorptive material shall be available. Mixing, loading and cleaning equipment are critical activities that present the greatest exposure to accidents or spills (Miller 1993).

In the event of a spill or herbicide misapplication:

- STOP, CONTAIN, ISOLATE
  - Stop the source of the spill
  - Contain the spill (it is especially important to prevent the spill from entering waterways)
  - Isolate the area – prevent people or vehicles from passing through the area.
- Report the spill to the Spill Hotline: 800.94.SPILL and provide:
  - Caller and manager's name
  - Date and time spill was discovered
  - Location (address or longitude and latitude)
  - Manufacturer name and serial number
  - Cause of spill
  - Amount of spill
  - Types of surfaces contaminated
  - Containment and/or clean-up activities performed so far
- Request the help of and notify supervisor/GF and PacifiCorp forester and environmental services.
- Remediate the spill
  - Clean up the spill or have it cleaned up, following directives from the Spill Hotline
  - Wash equipment and vehicles.
  - Properly dispose of cleanup materials
  - Follow up with appropriate cleanup documentation.
- Clean-up at or near PacifiCorp generating sites or substations must comply with site specific spill prevention and remediation plans.

2.3 Archaeological Sites

Vegetation management activities shall not disturb archeological sites. Known archaeological sites (Figure 2.3) shall be identified on the process checklist described in Chapter 4. If a contract utility forester or tree crew identifies something that might have archeological significance, they should move off site and contact the appropriate forester. The forester should contact environmental services for advice on whether or not to continue. Work should not proceed without environmental service's authorization.

Prior to beginning work on federal and state lands, PacifiCorp vegetation management shall contact the appropriate agency to determine whether or not such sites are present on or near the right-of-Way. PacifiCorp district offices may have field data inventories of known sites to assist in the determination. If present, foresters should secure the assistance of PacifiCorp environmental services.
Archeological sites shall be located and marked. Work must conform to guidelines of the responsible governing agency. If archaeological artifacts are located on private lands, the finding shall be reported to PacifiCorp environmental services. Field data inventories of known sites could be on file in PacifiCorp district offices.

2.4 Communication

Communication should be open and interactive. It should include everyone involved: management, planners, vegetation management crews, property owners, public land managers, appropriate governmental officials, members of organizations dedicated to related causes and others.

2.4.1 Internal Communication

Communication within the vegetation management department needs to be clear and concise to ensure everyone involved understands the desired results. Decision

making authority should be delegated throughout the origination, as appropriate.

Communication between vegetation managers and workers ought to be both written and verbal. Written instruction should include PacifiCorp Vegetation Management Standard Operating Procedures. It should also include details regarding concerned customers and locations of environmentally sensitive or archeological areas. Written instruction should be reviewed verbally. Appropriate communication also involves post work debriefings to review challenges and prevent problems from recurring.

Communication between utility vegetation management staff and other internal employees, such as engineers and operations managers, includes why, where, when and how vegetation management projects will be conducted. This is important because people within PacifiCorp, but outside vegetation management, can help set priorities, anticipate and prevent potential problems, and provide historical perspectives. Communicating with operations staff during work can also add a margin of safety. By knowing there is a vegetation management job underway, operations staff may be able to provide a timelier and more appropriate incident response than they would if they were unaware of the project. At the beginning of every week, districts in which vegetation management work is being conducted shall be emailed a spreadsheet with the approximate tree crew work locations for the coming week.

2.4.1.1 Communication of Vegetation Conditions that is Likely to Cause an Outage At Any Moment)

Members of the vegetation management team must comply with *Transmission Grid Operations Operating Procedure PCC-215,* which is designed to meet Requirement 4 of the *NERC Transmission Vegetation Management Program* standard FAC-003. Requirement 4 instructs utilities to notify the control center with switching authority for the applicable line of vegetation conditions that could cause an outage at any moment (see Figure 6.6 for the appropriate PacifiCorp dispatch center). PacifiCorp may implement temporary action, such as rating reductions or taking transmission lines out of service until vegetation can be cleared. Inspectors should report the exact location of the subject trees (providing longitude and latitude if possible) as part of the process.

2.4.1.2 Media

Requests from media (print, electronic, radio or television) shall be referred to PacifiCorp Media Relations and the community relations manager responsible for the area in which the request was made. Media Relations can be reached for each business unit at:

- Pacific Power: 800.570.5838
- RMP: 800.775.7950

Vegetation management personnel and contractors shall not speak to media representatives without prior authorization from PacifiCorp Media Relations.

2.4.1.3 Legal

No response shall be made to an attorney unless through PacifiCorp's General Counsel's office.

2.4.2 Communication with External Stakeholders

Public land managers, property owners, regulators, and civic organizations have interests in utility vegetation management activities.

Educating potentially affected parties about the need for, benefits of and science behind vegetation management can clarify expectations. Members of the vegetation management team, including crewmembers, should know the facts about the program, be prepared to answer basic questions and refer more complex issues through to their GF/Supervisor.

Communication should begin well in advance of work and involve listening to and understanding people's concerns. Work on governmentally-managed property can involve administrative procedures that take months of advance work, including navigating through permit processes and the concerns of specialists who have responsibility for stewardship over public lands. It is not always clear to lands specialists how vegetation management helps balance their (the land manager's) responsibilities against the public's need for a safe and reliable electric grid. A memorandum of understanding among Edison Electric Institute (EEI) member utilities and federal land management agencies (EEI 2006) established a framework for developing cooperative rights-of-way integrated vegetation management (IVM) practices among EEI shareholder-owned electric companies, federal land management agencies and the Environmental protection agencies. The MOU is expired and being renewed as of this writing.

2.5 Growth Rate Definitions

Slow-growing trees grow vertically less than one-foot a year. Moderate growing trees grow between one and three feet a year and fast-growing trees grow more than three feet a year.

2.6 Tree Removal

Tree removal is an important component of PacifiCorp's vegetation management program. Tree removal can reduce safety risks; improve access to facilities, clear lines of sight and moderate future workloads. Tree conditions are site and tree specific.

Tree removal on distribution facilities requires either written notification to or signed permission from the property owner, unless there is a right-of-way, easement or permit that expressly authorizes tree removal. If such an easement or permit exists, notification to the property owner may be verbal, provided it is documented. Signed permission may be obtained on the removal door hanger (see Section 8.2.1.3) or *Property Owner Permission Form* (see Section 8.2.2).

Stumps shall be cut to within six inches of the ground or as close to it as practical (for example, at the top of a barbed wire fence that has become imbedded in the trunk). Stumps of all deciduous trees, brush and vines that are removed shall be treated with an approved herbicide, where permitted (see Section 7.3.5).

PacifiCorp prefers to remove the entire tree in the following situations:

- Transmission rights-of-way where the conductors are fewer than 50 feet off the ground or between 50 and 100 feet off the ground depending on the size of the tree (see Table 6.1 and Figure 6.3).
- High risk trees (dead, dying, clearly diseased, deformed, or unstable trees which have a high probability of falling and contacting transmission or distribution conductors). Note that every tree is potentially hazardous. With millions of trees under management, it is impossible to

identify and correct every potentially hazardous tree. Nevertheless, PacifiCorp has a responsibility to maintain its system by making a reasonable effort to identify trees that are clearly hazardous, and correct the problems they could cause in a timely manner.

- Trees that will take no more than twice the time to remove than to prune during distribution cycle work. High risk trees are not limited by this constraint.
- Trees that take no more time to remove than to prune during interim and ticket work. High risk trees are not limited by this constraint.
- Readily climbable trees.
- Trees with tree houses not meeting the clearance to transmission or distribution conductors shown in (Table 2.2)
- Fast-growing trees that, through growth could interfere with distribution conductors or violate specific state regulatory clearances before the next scheduled maintenance work (cycle-busters).
- Volunteer trees less than six-inches in diameter (DBH), which, through growth, could eventually interfere with distribution conductors.

2.6.1 Equipment Mowing

Mowing is often more cost effective than manual methods of tree removal and should be pursued wherever practical (Figure 2.4). Mowing should be limited to fifteen feet either side of distribution primary wires within transmission rights-of-way and along access roads serving Company facilities

2.7 Mechanical and Helicopter Cutters

Mechanical and helicopter cutters can improve productivity in rural, densely vegetated areas (Figure 2.5). Mechanical cutting shall comply with ANSI A300 (Part 1) section 9.3.2. It should be limited to rural or remote locations and cuts should be made close to the main stem, outside of the branch bark ridge and branch collar. Precautions should be taken to avoid stripping or tearing of bark or excessive wounding.

In subsequent cycles, mechanical work should be monitored and repaired if need be to prevent high risk conditions from developing.

2.8 Slash Disposal

Slash is brush and limbs less than six-inches in diameter removed during tree operations.

2.8.1 Developed Areas

In developed areas, slash should be chipped and removed from the site unless an agreement has been reached with the property owner to leave it. Slash may be left temporarily, provided the crew has notified the property owner or tenant, and arrangements made to clean it up to the customer's reasonable satisfaction within two business days. Tree stems greater than six-inches in diameter should be left on site. Work locations shall left in a safe and orderly condition.

2.8.2 Rural Areas

In rural areas, slash should be disposed of on-site whenever possible. For off-road, wooded areas, brush should be lopped into three-foot maximum lengths, and scattered in piles no more than two-feet high. Stems larger than six-inches in diameter should be left on site.

Limbs and slash should be piled separately. Limbs and slash should be disposed of at the sides of distribution rights-of-way, and outside the wire zone of transmission rights-of-way, unless specified otherwise by the regional forester. If brush is chipped, it should be broadcast on site wherever possible. Resulting chip piles should be no higher than two-feet. Debris piles should not limit or block access to the right-of-way, or create fire risk.

2.9 Emergency Response

Tree work will be required from time to time on emergency storm restoration. Crews shall be properly equipped to perform the work. PacifiCorp will be the sole determiner of equipment appropriateness. Travel and lodging during the storm is billable. Double occupancy is expected for crew members.

Contractor should provide a designated contact person for each region. Requests for crews should be routed through that contact. Contractor shall be responsible for dispatching crews whenever emergency restoration services are needed.

Crew rosters shall be provided by the contractor and maintained during restoration efforts. At a minimum, rosters shall include: crew member names and position, location, contact information, equipment and identification number.

Debris from storm work is left on site and not chipped or cleaned up, so chippers should not be taken into the field during restoration work. Notification is not required during emergency restoration work, but crews should conduct themselves respectfully.

Emergency work shall be reported on a *Weekly Vegetation Report* according to section 4.2.1.

Emergency work is done under the authority of the district operations managers in cooperation with Company foresters. Tree crews and contract utility foresters assigned to storms should work under the direction of circuit captains assigned by operations. Tree crews should report their progress at least daily to both the circuit captain and their GF/supervisor. The supervisor should report crew progress to the appropriate forester.

Figure 2.4. Side mower used on distribution rights-of-way.

Figure 2.5. Jarraff mechanical "trimmer" that may improve productivity in remote areas.

Figure 2.6. Cracked pole – an example of the type of conditions tree crews should report.

Figure 2.7. PacifiCorp Vegetation Management Maintenance inspection report form.

Maintenance Conditions Found by Crews			
Week Of			
Location - closest address, meter number if available and facility point number.			
Address (city and state)			
Meter #		Facility Point #	
Description of Problem:			
Employee Name:			

All storm work must be conducted as if the line is energized. If the line cannot be worked safely under the assumption it is energized, it must be grounded in accordance with section 2.1.1. In general, PacifiCorp does not dispose of slash or debris resulting from storm damage. Trees that fall during storms would do so regardless of whether or not the lines are present. It should not be the Company's responsibility to clear the debris simply because the tree or trees from which it originated damaged Company facilities on the way down. However, if an outage is preventable, slash may be cleaned-up and removed from a property at the forester's discretion.

2.10 Facility Inspection

While tree crew members are not facility inspectors, they can be helpful in identifying pronounced conditions, such as cracked poles (Figure 2.6) broken cross arms or insulators, loose guy wires, and other problems. Tree crew members should report the condition on the *Maintenance Condition Report Form* (Figure 2.7).

When contract utility foresters are lining out work, they should inspect the perimeter around substations for trees that could interfere with or hazard trees that could fall into the facility, or for climbable trees that could allow access into the substation.

2.11 Property Damage

Contractor shall be responsible for property damage arising out of or related to work. Restoration of surfaces and repair of property damage in the execution of the Contract shall be part of the work. Such restoration shall include, but is not limited to, ruts, disturbed drainage ditches,

broken drain tiles, cut fences and damaged fence posts.

Contractor shall inform PacifiCorp of claims within 24 hours of damaging the property. Contractor has 15 business days to resolve any damages or PacifiCorp will settle the claim and bill the contractor. Contractor must inform PacifiCorp personnel and get permission for an extension if the time frame cannot be met.

Contractor shall be responsible for any damage or claims against PacifiCorp resulting in violations of conservation measures as a consequence of Contractors actions.

2.12 Freelance Work

No one employed in PacifiCorp's vegetation management department or their contractor may solicit or perform arboricultural-consulting or tree work (pruning, removal, insect or disease control, fertilization etc.) for interests outside of officially authorized PacifiCorp projects on open feeders, grids, transmission projects, tickets, storm orders, work orders or other PacifiCorp assigned project. Outside projects may include side jobs for cash, work for private arboricultural firms (whether or not they are owned by the tree crew members doing the work), consulting or any other arboriculturally related enterprise.

2.13 Miscellaneous Items

2.13.1 Fences and Gates

Gates should be left open or closed as they were found, or as the property owner instructs. Damage to fences or gates shall be reported to the property owner and the appropriate supervisor/GF, and repaired as soon as possible.

2.13.2 Climbing Spurs

Climbing spurs shall not be used when climbing to prune trees.

Exceptions:

- when limbs are more than throw line distance apart and there is no other safe means of climbing the tree.
- when the bark is sufficiently thick to prevent spur damage to the cambium.
- when working high risk trees that are to be reduced in height and left for wildlife.

2.13.3 Winching Vehicles.

Winch cables or ropes should not be wrapped directly around anchor trees. Doing so damages a tree's bark and cambium and can not only reduce its health and value, but also eventually create high risk to overhead lines. If the need arises to winch a vehicle (including an all-terrain vehicle), a nylon strap (or equivalent) at least 2-inches wide shall be used around the tree, and cables or ropes attached to the strap. Utility poles or towers shall not be used as winch anchors.

3. TREE BIOLOGY AND PRUNING

The primary purpose of utility line clearance work is to minimize safety and service reliability risks caused by tree-power line conflicts. Pruning is primarily performed on distribution facilities, although it can have application to transmission lines in some cases.

Pruning to clear conductors shall adhere to the principles of modern arboriculture. The *American National Standard for Tree Care Operations* A300 (ANSI 2012a), International Society of Arboriculture (ISA) *Best Management Practices: Tree Pruning* (Gilman and Lilly 2002), *Best Management Practices: Utility Pruning of Trees* (Kempter 2004), and *An Illustrated Guide to Pruning* (Gilman 2002), among other references, convey those principles.

While proper utility line clearance work should be consistent with practices that promote tree health, utilities cannot place tree health over public welfare. Sometimes, there is no way to obtain proper clearance in a manner that ensures the health of a tree (Lilly 2010). This is particularly true regarding foliage retention. In cases were the tree cannot be pruned without harming its health, tree removal is often best for the tree, tree owner and utility. If tree removal is not permissible or practical, the tree should be pruned to specification clearances, even if that work is against a customer's wishes or could harm the tree.

3.1 Pruning for Clearance (directional pruning).

Directional pruning is natural target pruning applied to routing tree growth away from utility lines (Miller 1998). ANSI A300 (2012a) and ISA's *Best Management Practices* (Kempter 2004) instruct that pruning to clear the utility space involves thinning cuts: removing at natural targets entire branches that are growing toward (or once cut will produce sprouts that will grow toward) the power lines.

While heading cuts produce sprouts that grow quickly back into the power lines, branch removal and reduction promotes growth away from conductors. Since the point of utility pruning is to train trees around power lines wherever practical, branches growing away from the electric facility should not be pruned. Instead, these stems should be allowed to develop to their natural height or length, provided that growth does not create unreasonable safety risks. This cannot be accomplished with strongly excurrent trees trapped directly beneath conductors.

Topping, round-overs, flush cuts, branch tipping and rip cuts are improper because they damage trees. Directional pruning is consistent with natural tree structure. Remaining branches retain their taper, strong attachments, growth regulators and spacing. They continue to grow and function normally, allowing the tree to reach to its natural height.

"V" shapes often result on properly pruned trees growing under power lines, particularly on decurrent, deciduous trees (Miller 1998, Shigo 1990, Gilman 2002, Kempter 2004) [Figure 3.1]). Limbs growing upward and toward the facility should be cut back to the trunk or to limbs growing away from the conductors.

Remaining branches should have sufficient clearance so they do not damage

the conductors in inclement weather common for the locality (high wind, freezing rain, snow or other conditions). Excurrent trees (such as many conifers) are more problematic, but should be reduced to appropriate laterals or whorls.

"L" or one-sided shapes often result on properly pruned trees to the side of conductors. (Shigo 1990, Gilman 2002 [Figures 3.2]). Limbs on the wire side of trees located adjacent to facilities should be cut back to the trunk; or to limbs growing vertically, sideways or downward; depending on the distance to the line or available natural target.

3.2 Tree Biology

Understanding fundamental tree biology is essential to applying proper pruning to utility line clearance (Miller 1998).

3.2.1 Leaves

Leaves are the tree's food source. Tree survival depends on the leaves' ability to manufacture carbohydrates from the sun's energy, carbon dioxide and water. Current thinking among scientists is that if a tree abruptly loses a large portion of its foliage, as can happen with over-pruning, it could lack the energy resources to meet its needs. Trees with insufficient foliage could be weakened to the point where they become subject to attack by opportunistic insect and disease pests. Damage can extend to the roots as well as to above ground portions of the tree (Shigo, 1986). Trees can suffer sun injury after sudden excessive foliage loss (Miller 1998).

Authorities disagree over how much foliage removal trees can tolerate in a given year. ANSI A300 (2008) recommends no more than 25%, while Gilman (2002) suggests less than 10 to 15 percent. Often, much more than 25% of foliage must be removed from the tree in order to appropriately maintain electric facilities. The ANSI committee did not intend the 25% provision to impede utilities from achieving appropriate clearances (Smith 2002). Utility arborists faced with the choice of maintaining public welfare by clearing the tree to specifications and removing more than 25% of the foliage have no choice but to remove more than 25% of the foliage

3.2.2 Stem Anatomy

Trunks and branches are tree stems. Their function is support, energy storage, and water, mineral, carbohydrate and growth regulator transport. The point of origin of a branch or limb is a node. A lead is an upright trunk or major limb with a dominant role in the tree crown, and a lateral is a branch off a parent stem. Some leads can also be laterals.

3.2.3 Xylem

Xylem is wood tissue. Sapwood is young, living xylem that stores carbohydrates, provides support, and conducts water and essential elements. Heartwood is old, dead xylem that provides support, and often contains anti-microbial compounds.

Long, hollow conducting cells (trachieds or vessels) predominate xylem structure. While trees need this vascular structure to conduct water and essential elements, it can be exploited by pathogens to spread up and down the stem. Trees attempt to block or "wall" off disease spread by plugging conducting cells in various ways, but pathogens can use energy stored in the trunk or branch to breach these walls (Shigo1986).

Figure 3.1. "V"-shapes can develop from crown reduction on deciduous trees (left). The ultimate objective is to train trees up and around the wire wherever possible, so the facility is clear and the tree is healthy. These two photos are of the same tree, in 1992 (left) and 2007 (right).

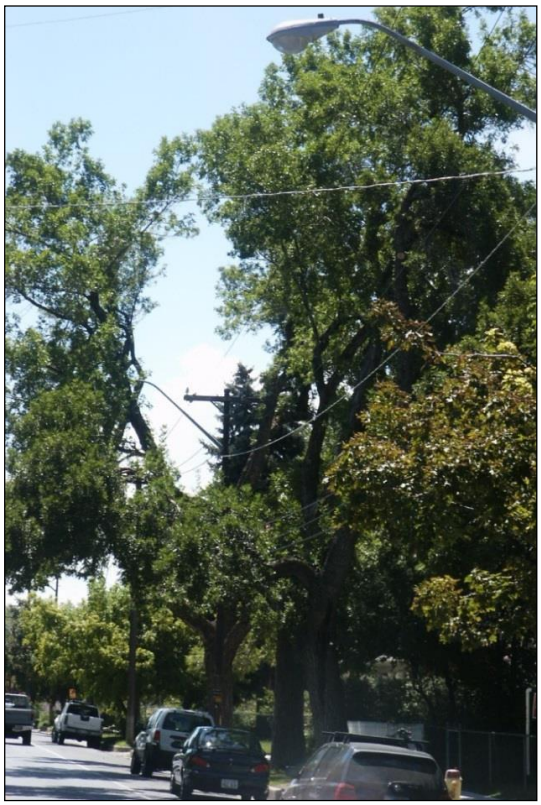
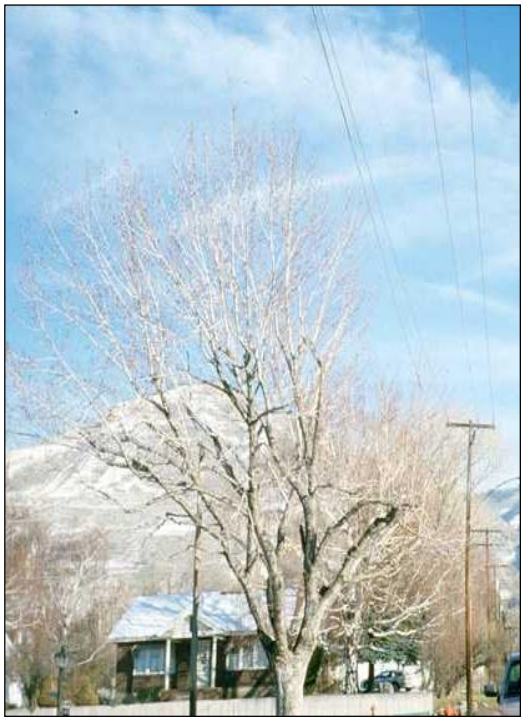
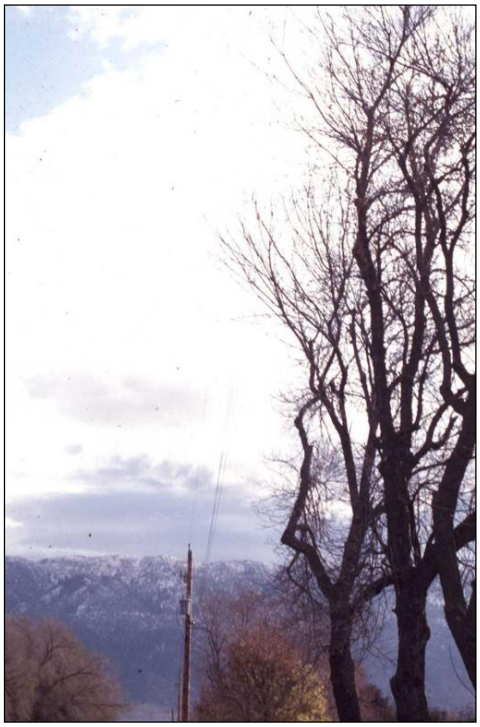


Figure 3.2 "L" or one-sided shapes.

"L" or one-sided shapes often result on properly pruned trees growing to the side of conductors. Pruning may be mechanical in rural areas, below right





3.2.4 Cambium

The tree's cambium is a thin layer of rapidly dividing cells around the outside of the sapwood. One of the functions of the

cambium is to produce wood to its inside, creating diameter growth. This is the only source of wood production in the tree system, and the tree has no ability to replace damaged or decayed wood.

Pathogens gain access to wood through wounds. In response to wounding, the cambium generates a "barrier zone" containing antimicrobial compounds (Figure 3.3). It protects new wood by separating it from potentially infected wood that existed at the time of wounding. Following infection, a "race" develops between the cambium and wood-rotting microorganisms, with the structural integrity of the tree at stake. The cambium must produce new wood faster than pathogens can digest the former stem if the tree is to remain viable (Figure 3.3).

While the barrier zone contains strong antimicrobials, it is weak structurally. This structural weakness can be problematic, as cracks may develop along the barrier zone when the stem twists and flexes due to wind, ice or other stress loads. These cracks allow pathogens to breach the barrier zone and enter new wood, further threatening the tree (Figure 3.3 [Shigo 1986]).

3.2.5 Branch Collars

Branch collars are a combination of parent stem and branch tissue generated through coordinated growth around the branch attachment (Figure 3.4). In the spring of the year, diameter growth begins at branch tips, and works toward the base. When new wood meets the branch base, it turns at 90°, and wraps around the juncture. Later in the growing season, wood from the parent stem envelops branch wood laid down earlier. As a result, two layers of wood secure the branch every year, and the attachment increases in strength as the branch grows (Shigo1986).

3.2.6 Branch Bark Ridge

An important structure associated with branch attachment is the branch bark ridge. The branch bark ridge is a line of raised bark, formed as the branch and parent stem grow together. It marks where branch wood meets stem wood Figure 3.5). A raised branch bark ridge is often a sign of a strong attachment.

3.2.7 Branch Protection Zone

Branch protection zones are areas of antimicrobial compounds that form internally at the base of diseased or injured branches (Shigo 1986). They inhibit pathogens in the branch from passing to the parent stem. While protection zones are effective, pathogens can overcome them using energy stored in the branch.

3.2.8 Taper

Tree stems taper from their bases, where they are widest, to twig tips, where they narrow to buds or apical meristems. Taper provides flexibility and strength that disperses loads from branch weight and from wind, snow or ice loads. The adaptation reduces the likelihood of failure under stress.

Figure 3.3 The cambium creates a barrier zone that contains discoloration and decay in old wood, protecting new wood. Note on the right, a ring shake formed along the old barrier zone. This is a structural flaw.

Figure 3.4. Branch collars form at branch bases.

Figure 3.5. A raised branch bark ridge i

A raised branch bar ridge s often a sign of a strong attachment. It marks where the branch meets the parent stem.

Figure 3.6. Codominant stems are at least 50% of the diameter of their parent stem.

They have no branch collars or branch protection zones. Codominant stems can grow together and have bark included (embedded) between the stems in the attachment.

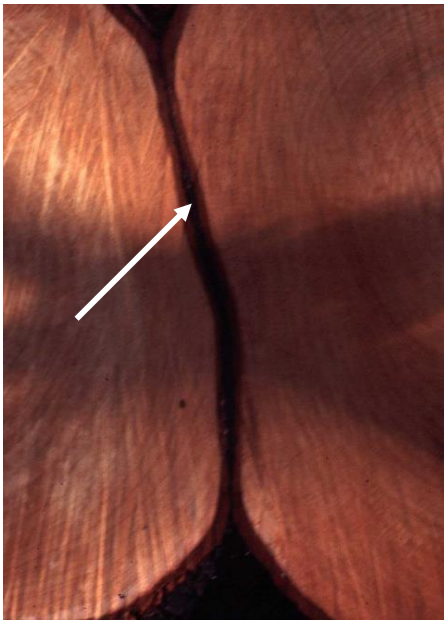


Figure 3.7. A before and after collar cut.

3.2.9 Codominant Stems

Codominant stems are stems that are at least half the diameter of their parent stem, and compete for dominance in the tree crown (Gilman 2002). They are similar to branches, but have no branch collars or branch protection zones. Disease moves from one codominant stem to another as readily as it moves through ordinary stems. Codominant stems can have a branch bark ridge. However, they are structurally flawed because they do not have room to develop (Figure 3.6). As crowded branches grow in diameter, they can press together, creating wounds and squeezing bark in between the two stems (Figure 3.6).

The resulting wounds allow disease entry and weaken branch attachments. Moreover, stems with included bark often pry one another apart as they grow, further weakening their attachments. Attachments with included bark often fail, and can be recognized by a crease between stems near their juncture (Figure 3.6).

3.2.10 Growth Regulators

Growth regulators are chemicals that coordinate plant growth. A growth regulator can have confusing, even contradictory roles depending on its concentration, the concentration of other growth regulators, environmental conditions the species of tree, and other factors. Nevertheless, scientists understand that growth regulators are responsible for orderly plant growth and development.

For example, auxin is a growth regulator produced in apical meristems, while cytokinin is another type synthesized in root tips. In response to environmental factors, roots grow and make cytokinens that stimulate shoot growth, which can result in auxin production that promotes root development. The resulting cycle is one way the tree system "communicates" to stay in balance as it grows. Auxin also functions in apical dominance. Auxin produced in apical meristems inhibits lateral growth, and helps to account for orderly branch development and spacing. Conversely, removing an apical bud or

meristem promotes lateral growth, which alters the tree's normal growth habit, and can lead to codominant stems, poor spacing, and included bark.

Gibberellins are another class of growth regulators. Among other functions, gibberellins promote cell elongation. Marketed chemicals commonly known as "Tree Growth Regulators" (TGRs) are actually gibberellin inhibitors. By inhibiting gibberellins synthesis, TGRs reduce cell elongation, which in turn slows growth.

3.3 Natural Target Pruning

Natural targets are proper final pruning cut locations at strong points in the tree's disease defense system. Removing branches at natural targets rarely damages the joining trunk or limb (Miller 1998). The ISA *Best Management Practices: Tree Pruning* (Gilman and Lilly 2002) and *A300* (ANSI 2008) describe the technique. Targets vary depending on whether a branch is removed or reduced.

3.3.1 Collar Cuts

Branches should be removed at the collar (Figure 3.7). Cutting into the collar, known as flush cutting, is inappropriate because it creates a direct port of disease entry into the parent stem.

Disease can weaken stems, potentially creating safety risks. On the other hand, proper branch removal does not leave stubs that pathogens can use as an energy source to overcome the tree's defense system and spread into the trunk. If the branch is removed correctly, only the branch protection zone is exposed, giving an advantage to trees in keeping out disease. As a result, collar cuts virtually prevent decay from entering the parent stem (Figure 3.7 [Miller 1998]).

3.3.2 Approximating the Collar

Occasionally, branch collars are not readily evident and the collar must be approximated using the branch bark ridge (Figure 3.8). Start the cut in the branch crotch, just outside the branch bark ridge, and follow an outward angle that mirrors the inward angle the branch bark ridge makes with the trunk or parent stem. The cut should end roughly opposite the bottom of the branch bark ridge (Figure 3.8).

3.3.3 Reduction Cuts

Reduction cuts shorten leads to appropriate laterals. An appropriate lateral is no less than one-third the diameter of the original limb and retains at least three-quarters of the lead's foliage (ANSI 2008 [Figure 3.9]). The reason for these requirements is that branches are autonomous in their energy requirements. Removing too much foliage from a limb could deprive it of sufficient energy to establish apical dominance, maintain its taper, close the wound, and compartmentalize and "out-race" disease which will enter the wound.

As a result, the lateral will not develop into a structurally viable leader. Moreover, shortening a lead removes apical meristems and other points of growth regulator production, which can disrupt orderly growth. If, for example, auxin concentrations are insufficient, on some species a crowded mass of upright, rapidly growing, poorly attached shoots can sprout from the cut and grow directly back into the lines.

Therefore, removing more than 25% of foliage from a limb has the same damaging result as a random topping cut (Figure 3.10), regardless of whether or not the cut is made to a proper-sized lateral. Even under the best circumstances, reduction cuts are potentially harmful,

acting more like a heading than a thinning cut (Gilman 2002). Consequently, if a lead cannot be shortened to a limb at least one-third the diameter of the original lead, or if a cut removes more than 25% of the foliage, that limb should be either targeted for removal, or not pruned. Removal may be gradual over the course of several cycles.

3.3.4 Large Branches

Large branches (those 3-inches in diameter or greater) can seldom, if ever, be removed without harming the tree, particularly if they are codominant stems. Yet, large branches must be prevented from growing toward the utility space, and that nearly always means heading or removing them entirely. Either option can be harmful, but heading large branches not only injures the tree, but fails to effectively clear the conductors (Figure 3.10).

Removal may take a measured approach. For example, one or two large limbs might be removed out of three that are growing toward the conductors, and the remaining limb(s) targeted for removal on subsequent cycles.

Large branches selected for later removal can be subordinated, or removed gradually over subsequent cycles (either interim or cycle). Subordination thins a portion of a limb's foliage. Reducing a fraction of the foliage in this way suppresses the stem's growth, and allows the remaining tree parts to adjust and develop. In some cases, subordination can allow a codominant stem to develop into a branch over time, enabling a branch protection zone to form so a limb can be removed without unnecessarily subjecting a tree to disease (Gilman 2012). Using subordination over multiple cycles to remove large branches can reduce the effect of structural limb removal on tree health, while ultimately circumventing the permanent problems heading cuts can cause, even if that means temporarily heading the branch.

3.3.5 Old Heading Cuts

Removing large stems that have been headed often leaves wide gaps in the tree, because shoots that proliferate from the old heading cuts often dominate the crown (Figure 3.10), and gaps result when branches containing these shoot clusters are removed. Moreover, previously headed branches usually lack natural targets. When such branches are growing toward the conductors, there might be no alternative but to remove them entirely. However, in some cases, headed limbs may be left as a temporary measure. Such headed branches could be removed on subsequent cycles.

Headed branches growing away from the facility space should not be pruned as a matter of standard practice. However, shoots growing from the old heading cuts should be inspected for structural integrity during subsequent visits. Corrective action, such as crown restoration (ANSI 2008), could be necessary if these sprouts are found to be structurally weak.

However, in some cases, structural defects resulting from heading cuts are so severe that they cannot be corrected (Dahle et al. 2006). In these cases, the customer should be contacted about removing the entire tree, or at least the subject branch or branches. If tree or branch removal is not possible, there could be no choice but to remove the weak growth with a new heading cut. This should be done only when extensive decay or hollow exists in the remain-ing branch, with the approval of the forester or GF/supervisor, for safety (not "aesthetic") purposes.

Figure 3.8 Approximated collar cut.

Figure 3.9. Crown reduction cut.

Figure 3.10. Old heading cut.

Shoots that proliferate from these cuts often dominate the tree's crown, and gaps result when branches containing these shoot clusters are removed.

3.3.6 Reduction

Reduction is selective pruning applied to reduce the top or side of a tree or individual limb (ANSI 2008). In a utility context, the goal of reduction is to promote future tree growth away from the conductors, at least on decurrent trees (Figure 3.1)

3.3.6.1 Deciduous Trees

The "V" in many crown reduced deciduous trees quickly fills in with shoots. These shoots eventually require pruning to be kept from interfering with the lines (Figure 3.1) In subsequent cycles, it is important not to strip all these sprouts away, since that causes lion's tailing and can stimulate resurgent growth in many species. Rather, about half of the shoots should be removed, and the other half retained (Figure 3.11).

Shoots selected for removal should be the largest and most vigorous, leaving smaller sprouts behind. Growth selected for retention should be pencil-thin at the point of attachment. If need be, these remaining shoots may be headed back to obtain specification clearances. In this way, a rotation can be established where the largest, most vigorous shoots are removed each cycle, but smaller, suppressed shoots are left to soften the negative visual effect that many customers find objectionable.

Moreover, leaving shoots in the interior of a "V" provides shade and retains auxin production, both of which suppress vigorous sprouting, and helps the trees hold (Figure 3.11). Eventually the sides of the tree will overtop the wires, resulting in more of a "U," and shade the interior of the tree, suppressing shoot growth even more. In time, this top growth decreases the proportion of the crown occupied by the cleared utility space, and softens the negative aesthetics.

3.3.6.2 Conifers

Many conifers; such as pine (*Pinus spp.*), spruce (*Picea spp.*) and Douglas-fir

(*Pseudotsuga menziesii*); have strong central leaders (excurrent form). When these types of trees grow directly under the lines, they should be reduced to the whorl or largest available lateral that provides specification clearance. Cuts made to conifer whorls are typically flat-topped in order not to damage any branches in the whorl (Figure 3.12). Laterals should be tipped on conifers, which prevents them from forming compression wood and bending up toward the conductor.

Figure 3.11 On return visits to "V-Outs", under pruning should leave the smaller, suppressed shoots to retain foliage and soften the visual effect of crown reduction.

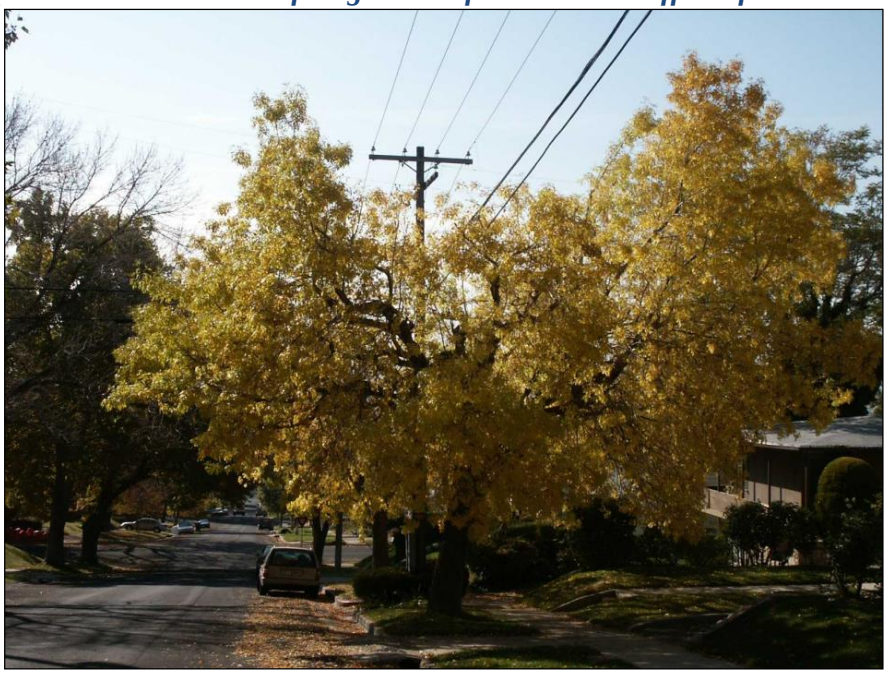


Figure 3.12.

Crown reduction.

4. SCHEDULING AND REPORTING WORK

Scheduled work involves systematic cycle or interim projects on both distribution and transmission lines. Schedules should be based on the time elapsed since the last scheduled work, compliance, voltage (particularly for transmission lines), the frequency of tree-caused outages, customer count, the existence of important accounts (hospitals, factories, mines or other high demand facilities), tree conditions, the number of customer complaints, the growth rate of predominant tree species, geography, customer density, rainfall and other environmental factors.

4.1 Process Checklist

Scheduled distribution and transmission work should follow the *PacifiCorp Vegetation Management Process Checklist* (Figure 4.1). The purpose of the process checklist is to facilitate systematic project management. The project should be identified along with the start date on the top of the process checklist.

4.1.1 Authorize Project Work

PacifiCorp foresters are responsible for work authorization. No work should begin on a project until foresters have authorized it to proceed as outlined.

4.1.1.1 Contractor Work Release

Before beginning a scheduled project, the forester shall open a *Work Release* (Figure 4.2). The *Work Release* authorizes a contractor to proceed with a specific maintenance project, and provides written instructions for the work. Contractors will not get compensated for work performed on projects that have not been authorized through a work release.

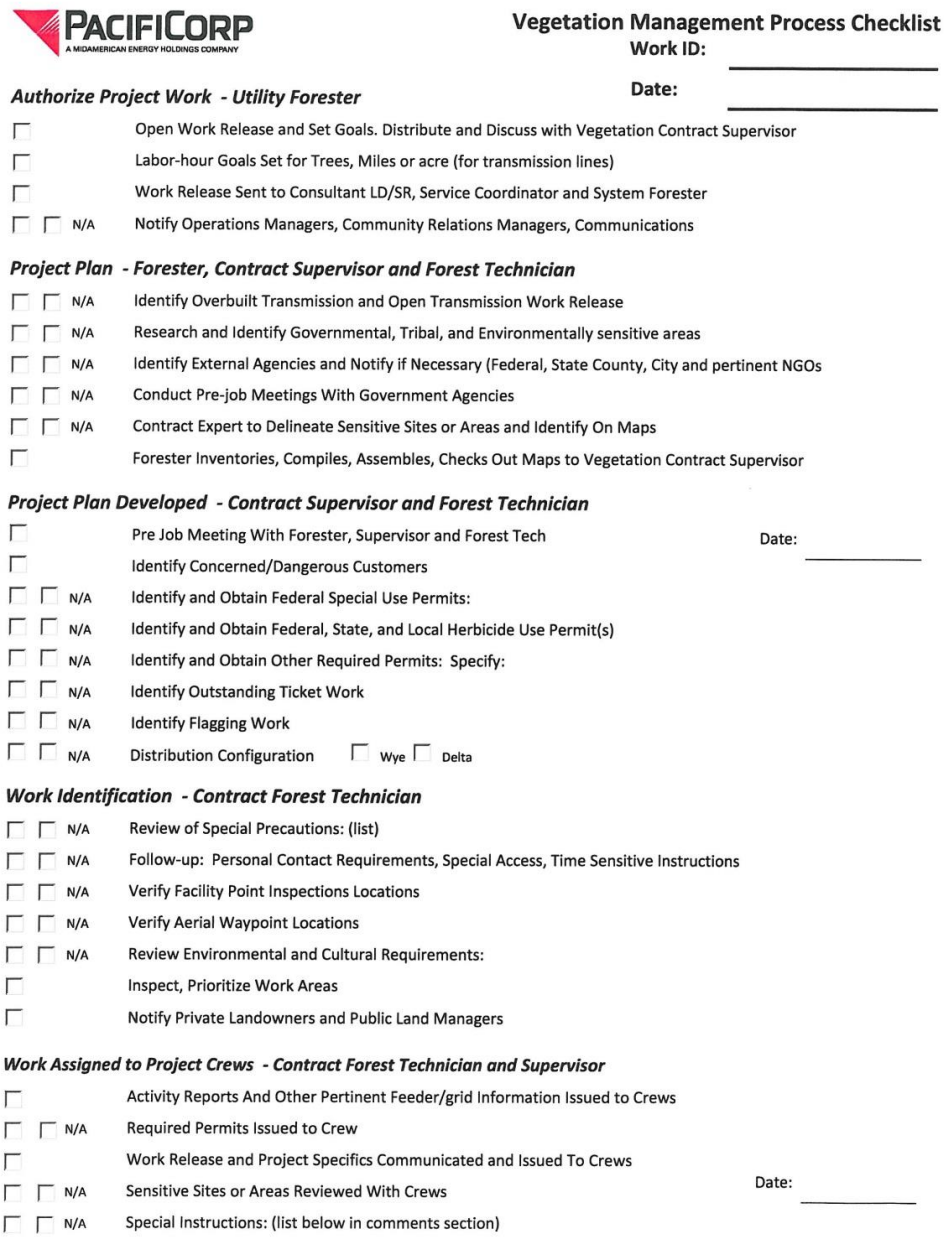
The *Work Release* specifies the project type (distribution cycle or interim, transmission cycle or interim, TGR or chemical). It provides instructions on tree removals, tree replacement, tree growth regulators (TGRs) and other particulars. It also assigns desired starting and ending dates. Before work begins, the GF/supervisor shall distribute copies of the *Work Release* to each crew assigned to the project, and review instructions for proceeding.

After the project is finished, the supervisor/GF shall sign the *Work Release* to certify the project is completed and closed. The contractor shall provide the actual starting and completion dates, as well as any pertinent comments. Comments should note work that is either incomplete (due to refusals, for example) or does not meet specifications at the time the *Work Release* is closed. By signing off on a project, the contractor guarantees that the work has been completed to PacifiCorp's specifications, and assumes responsibility for any failures to meet Company requirements, outside of exceptions noted in the comments.

4.1.1.2 Set Labor-hour Goals

The forester should set goals for labor-hours a tree and mile for time and equipment distribution cycle and interim work. These goals should be based on production data drawn from the last work on the feeder or grid, with a stretch goal of 10% improvement. Goals should also be established for transmission facilities at labor-hours a mile from previous or similar projects.

Figure 4.1 Process Checklist



PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

Vegetation Management Process Checklist

Work ID: _____

Date: _____

Authorize Project Work - Utility Forester

- ☐ Open Work Release and Set Goals. Distribute and Discuss with Vegetation Contract Supervisor
- ☐ Labor-hour Goals Set for Trees, Miles or acre (for transmission lines)
- ☐ Work Release Sent to Consultant LD/SR, Service Coordinator and System Forester
- ☐ ☐ N/A Notify Operations Managers, Community Relations Managers, Communications

Project Plan - Forester, Contract Supervisor and Forest Technician

- ☐ ☐ N/A Identify Overbuilt Transmission and Open Transmission Work Release
- ☐ ☐ N/A Research and Identify Governmental, Tribal, and Environmentally sensitive areas
- ☐ ☐ N/A Identify External Agencies and Notify if Necessary (Federal, State County, City and pertinent NGOs
- ☐ ☐ N/A Conduct Pre-job Meetings With Government Agencies
- ☐ ☐ N/A Contract Expert to Delineate Sensitive Sites or Areas and Identify On Maps
- ☐ Forester Inventories, Compiles, Assembles, Checks Out Maps to Vegetation Contract Supervisor

Project Plan Developed - Contract Supervisor and Forest Technician

- ☐ Pre Job Meeting With Forester, Supervisor and Forest Tech Date: _____
- ☐ Identify Concerned/Dangerous Customers
- ☐ ☐ N/A Identify and Obtain Federal Special Use Permits:
- ☐ ☐ N/A Identify and Obtain Federal, State, and Local Herbicide Use Permit(s)
- ☐ ☐ N/A Identify and Obtain Other Required Permits: Specify:
- ☐ ☐ N/A Identify Outstanding Ticket Work
- ☐ ☐ N/A Identify Flagging Work
- ☐ ☐ N/A Distribution Configuration ☐ Wye ☐ Delta

Work Identification - Contract Forest Technician

- ☐ ☐ N/A Review of Special Precautions: (list)
- ☐ ☐ N/A Follow-up: Personal Contact Requirements, Special Access, Time Sensitive Instructions
- ☐ ☐ N/A Verify Facility Point Inspections Locations
- ☐ ☐ N/A Verify Aerial Waypoint Locations
- ☐ ☐ N/A Review Environmental and Cultural Requirements:
- ☐ Inspect, Prioritize Work Areas
- ☐ Notify Private Landowners and Public Land Managers

Work Assigned to Project Crews - Contract Forest Technician and Supervisor

- ☐ Activity Reports And Other Pertinent Feeder/grid Information Issued to Crews
- ☐ ☐ N/A Required Permits Issued to Crew
- ☐ Work Release and Project Specifics Communicated and Issued To Crews
- ☐ ☐ N/A Sensitive Sites or Areas Reviewed With Crews Date: _____
- ☐ ☐ N/A Special Instructions: (list below in comments section)

Figure 4.1. Continued

Project Closure - Contract Supervisor and Forest Technician

☐		Post Inspection of Work to Verify Completion	Date: _____
☐		Inventory and Check In Maps	
☐		Maps and Documentation Submitted	
☐	☐ N/A	Concerned Customer Forms Submitted	
☐	☐ N/A	Refusal Information Submitted	
☐	☐ N/A	Dangerous Customer Information Submitted	
☐	☐ N/A	Tree Replacement Voucher Copies Submitted	
☐	☐ N/A	Hazard Forms - Copy in File and Copy to Utility General Foreman	
☐		Daily Logs for Project Sent to Utility Area Forester	

Project Closure - Forester

- ☐ Verify Receipt of All Maps, Daily Logs, Activity Reports, Tree Replacement Vouchers, and Hazard Forms
- ☐ Verify Receipt of Refusal and Concerned/Dangerous Customer Information
- ☐ Verify Receipt of Signed Work Release
- ☐ Close Work Release (Send to Consultant LD/SR, Service Coordinator and System Forester)

X_____ X_____

Contract Supervisor / Date Area Forester/ Date

Comments:

Figure 4.2. Vegetation Management Contractor Work Release

PacifiCorp Vegetation Management

Contractor Work Release

This work release authorizes *Contractor* to proceed with the specified maintenance project. All work shall conform to PacifiCorp's Vegetation Management Specifications. Following project completion, a *Contractor* representative shall sign this work release, and return it to PacifiCorp. Refusals or any work performed that does not conform to PacifiCorp Specifications shall be noted.

District: **Project #:**

Contractor: **Supervisor/GF:**

_____ **Distribution Cycle Maintenance** **Feeder/Grid #:**
Work according to PacifiCorp *Specifications.* Identify and correct all climbable tree and tree house hazards, and remove danger trees.

_____ **Tree Removals:** Limit removals to cases where removal time equals twice pruning time. Forester approval is required for removals outside of this constraint.

_____ **Tree Replacement:** Use coupons to pursue removals as needed.

_____ **Tree Growth Regulators:** Pursue TGRs on cycle busters.

_____ **Bulk Transmission:** Work bulk transmission with distribution.

_____ **Other:** _____

Desired Starting Date: _____ **Completion Date:** _____

Area Forester Approval: _____ **Date:** _____

To be completed by the Contractor:

Starting Date: _____ **Completion Date:** _____

Comments: _____

Supervisor/GF Signature: _____

4.1.1.3 Work Release Forwarded to Senior Business Specialist and Director of Vegetation Management

The forester should forward the work release and goals to the PacifiCorp senior business specialist and director of vegetation management. The consultant will authorize payment for work on the project.

4.1.1.4 Notify Appropriate Company Personnel

The forester should notify internal stakeholders of a project prior to beginning work. Internal stakeholders include operations managers, customer-community managers, line patrolmen, hydro facility site managers and other personnel. PacifiCorp tariff policy should be notified if work will be conducted in a location where either past or current state public utility commission complaints have been received. PacifiCorp communications department should be informed if work will be conducted in the vicinity where public relations issues have surfaced in the past or could be reasonably expected to arise during currently planned work.

4.1.2 Project Plan

The project plans section provides direction for foresters, contract supervisors and contract utility foresters.

4.1.2.1 ID Overbuilt Transmission and Open Transmission Work Release

Transmission overbuilt on distribution lines should be worked in conjunction with distribution feeder or grid projects.

4.1.2.2 Research and Identify Governmental, Tribal and Environmentally Sensitive Areas.

Governmental, tribal and environmentally sensitive lands present particular demands. Lands under governmental or tribal management and environmentally sensitive areas should be identified early to allow time to work through the required processes.

4.1.2.3 Identify External Agencies and Notify if Necessary.

Identify federal, state, county, city and pertinent non-governmental organizations potentially affected by the project. The appropriate entity should be notified of the impending project, and asked whether or not they have any concerns.

4.1.2.4 Conduct Pre-job Meetings with Governmental Agencies

Before any field work begins, a meeting shall be conducted with governmental agencies that have interest in the project. This is especially important for federal land managers and tribal leaders. In particular, no work may begin on Bureau of Land Management or Forest Service managed lands without a pre-work meeting among federal officials and vegetation management. Multiple projects and multiple agencies may be covered by a single meeting.

The meeting(s) shall be organized by the forester and PacifiCorp's environmental services must be notified and invited to attend. The meeting may be held either in person or through a conference call. Work shall not begin until vegetation management receives written notice to proceed from the appropriate agency.

4.1.2.5 Contract Expert to Delineate Sensitive Areas

If environmentally or culturally sensitive areas are identified on governmentally-managed lands, a contractor with appropriate expertise should be retained to delineate subject sites or areas. Target locations should be marked on maps and on site. Care should be taken with field marking to ensure it is sufficiently clear to alert crews, while at the same time being sufficiently discreet to avoid casual detection.

4.1.2.6 Forester Inventories, Compiles, Assembles, Checks Out Maps to Vegetation Contract Supervisor

It is critical for foresters to be gatekeepers over company maps in order to ensure there is only a single master version of each. If paper map copies are necessary, the forester will check out copies of the master version, which should include sensitive environmental or cultural sites. Effort should be made to work off of digitized maps wherever possible. Contract utility foresters should work with mapping to secure digital maps and communicate with the Company forester responsible for the region. Foresters should ensure that there is a digital master with all pertinent information.

4.1.3 Project Plan Developed

The contract supervisor and contract utility forester are responsible for developing the project plan.

4.1.3.1 Pre-Job Meeting

The contract supervisor and contract utility forester must have a pre-job meeting to discuss the upcoming project. They should discuss elements of the project plan and focus on solving problem issues that arose during the initial stages of the planning process.

4.1.3.2 Identify Concerned or Dangerous Customers

Contract utility foresters should research the feeder or grid file to identify customers with a history of concerns. Contract utility foresters should be proactive in working with these customers. Contract utility foresters, supervisors/general forepersons and foresters should discuss strategies for avoiding violence with dangerous customers.

4.1.3.3 Identify and Obtain Federal Special Use Permits

PacifiCorp facilities that cross federally-managed lands are in place under the authority of special use permits. Contract utility foresters and supervisors should study and ensure the conditions in the pertinent special use permits are satisfied. Any concerns about the potential of not complying with provisions in special use permits shall be communicated to the forester.

4.1.3.4 Identify and Obtain Federal, State and Local Herbicide Use Permits.

Herbicide or pesticide use permits are required in certain jurisdictions, particularly on federally-managed land. If a permit is required, foresters must ensure that contract utility foresters or supervisors/GFs have obtained it before herbicide application may proceed.

4.1.3.5 Identify and Obtain Other Required Permits.

Permits may be required. Examples may include projects along state road rights-of-way, in some communities, county or state forests or riparian areas. All required permits shall be obtained by the contractor before work may proceed.

4.1.3.6 Identify Outstanding Ticket Work.

From time to time, customers who have called in work requests have been told that their request did not present an immediate threat to safety or electric service and could wait until regularly scheduled work. Contract utility foresters should research tickets associated with a feeder or grid, ensure contact is made with those customers, and either explain the reasons why the work does not need be done or schedule it for completion

4.1.3.7 Identify Flagging Work.

Many areas require flaggers and traffic control. Contract utility foresters should identify areas where flagging support is necessary. Those locations should be identified on both the *Activity Report* and a map. Planning should maximize the number of tree crews working with each flagging crew.

4.1.3.8 Identify Circuit Configuration

The overwhelming majority of PacifiCorp distribution circuits are built with wye configuration, which includes a neutral wire. However, delta construction, which does not have a neutral wire, is found in some areas.

The difference is of little consequence on wires attached to cross arms, as all cross arm-mounted wires should be cleared to primary specifications (see section 5.6.5). However, there is a significant distinction on lines without cross arms. Wye construction has a low neutral, while the low wire on delta carries primary voltage. This could lead to safety and clearance risks if the low primary is mistakenly identified as a neutral. In noting that a circuit is delta construction, contract utility foresters should alert tree crew leaders of the potential of a low-mounted primary, so safe work practices can be conducted and proper clearances obtained.

4.1.4 Work Identification

Contract utility foresters are responsible for work identification.

4.1.4.1 Review Special Precautions

Before beginning field work on a project, contract utility foresters should review special precautions. These might include areas where difficulties have arisen in the past, such as a particularly sensitive community or neighborhood, areas where the media has been called to help oppose line clearance work, locations where there is a concentration of people who object to herbicide application, environmentally or culturally sensitive areas, or other matters of concern.

4.1.4.2 Follow-up On Items of Concern

Contract utility foresters should follow-up with customers who requested personal contact in the past, note special access (property owners who have requested tree crews not use a gate or drive, for example), or time sensitive instructions. Examples of time sensitive instructions include advisories not to work prior to hay harvest, not to drive in a field during the raining season in the Pacific Northwest, or some other matter.

4.1.4.3 Verify Facility Point Locations

Contract utility foresters should print outstanding facility points for the feeder, grid or transmission lines on which they are planning work. They should inspect outstanding conditions and assign work where necessary.

4.1.4.4 Verify Aerial Waypoint Locations

For transmission projects, contract utility foresters should print outstanding locations from recent aerial patrols and ensure they are inspected and worked if necessary.

4.1.4.5 Review Environmental and Cultural Requirements

For work crossing governmentally managed land, contract utility foresters should review any existing environmental and cultural requirements. These can include threatened and endangered species, riparian areas or the location of culturally sensitive sites.

4.1.4.6 Inspect, Prioritize Work Areas

Contract utility foresters shall document their contact with property owners or land managers, and organize work for tree crews on an *Activity Report* (Figure 4.3).

The *Activity Report* should identify the district in which work is to be conducted, the project number (the discrete number assigned to the district), the contractor assigned to the job and the feeder or grid number for distribution or plant locality number for transmission.

For each work location, the contract utility forester should note the date they inspected the site, a detailed location, the identity of the tenant or property owner (if known), the type of contact (door hanger, letter, personal visit, telephone or no contact), the crew type required to perform the work (lift, climb, flagging, mowing or other), a description of the work, and comment, if necessary. Comments could include special considerations such as how to access the work, whether or not there is a dog on site, a sensitive area of the yard such as flower beds, cultural or environmental sites, or other matters.

4.1.4.7 Hydroelectric Facilities

PacifiCorp hydroelectric facilities and adjacent rights-of-way could have restrictions on vegetation management activities. PacifiCorp's hydro operations and implementation (compliance group), PacifiCorp right-of-way services, or PacifiCorp environmental services shall be contacted before activities on or adjacent to hydroelectric facilities begin.

Herbicide use on or adjacent to PacifiCorp hydroelectric facilities shall be reported to the plant manager weekly. Tree crews working on property that is part of a hydroelectric project site should check in with the plant office before beginning work and check out after work each day.

4.1.4.8 Substations and Transition Stations

Contract utility foresters should provide a limited visual assessment of the vicinity around substations and transition stations for trees that have a high probability of falling into or interring with the facility. Trees identified in the limited visual assessment should undergo a basic assessment. If the basic assessment indicates trees are likely to interfere with or fail and strike the sub or transition station, the trees should be assigned to a tree crew for removal or mitigation. Limited visual and basic assessments are described in Smiley, Matheny and Lilly (2011). Climbable trees that could provide access into the fenced area should

also be identified and corrected along with any vegetation growth that could interfere with the facility. Tree crew substation

4.1.4.9 Notify Private Landowners and Public Land Managers

Prior to any tree crew work, contract utility foresters should attempt to contact the property owner or tenant on whose property the work will occur. Customer contact shall follow procedures outlined in Section 8.2.

Public land managers should have been consulted before this stage (see section 4.1.2.4). However, during the notification process, contract utility foresters should follow-up with appropriate land managers to inform them that work is proceeding as planned, and provide an update on when crews are expected to begin work.

4.1.4.10 Schools

School main or administrative offices should be notified of work to be done within school grounds or on property adjacent to schools. An effort should be made to schedule work without children present or specific accommodations made for pupils' safety. Particular effort should be made to identify targets within drop zones, climbable trees, access issues and other safety matters on site.

4.1.4.11 Mobile Home Parks and Apartment Complexes

Mobile home park and apartment complex managers should be notified in advance of planned work. Managers could be aware of tenants with specific concerns. Mobile home park and apartment managers should be encouraged

activity should be charged to a work order supplied by sub operations.

to communicate with affected renters. Individual units may still need notification of impending work.

4.1.5 Work Assigned to Project Crews

Work assignments are the responsibility of both contract utility foresters and supervisors/GFs.

4.1.5.1 Activity Reports and Other Pertinent Information Issued to Tree Crews

Contract utility foresters or supervisors/GFs should distribute completed *Activity Reports* to the tree crews.

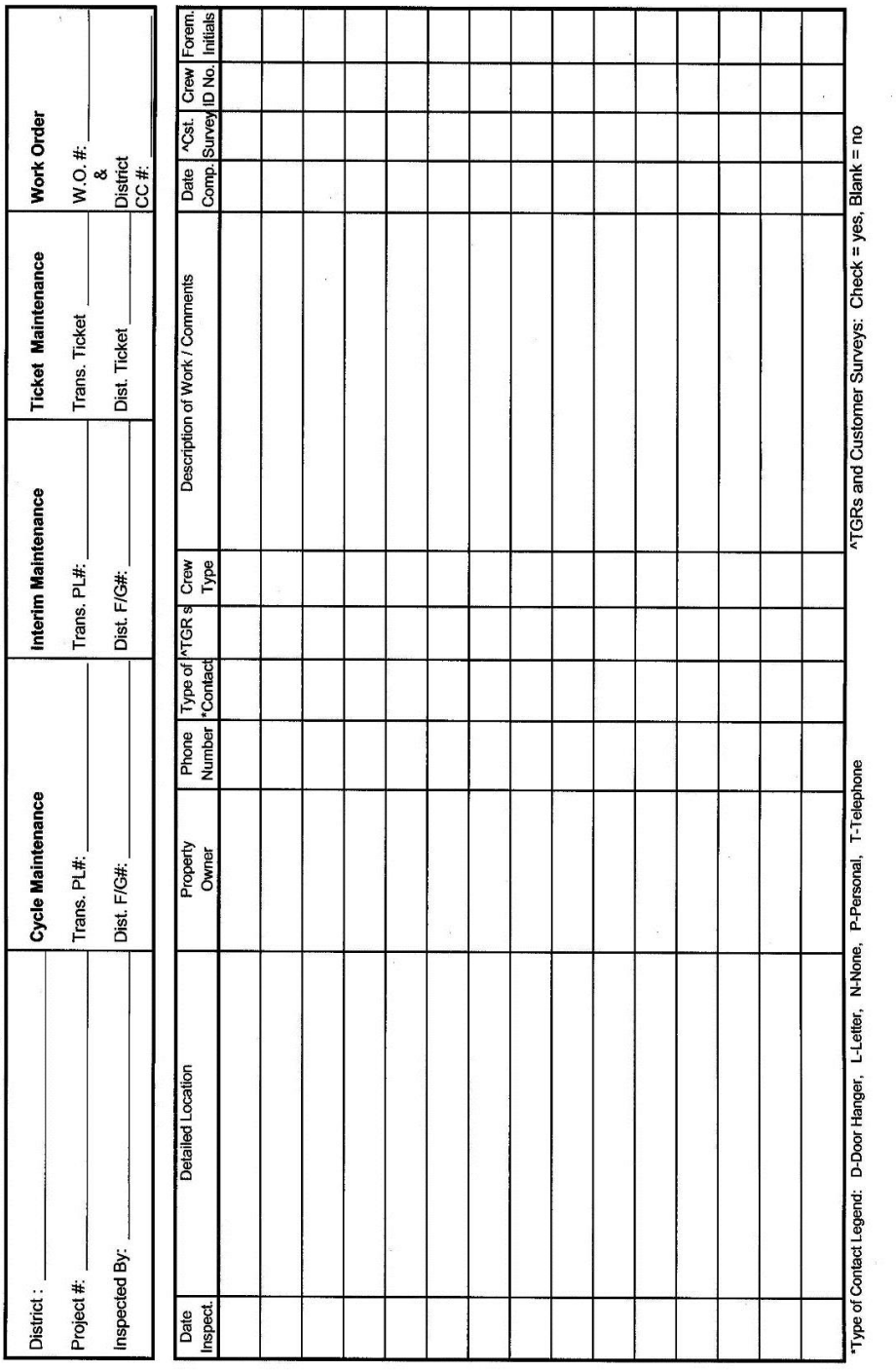
4.1.5.2 Required Permits Issued to Tree Crews

Appropriate permits shall be issued to tree crews. Tree crew members should have them available to produce to the appropriate authorities on demand.

4.1.5.3 Work Release and Project Specifics Communicated and Issued to Crews

Before beginning work on a project, the tree crew should be issued the pertinent work release. Tree crews should be able to produce the work release to foresters during audits.

Figure 4.3. PacifiCorp Vegetation Management Activity Report.



District : _____ **Cycle Maintenance** **Interim Maintenance** **Ticket Maintenance** **Work Order**

Project #: _____ Trans. PL#: _____ Trans. PL#: _____ Trans. Ticket _____ W.O. #: _____

Inspected By: _____ Dist. F/G#: _____ Dist. F/G#: _____ Dist. Ticket _____ & District CC #: _____

Date Inspect.	Detailed Location	Property Owner	Phone Number	Type of *Contact	^TGR s	Crew Type	Description of Work / Comments	Date Comp.	^Cst. Survey	Crew ID No.	Forem. Initials

*Type of Contact Legend: D-Door Hanger, L-Letter, N-None, P-Personal, T-Telephone

^TGRs and Customer Surveys: Check = yes, Blank = no

4.1.5.4 Sensitive Site or Area Review With Crews

Sensitive site locations should be communicated to tree crews.

4.1.5.5 Special Instructions

If there are special instructions, such as working in sensitive areas, contract utility foresters should communicate this in writing and ensure that tree crews have read and understand them.

4.1.6 Project Completion

After completing work, the crew leader shall note the date it was performed and initial the location entry.

4.1.6.1 Post Inspection to Verify Completion

The vegetation management contractors are ultimately responsible for ensuring that all work on a project is completed to PacifiCorp specifications. Supervisors/GFs should either inspect the work themselves, or delegate that inspection. If the work is delegated to the contract utility foresters, supervisors/GFs still have the responsibility for ensuring the project is completed to specifications. Any exceptions to specifications for any reason must be noted on the work release (see section 4.1.1.1).

4.1.6.2 Inventory and Check in Maps

Supervisors/GFs and contract utility foresters should collect all maps that have been distributed to tree crews and return them to the forester from whom they were initially issued. Foresters shall account for all maps originally issued, and file them appropriately.

4.1.6.3 Maps and Documentation Submitted

Supervisors should submit maps, completed activity reports and other pertinent documentation to foresters.

4.1.6.4 Concerned Customer Tracking

Contract utility foresters and supervisors should gather information on customers that might require follow-up the next time a project is worked. Examples are customers who refuse to allow work or access, customers who express concerns about work or customers or property owners who threaten vegetation management employees. Information should be presented to the forester in writing on the customer refusal form and appropriately filed, preferably digitally.

4.1.6.5 Tree Replacement Voucher Copies Submitted

Contract utility foresters and supervisors should submit digitized copies of tree replacement coupons to the forester.

4.1.6.6 Hazard Forms Copied, Filed and Submitted to the Utility General Foreman

Forms documenting facility points (Figure 2.7) that need to be corrected (broken cross arms, broken insulators, leaning or unstable poles, for example) should be submitted to the PacifiCorp district general foreman or operations manager.

4.1.6.7 Daily Logs for Project Submitted to Area Forester

Supervisors should collect *Daily Logs* from each crew member under their direction. These should be digitized and emailed to the forester, as well as filed by the forester.

4.1.6.8 Sign Work Release

Once they have determined that all work on a project is completed to specifications, GF/supervisor should sign and date the work release. Any locations that have not been worked to specifications should be documented on the work release with an explanation of the circumstances (see section 4.1.1.1).

4.1.7 Project Closure

Foresters are responsible for closing projects by completing the tasks in 4.1.7.1-4.1.7.3.

4.1.7.1 Verify Receipt of Maps and Other Pertinent Information

Foresters should inventory maps and collect daily logs, tree replacement vouchers, hazard forms as well as concerned customer, dangerous customer and refusal information from the supervisor. Foresters should file this information digitally so it can be retrieved when work is conducted the next time through. Foresters should ensure to keep one master digital map.

4.1.7.2 Verify Receipt of Signed Work Release

Foresters should ensure they have received and filed a copy of the signed work release from the contractor. They should examine the comment section for any work that was not completed to specification, and if necessary, make provisions to correct those outstanding conditions.

4.1.7.3 Close Work Release

The forester should close the work release and inform the lead/senior consultant and director of vegetation management of the closure by electronic mail.

4.2 Reporting Work

After completing work, the crew leader shall document tree work on *Weekly and Daily Reports*. Note the date the work was performed, the crew ID number and the crew leader's initials.

4.2.1 Weekly Vegetation Report

Tree work shall be reported on the *Weekly Time & Vegetation Report* (Figure 4.4) or other approved method. The report is a combination contractor time sheet and PacifiCorp weekly production report. The back of the report provides instructions and definitions for each cell (Figure 4.5). Weekly Reports, along with the corresponding invoice should be submitted to the forester responsible for the area in which the report was completed,

Most of the items on the *Weekly Report* are self explanatory. A few cells warrant clarification, (reference Figures 4.4 and 4.5).

- Item 23. General Work Location: The general location should be the approximate address. For example, the 4000 block of Dead Elm Memorial Road. Note that for audit purposes, crew leaders will be responsible to find and identify all the trees they worked over the course of a week. Consequently, more detailed information should be kept in the *Daily Report* (covered in Section 4.2.2 [Figure 4.6]).
- Items 31 and 32. Woody plants (including vines) less than 4-inches in diameter at breast height are classified as saplings. The actual square footage occupied by the above ground portion of the plant should be measured and recorded, with a 100 ft^2 maximum per plant for both pruned and removed vegetation. Note that multi-stemmed

woody plants where no single stem is over 4-inches in diameter are classified as saplings, with a maximum of 100 ft^2 per plant.

- Item 37. Stump Spraying: Document the time spent treating stumps of trees and brush feet that have been removed during the day. Use quarter-hour increments.
- Items 43-45. To obtain the diameters of multi-stemmed trees, add the diameters at breast height of individual stems. For example, if a tree has three stems of 8, 4 and 3- inches in diameter, the tree would be 15 inches in diameter and reported as a 12-24 inch removal. An exception would be if no stems on the plant are over 4-inches in diameter at breast height, in which case the plant should be classified as a sapling (see items 31 and 32). If only one stem is over 4-inches in diameter and the remaining stems are less, report the diameter of that specific removal as the diameter of the single largest stem.
- Item 47 and 48. Saplings pruned and removed. Saplings are trees under four-inches in diameter at breast height (they could also be 6-inches or less in diameter at the stump). Report area covered by the crown of the plant, with a 100 ft^2 maximum for each plant. There must be six inches of soil between stems of the same species to count as multiple plants.
- Items 54 and 55. For transmission cycle work, capture the number of acres cleared or sprayed respectively using linear feet.

4.2.2 Daily Report

The *Daily Report* shall be used by crew leaders to keep detailed records on their productivity (Figure 4.6). It is particularly important as a reference for locating trees during audits and tracking chemical use. Like the *Weekly Report*, the *Daily Report* provides instructions on a cell by cell basis. The *Daily Report* is the property of PacifiCorp, and when completed, supervisors/GFs shall digitize it, and sent to the appropriate forester.

4.3 Tree Crew Audits

The primary purpose of a crew audit is quality control. Furthermore, crew audits offer an opportunity for the forester to provide tree crew leaders and their supervisors/GFs with a clear understanding of PacifiCorp's expectations.

Foresters shall audit one full week of work as many times a year as specified in their goals. All work, including transmission and pole clearing, shall be audited. Each audit should have the forester, the crew's GF/supervisor and the crew leader in the field together reviewing completed work. Audits should begin with the first tree, and progress in order to the last tree worked during the week. Over the course of the audit, the forester, supervisor/GF and crew leader should open a dialog regarding the week's results.

The audits should objectively assess quality, adherence to specifications, tree counts, herbicide and other matters. Moreover, audits should provide the tree crew leader with feedback on production, professionalism, equipment, safety and crew efficiency. Results shall be documented on a *Tree Crew Audit Report* (Figure 4.8).

4.3.1 Objective Components

Objective audit components shall be determined on the straight percentage of trees that meet expectations compared to the total trees worked in each category. The percent score shall be averaged for the final rating.

4.3.1.1 Quality

The quality component documents crew adherence to natural target pruning as described in Section 3.3. Before conducting an audit, the forester and supervisor/GF should agree on a day to examine cut quality. One way would be to roll a die. In this case, 1 would designate Monday as cut quality day, 2 Tuesday and so on. Six would represent Saturday, so it would require further rolls until a different number turns up.

All final cuts made by the crew that day should be counted and examined for proper technique. A minimum of 20 cuts shall be inspected. If a crew did not make 20 cuts on the selected day, another day should be added until a minimum of 20 cuts have been evaluated. Note that if Friday is the selected day and 20 cuts were not made, the crew leader should alert the forester and GF/supervisor before the audit begins so another day can be added for cut quality.

Rip cuts, flush cuts and improper lateral selections violate the principles of natural target pruning, and shall be counted against the category score. Foresters should grant tree crews one grace faulty cut (the "Mulligan"). In addition, each "hanger" left in the tree will count as one improper cut per inch of the hanger's diameter. For every two hangers under one-inch in diameter, a single cut penalty should be assessed.

Lombardi poplar, Douglas hawthorn and other species are exempted from cut quality examination at the PacifiCorp director of vegetation management's discretion.

4.3.1.2 Specification Adherence

The *Specification* section examines all trees worked over the course of a week, both pruned and removed. It takes a straight percentage of trees that comply with clearances specified in Chapters 5 and 6 against all those worked during the week. Brush feet sprayed may be counted as brush feet removed. In addition, if climbing spurs were used in violation of section 2.6.3, the crew will be penalized for a tree out of specification.

4.3.1.3 Tree Count

The tree count section is used to validate numbers in the *Weekly Report* against those actually identified in the field on a straight percentage basis. Reported trees pruned, secondary trees, and brush feet equivalents ($ft^2 \div 100\ ft^2$ of saplings pruned or removed) should be validated for discrepancies in these categories. Note that no plant should be reported at more than 100 ft^2. Smaller, pencil-diameter stems may be counted at 10 ft^2 each.

Figure 4.4. Weekly Time and Vegetation Report

WKLY TIME REPORT & PACIFICORP WKLY VEGETATION REPORT

1 W/E _____ State _____ Local Union # _____ Crew _____ Contract# _____

Last 4	Employee Name	Code	T	Pay Rate	Sun	Mon	Tue	Wed	Thur	Fri	Sat	ST	OT	DT	Total	HOL	VAC	Other	PAD

Explain Other Hours: PAD- Paid Absent Day

Eq Name	Equipment Number	Mileage	TOTAL	Sun	Mon	Tue	Wed	Thur	Fri	Sat

MAN HOURS	TOTAL	Sun	Mon	Tue	Wed	Thur	Fri	Sat
28 Travel & Misc.								
29 Inspection/Notification								
30 Traffic Flagging								
31 Chp/Cleanup/Dmp/Stmp Grnd								
32 Tree Prune								
33 Tree Removal								
34 Saplings Pruned								
35 Saplings Remove								
36 TGR								
37 Pole Clear/Treating								
38 ROW Clearing								
39 ROW Spraying								
40 Stump Spraying								
41 Total Man-Hours								

PRODUCTIVITY	TOTAL	Sun	Mon	Tue	Wed	Thur	Fri	Sat
42 # Intentionally Blank								
43 # Primary Pruning								
44 # Intentionally Blank								
45 # Sec/Serv. Pruning								
46 # Removals 4"-11"								
47 # Removals 12"-23"								
48 # Removals 24"-Up								
49 TOTAL PRUNED/REMOVED								
50 Ft^2 Saplings Pruned								
51 Ft^2 Saplings Removed								
52 # Stump Application								
53 # Stumps Ground								
54 # TGR Application								
55 # Poles Cleared								
56 # Poles Treated								
57 # ROW Ac Cleared								
58 # ROW Ac Sprayed								
59 Ft^2 Sprayed								
59 # Loads of Chips								
60 # Survey Cards								

2 District _____
3 Project _____

Crew Information

4 Crew Leader _____
5 PacifiCorp # _____
6 Crew Type _____
7 Cert. Appl# _____
8 Supervisor _____

Work Activity

Local Transmission Maintenance

9 Trans Cycle (TRN) TID# _____
10 Trans Ticket (TTK) ☐
11 Trans Hot-Spot (THS) TID# _____
12 Trans Chemical (TCM) TID# _____
13 Trans Inspection (TNT) TID# _____
14 Trans Pole Clear (TPL) TID# _____

Distribution Maintenance

15 Dist Cycle (DST) F/G # _____
16 Dist Ticket (DTK) ☐
17 Dist Hot-Spot (DHS) F/G # _____
18 Dist Chemical (DCM) F/G # _____
19 Dist Pole Clear (DPL) F/G# _____

Main Grid Transmission Maintenance

20 MG Cycle (MGT) TID# _____
21 MG Hot-Spot (MHS) TID # _____
22 MG Chemical (MCM) TID# _____
23 MG Inspection (MGI) TID# _____
24 MG Pole Clear (MPL) TID# _____

25. District Work Order or Storm #s

PM Order # _____
26 Shop Location _____

27. General Work Location

Mon _____
Tue _____
Wed _____
Thrs _____
Fri _____
Sat _____
Sun _____

62 Crew Leader Signature _____

PAGE _____

Vegetation Weekly Report 07/2014

Figure 4.5. PacifiCorp Weekly Time and Vegetation Management Report Instructions and Definitions.

Instruction & Definitions

1. Week Ending: The week ending date (Saturday).
2. District: The PacifiCorp district where the work occurred.
3. Project #: District identification number
4. Cr. Leader: Crew Leader's name.
5. Crew #: Three-digit crew number assigned to crew leader.
6. Crew Type: Two-character crew-type code (2-Lift, 2-Mow, 3-Lift, 3-Climb. 4-Climb, 5-Climb, F. Tech, Others)
7. Certified Appl. #: The certified applicators license number.
8. Supervisor: Crew's Supervisor's name.
9. Local Trans Cycle, TID#: Transmission line six-digit Tech ID number.
10. Local Trans Ticket: Check when working transmission tickets. Tech ID number not required.
11. Local Trans Hot-Spot, TID#: Transmission line six-digit Tech ID number.
12. Local Trans Chemical: Transmission line six digit Tech ID number.
13 Local Trans Inspection: Transmission line six digit Tech ID number.
14. Local Trans Pole Clear: Transmission line six digit Tech ID number California Only
15. Dist. Cycle, F/G#: Feeder or grid number, maximum eight characters.
16. Dist. Ticket: Check when working distribution ticket. Feeder or grid numbers not required.
17. Dist. Hot-Spot, F/G#: Feeder or grid number, maximum eight characters.
18. Dist. Chem. F/G#: Chemical Cycle Maintenance: Enter Feeder/Grid #.
19. Dist. Pole Clear F/G#: Feeder or grid number. maximum eight digits. This activity is only in California.
20. Main Grid Cycle: Transmission line six digit Tech ID number
21. Main Grid Hot-Spot: Transmission line six digit Tech ID number
22. Main Grid Chemical: Transmission line six digit Tech ID number
23. Main Grid Inspection: Transmission line six digit Tech ID number
24. Main Grid Pole Clear: Transmission line six digit Tech ID number California Only
25. District Work Order or Storm Work: Plant Maintenance (PM) Order and Cost Center.
26. Shop Location: Shop location.
27. General Work Location: General work location for the day. Detailed locations are to be kept separately in the "yellow books." For audit purposes, crew leaders are responsible to find and identify all trees they worked.
28. Travel & Misc. Man-hours: Number of travel and miscellaneous (meetings, stand-by, etc.) man-hours a day.
29. Inspection/Notification: Number of inspection and notification man-hours a day. Includes facility inspection property owner notification.
30. Traffic Flagging: Number of traffic flagging man-hours a day.
31. Chip/Cleanup/Dump: Number of chipping, cleanup, and dumping man-hours a day. Stump grinding shoud be accounted for here.
32. Tree Prune: Number of man-hours a day spent pruning, including setup.
33. Tree Removal: Number of tree removal man-hours a day, including setup.
34. Saplings Pruned: Man-hours a day spent pruning saplings, including setup. Saplings are woody plants under 4" DBH (diameter at 4.5 feet above the ground) of species which have the potential to reach wire height at maturity. Report no more than 10 ft2 a plant.
35. Sapling Removed: Man-hours a day removing saplings, including setup. Saplings are woody plants under 4" DBH (diameter at 4 .5 feet above the ground) of species which have the potential to reach wire height at maturity. Report no more than 10 ft2 a plant.
36. TGR: Man-hours a day applying TGRs. including setup.
37. Pole Clear/Treating: Pole clearing man-hours a day.
38. ROW Clearing: Transmission ROW clearing man-hours a day.
39. ROW Spraying: Transmission ROW spraying man-hours a day.
40. Stump Spraying: Man-hours a day spent spraying stumps and stubble from removed saplings. Use 1/4 hour increments
41. Total Man-Hours: Total number of man-hours a day and week. Use 1/4 hour increments.
42. Intentionally blank.
43. Primary pruning. Total trees pruned on primary conductor each day.
44. Intentionally blank.
45. Sec/Serv. Pruning: Total trees pruned each day for secondary, service, or street light where there is no primary.
46. Removals 4"-11": Total trees removed between 4"-11" DBH
47. Removals 12"-23": Total trees removed between 12"-23" DBH
48. Removals 24" and greater: Total trees removed 24" DBH and greater.
49. TOTAL PRUNED/REMOVED: Total trees pruned or removed a day and week.
50. Sq. Ft. Saplings Pruned: Square feet (length x width) of saplings pruned. Saplings are woody plants under 4" DBH (diameter at 4.5 feet above the ground) of species which have the potential to reach wire height at maturity. Report no more than 100 ft^2 a plant.
51. Sq. Ft. Saplings Removed: Square feet (length x width) of saplings removed. Saplings are woody plants under 4" DBH (diameter at 4.5 feet above the ground) of species which have the potential to reach wire height at maturity. Report no more than 100 ft^2 a plant.
52. Stump Application: Total trees that were stump treated with herbicides.
53. Stumps Ground: Stumps ground out.
54. TGR Application: Trees treated with Tree Growth Regulators (TGRs [(Implants, soil drench, and soil injection]).
55. Poles Cleared: Poles cleared of trees and brush. This activity is only in California.
56. Poles Treated: Poles treated with herbicides.
57. ROW Acres Cleared: Transmission ROW acres cleared of trees and saplings.
58. ROW Acres Sprayed: Transmission ROW acres where trees and saplings were treated with herbicides.
59. Sq. Ft. Sprayed: Report the square feet of undesirable vegetation sprayed.
60. Loads of Chips: Loads of chips dumped.
61. # Survey cards: Total number of survey cards distributed
62. CREW LEADER SIGNATURE: Crew leader signs the report to authenticate its accuracy.

Figure 4.6 Daily Report

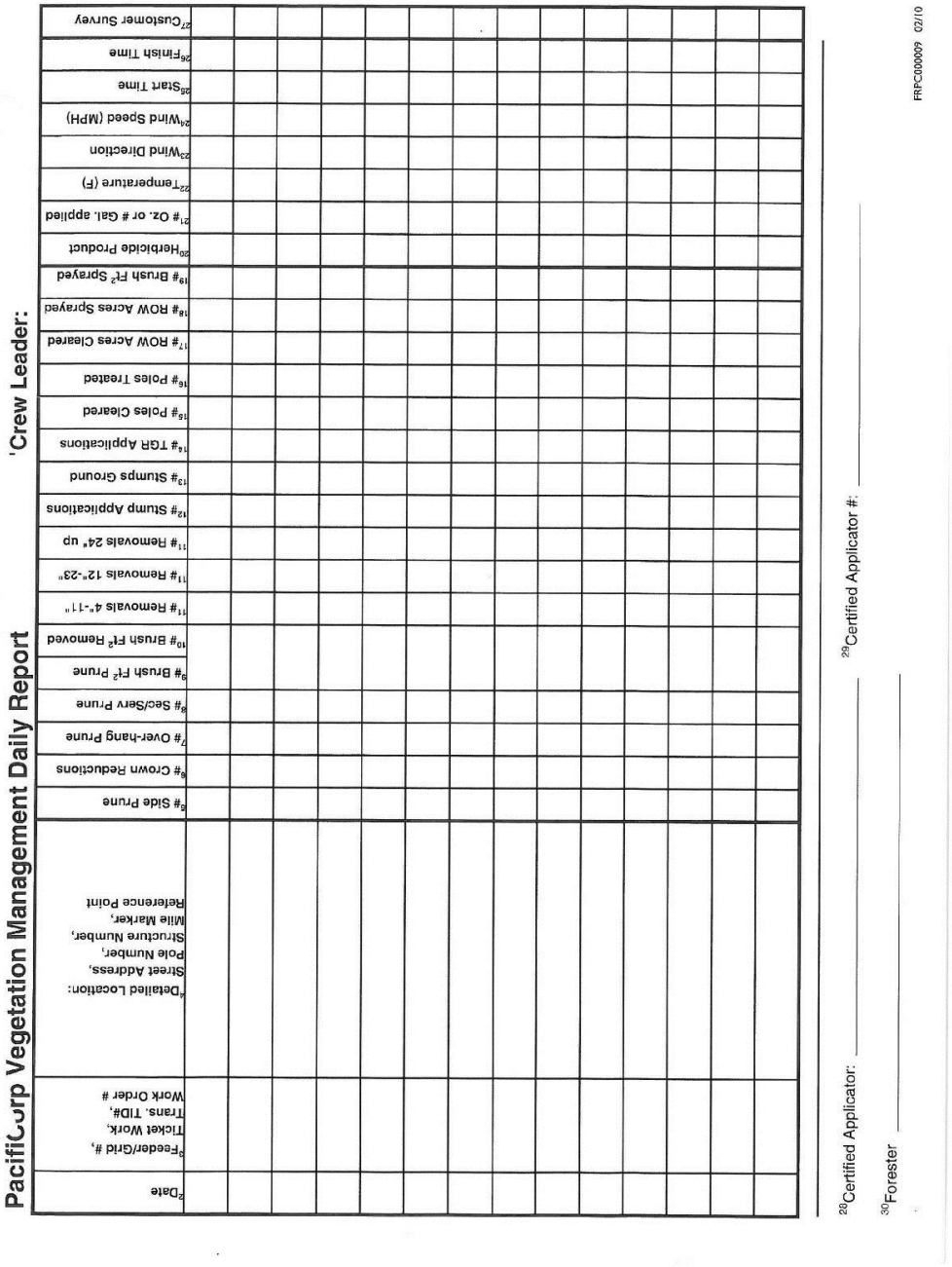


Figure 4.7 Vegetation Management Daily Report

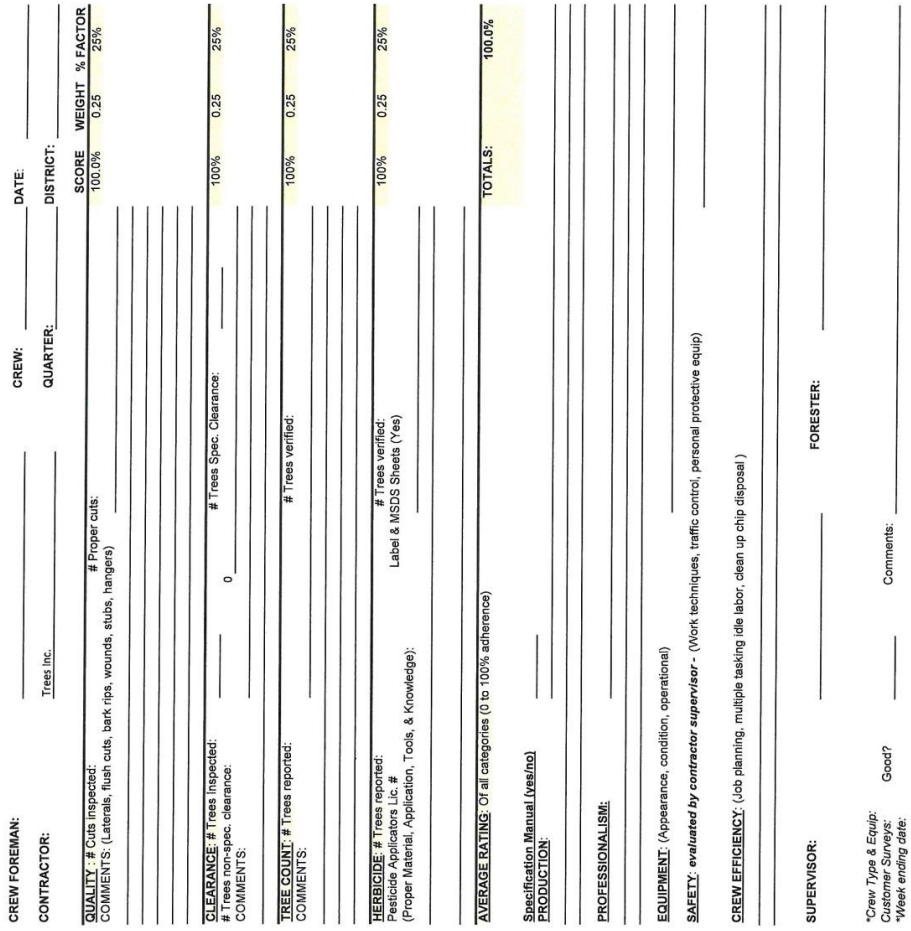
PacifiCorp Vegetation Management Daily Report

Instruction and Definitions

1. **Crew Leader:** The name of the crew leader for the day.
2. **Date:** Date work was performed.
3. **Feeder/Grid #, Ticket work, Trans TID #, After Hours Trans or Dist. Storm Work, Worker Order #:** Identify the work with the appropriate number, or as ticket work.
4. **Detailed Location:** Report a detailed work location for each job site.
5. **Side Pruning:** Report the number of trees pruned to the side of the primary conductors.
6. **Crown Reductions:** Report the number of trees pruned under the primary conductors.
7. **Overhang Pruned:** Report the number of pruned overhanging the primary conductors.
8. **Sec/Service Pruned:** Report the number of trees pruned for secondary, service, or street lights where there is no primary.
9. **# Ft^2 Saplings Pruned:** Report the area of power line right-of-way where saplings were pruned. Report the area occupied by the crown of the plant(s), with no more than 10 ft2 reported for an individual plant. Saplings are defined as woody plants under 4" DBH (diameter at breast height) of species which have the potential to reach wire height at maturity.
10. **# Ft^2 Saplings Removed:** Report the area of power line right-of-way where saplings were removed. Report the area occupied by the crown of the plant(s), with no more than 10 ft2 reported for an individual plant. Saplings are defined as woody plants under 4" DBH (diameter at breast height) of species which have the potential to reach wire height at maturity.
11. **# Removals 4"-11", 12"-23", and 24" and up:** Report the number of trees removed in each size class measured 4½ feet above the ground).
12. **# Stump Applications:** Report the number of trees that were stump treated with herbicides.
13. **# Stumps Ground:** Report the number of stumps that were ground.
14. **# TGR Applications:** Report the number of trees treated with tree growth regulators.
15. **# Poles Cleared:** Report the number of poles cleared of trees and brush to bare ground.
16. **# Poles Treated:** Report the number of poles treated with herbicides.
17. **# ROW Acres Cleared:** Report the number of transmission ROW acres were cleared.
18. **# ROW Acres Spayed:** Report the number of ROW acres sprayed with herbicides.
19. **# Ft^2 Sprayed:** Report the number of square feet of right-of-way sprayed with herbicides.
20. **Loads of chips:** loads of chips dumbed that day.
21. **Herbicide Product:** Report the herbicide product used at the site. Refer to Herbicides A-F.
22. **# Oz., or # Gal. Applied:** Report the number of herbicide ounces or gallons applied at the site.
23. **Temperature (F):** Report the temperature when the herbicide application is made.
24. **Wind Direction:** Report the wind direction at the site when the herbicide application was made.
25. **Wind Speed (MPH):** Report the wind speed in miles per hour at the site when the herbicide application was made.
26. **Start Time:** Report the time when the herbicide application was started.
27. **Finish Time:** Report the time when the herbicide application was completed.
28. **Certified Applicator:** The name of the liscensed applicator.
29. **Certified Applicator #:** The number of the applicator's license.

FRPC000009

Figure 4.8 Tree Crew Audit Form.



CREW FOREMAN: _____ CREW: _____ DATE: _____

CONTRACTOR: Trees Inc. QUARTER: _____ DISTRICT: _____

	SCORE	WEIGHT	% FACTOR
QUALITY: # Cuts inspected: # Proper cuts:	100.0%	0.25	25%
COMMENTS: (Laterals, flush cuts, bark rips, wounds, stubs, hangers)			
CLEARANCE: # Trees inspected: # Trees Spec. Clearance:	100%	0.25	25%
# Trees non-spec. clearance: 0			
COMMENTS:			
TREE COUNT: # Trees reported: # Trees verified:	100%	0.25	25%
COMMENTS:			
HERBICIDE: # Trees reported: # Trees verified:	100%	0.25	25%
Pesticide Applicators Lic. # Label & MSDS Sheets (Yes)			
(Proper Material, Application, Tools, & Knowledge):			
AVERAGE RATING: Of all categories (0 to 100% adherence) TOTALS:			100.0%

Specification Manual (yes/no) _____

PRODUCTION: _____

PROFESSIONALISM: _____

EQUIPMENT: (Appearance, condition, operational) _____

SAFETY: ***evaluated by contractor supervisor -*** (Work techniques, traffic control, personal protective equip) _____

CREW EFFICIENCY: (Job planning, multiple tasking idle labor, clean up chip disposal)

SUPERVISOR: _____ **FORESTER:** _____

**Crew Type & Equip:*
Customer Surveys: Good? _____ Comments: _____
**Week ending date:*

Table 4.1 Herbicide category deductions. Deductions are added together.

Penalty Description	Deduction
Failing to treat stumps or ft^2 of brush requiring treatment	Percentage of stumps or ft^2 of brush missed against the total of those requiring treatment.
Misreported stumps or ft^2 of brush	Percentage of over or under reported stumps, or ft^2 of brush against the total that were actually treated
Crews without a crew leader or an applicator (if required by state regulations) holding a current applicator's license	100% (crew may be shut down at the forester's discretion).
Crew leader or applicator (if required by state regulations) who have a current applicator's license, but does not have it on site.	10%
Missing herbicide SDS or Label	10% for each missing chemical document of on the truck

On transmission projects, work in the right-of-way should be reported as acres cleared if there are more than 40 trees per acre. If there are fewer than 40 trees per acre, work should be reported as individual trees. Trees outside the right-of-way should be reported as individual trees.

4.3.1.4 Herbicide

The herbicide component should compare total treated stumps and brush feet equivalents (total $ft^2 \div 100\ ft^2$) against those that should have been treated. It should also compare stumps and brush feet equivalents treated with herbicide against the total number reported. Deductions for over or under treatment or reporting should be made on a straight percentage basis and added together (Table 4.1). For example, if in an area where herbicide use was acceptable, a tree crew removed five deciduous trees, but only treated four stumps, they would receive a 20% deduction ($[1 \div 5] \times 100 = 20\%$). Moreover, if they reported only three out of the four stumps actually treated, the crew would receive an additional 25% demerit. The total deduction in this example would be 45%, and the crew's herbicide score would be 55% (assuming everything else was in order).

Moreover, foresters should apply penalties for violations of herbicide policy. Penalties include a 100% category deduction for cases where the crew leader or applicator did not hold a valid applicator's license (California excepted). The crew may be shut down until the crew is properly credentialed. Further penalties include a 10% penalty for crew leaders or applicators that have valid applicator's licenses, but do not have it on site, and a 10% penalty for each required pesticide

document that is missing (SDS and labels, for example [Table 4.1]).

Failing to report treated trees is a violation of law, in addition to not providing PacifiCorp with accurate information. Examples of trees and brush that do not require treatment include conifers that do not sprout from the stump (pines, firs, spruces, cedars and others), and stumps located in areas where herbicide use is prohibited (certain Federal jurisdictions, municipal watersheds and private property where the owner objects to herbicide use).

4.3.2 Subjective Components

While not included in the final audit score, subjective factors such as productivity, professionalism, equipment and safety are also critical to program success. The audit process allows the forester to comment on these items.

4.3.2.1 Production

For time and equipment work, foresters should provide the tree crew's *Statistics Report* (Figure 4.11) and a *Crew Productivity Report* from PVM for the year to date. On the *Statistics Report,* foresters should review the percentage of removals, the type of removals, the amount of nonproductive time and other factors that affect a tree crew's productivity and quality. The *Crew Productivity Report* compares the subject crew's data with the average productivity of crews working in similar areas. It enables crew members to compare their performance against that of their peers.

While productivity data is objective, valid comparisons involve subjective judgment because specific work types are different from one another. For example, a climb crew's production results will invariably be lower than those of lift crews, ticket work will be worse than cycle work, and one cycle crew working in a vegetation-dense area will have different production from crews working in urban areas. Nevertheless, 70% of PacifiCorp's contractor performance formula is based on productivity; so, audits should stress productivity's importance to program success.

4.3.2.2 Professionalism

Since vegetation management has more interaction with PacifiCorp customers than any other department, it is vitally important for tree crews to exhibit professionalism. Foresters should comment on factors such as ISA Certification, appearance, and other considerations.

4.3.2.3 Equipment

The condition of equipment relates to professionalism and productivity. Well cared for equipment and organized tool boxes are not only a positive reflection on the crew, but they also make work safer and more efficient. Foresters should comment on the appearance and functionally of equipment and organization of the bins.

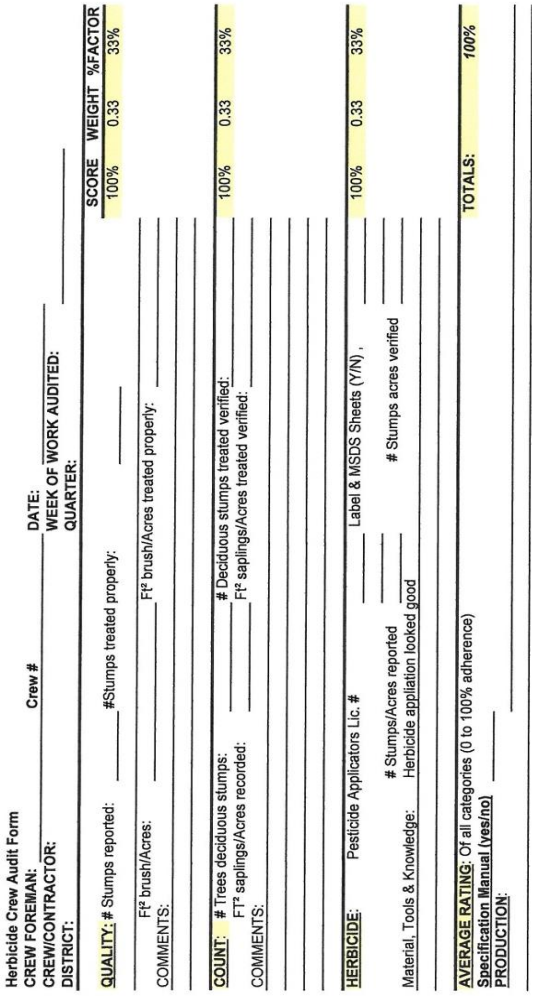
4.3.2.4 Safety

Safety should be evaluated by the supervisor/GF. However, if a forester observes unreasonable safety risks or obvious safety violations (such as someone failing to wear personal protective equipment), he/she should relate their concerns to the crew, and inform that crew's GF/supervisor so that he or she may correct the situation. All crew members should know the safety requirements applicable to their positions and take responsibility for following those requirements.

4.3.2.5 Crew Efficiency

Reviewing work systematically from the first to last tree worked allows foresters and supervisors/GF to gain an

Figure 4.9. Herbicide Audit Form.



Herbicide Crew Audit Form
CREW FOREMAN: Crew # DATE:
CREW/CONTRACTOR: WEEK OF WORK AUDITED:
DISTRICT: QUARTER:

		SCORE	WEIGHT	%FACTOR
QUALITY: # Stumps reported:	#Stumps treated properly:	100%	0.33	33%
Ft² brush/Acres:	Ft² brush/Acres treated properly:			
COMMENTS:				
COUNT: # Trees deciduous stumps:	# Deciduous stumps treated verified:	100%	0.33	33%
FT² saplings/Acres recorded:	Ft² saplings/Acres treated verified:			
COMMENTS:				
HERBICIDE: Pesticide Applicators Lic. #	Label & MSDS Sheets (Y/N) ,	100%	0.33	33%
# Stumps/Acres reported	# Stumps acres verified			
Material, Tools & Knowledge: Herbicide appliation looked good				
AVERAGE RATING: Of all categories (0 to 100% adherence)		TOTALS:		100%
Specification Manual (yes/no)				
PRODUCTION:				

impression of job planning, which is a reflection of crew efficiency. Foresters should share their impression of crew efficiency and also comment on methodology, clean up and chip disposal. Inefficient work organization may be the responsibility of the contract utility forester who originally lined-out the work. Trends in disorganization may require contract utility forester counseling.

4.3.2.6 Crew Composition

Foresters will note the number of crew members and equipment type on the crew being audited. The field notes will be compared to an itemized invoice for accuracy. Foresters should also note the week ending date to help access the proper invoice. Results should be reported monthly on the invoice audit.

4.3.2.7 Customer Surveys

Foresters should compare surveys distributed against the occupied buildings along the audit. The score will be based on the number of surveys distributed against the number that ought to have been distributed. It will not count toward the overall audit score.

4.4 Herbicide Crew Audit

The primary purpose of the herbicide crew audit is quality control. Audits should evaluate one full week of herbicide crew work. Each audit should have the forester, the crew's GF/supervisor and the crew leader in the field together observing completed work. Audits should begin with the first area treated, and progress in order to the last area worked during the week. Over the course of the audit, the forester, supervisor/GF and crew leader should open a dialog regarding the week's results.

Moreover, audits should provide the herbicide crew leader with feedback on production, professionalism, equipment, safety and crew efficiency. Results shall be documented on an *Herbicide Crew Audit Report* (Figure 4.9).

4.4.1 Objective Components

Objective audit components shall be determined on the straight percentage of trees that meet expectations compared to the total trees reported in each category. The percent score shall be averaged for the final rating.

4.4.1.1 Quality

The quality section examines proper square footage of brush treated following specifications described in Chapter 7. Calculate the score by using percentages of proper brush or acres treated against the total number reported.

4.4.1.2 Count

To complete the *Count* section, the square feet of brush or acres treated against which should have been sprayed.

4.4.1.3 Herbicide

Foresters should apply penalties for violations of herbicide policy. Penalties include a 100% category deduction for cases where the crew leader or applicator did not hold a valid applicator’s license (California excepted). The crew may be shut down until the crew leader or applicator are properly credentialed. Further penalties include a 10% penalty for crew leaders or applicators that have valid applicator's licenses, but do not have it on site, and a 10% penalty for each required pesticide document that is missing (SDS and labels, for example [Table 4.1]).

Failing to report treated trees is a violation of law, in addition to not providing PacifiCorp with accurate information. Examples of trees and brush that do not

require treatment include conifers that do not sprout from the stump (pines, firs, spruces, cedars and others), and stumps located in areas where herbicide use is prohibited (certain Federal jurisdictions, municipal watersheds and private property where the owner objects to herbicide use). Foresters should also comment on material, proper tools and crew knowledge.

4.4.2 Subjective Components

While not included in the final audit score, subjective factors such as productivity, professionalism, equipment and safety are also critical to program success. The audit process allows the forester to comment on these items.
Failing to report herbicide treatment or not having a licensed applicator on the crew is a violation of the law.

4.4.2.1 Professionalism

Same instructions as 4.3.2.2

4.4.2.2 Equipment

Same instructions as 4.3.2.3

4.4.2.3 Safety

Same instructions as 4.3.2.4

4.4.2.4 Crew Efficiency

Same instructions as 4.3.2.5

4.4.2.5 Crew Composition

Same instructions as 4.3.2.6

4.4.2.6 Customer Surveys

Same instructions as 4.3.2.7

4.5 Worksite Inspection

PacifiCorp has a *Worksite Inspection Form* (Figure 4.10), which is designed to check tree crew safety. Foresters are required to perform a number of worksite inspections as specified in their annual goals. Foresters may use the form during crew visits. The form provides a general review, as well as tailboard, bucket or climb setup, vehicle, herbicide and other safety provisions.

4.6 PVM

PacifiCorp Vegetation Management (PVM) is a PacifiCorp intranet-based program available at: http://pdxappw51vp.pacificorp.us:8080/BOE/BI?startFolder=AVPSDml489dAlLbJ3JVVZzE&isCat=false. The databse organizes data downloaded from the *Weekly Report* (Figure 4.4). PVM offers a variety of reports, such as the *Statistics Report* (Figure 4.11), which enable program analysis.

The statistics reports are designed to be flexible. They allow data examination on a program level (it contains data since 1996 for Pacific Power, for example), down to a crew level for a specific week of work. They also provide cost and man-hours per tree, the percentage of various work types (tree removals, the size of trees removed, the number of side pruned trees, crown reduction and others), the percentage of time spent on travel, flagging, cleanup and other activities.

Other PVM reports compare the productivity of individual crews, or breakdown production by district, state, and work code. The reports provide objective information upon which foresters and supervisors/GFs can make sound management decisions based on objective information.

4.7 Monthly Reports

Vegetation management has monthly reports tracking distribution cycle and

Figure 4.10. Vegetation Management Worksite Inspection Form.

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

VEG. MANAGEMENT WORKSITE INSPECTION FORM

Employee Name(s)

Feeder/Grid #

District

Inspection Date

0
Crew Leader

Work Location (Address or GPS)

Required? Yes	Required? No	General	In Use? Yes	In Use? No
☐	☐	Hard Hat	☐	☐
☐	☐	Safety Glasses/Face Shield	☐	☐
☐	☐	Hearing Protection	☐	☐
☐	☐	Hand Protection	☐	☐
☐	☐	Chaps	☐	☐
☐	☐	Appropriate Footwear	☐	☐
☐	☐	Safety Vest	☐	☐
☐	☐	Job-site Housekeeping	☐	☐
☐	☐	Proper Clothing	☐	☐
☐	☐	Whistle	☐	☐
☐	☐	Communication	☐	☐
☐	☐	First Aid Kit	☐	☐
☐	☐	Fire Extinguisher	☐	☐
☐	☐	Backpack Water Fire Sprayer	☐	☐
☐	☐	Shovel and Pulaski	☐	☐
☐	☐	Fire Wagon	☐	☐
☐	☐	Dispatch Notified	☐	☐
☐	☐	Seasonal Tools	☐	☐

Required? Yes	Required? No	Bucket Work	In Use? Yes	In Use? No
☐	☐	Bucket Lanyard/Harness	☐	☐
☐	☐	Minimum Separation	☐	☐
☐	☐	Wheel Chocks in Place	☐	☐
☐	☐	Clearance Over Roadway	☐	☐
☐	☐	Outrigger Placement	☐	☐
☐	☐	Hydraulic Saw Use/Storage	☐	☐
☐	☐	Chain Saw Use/Storage	☐	☐
		Climb Work		
☐	☐	Pre-Climb Inspection	☐	☐
☐	☐	Saddle	☐	☐
☐	☐	Rope	☐	☐
☐	☐	Lanyard	☐	☐
☐	☐	2-point Attachment	☐	☐
☐	☐	Proper Tie-in Position	☐	☐
☐	☐	Figure 8 knot	☐	☐
☐	☐	Carabineers/Snaps	☐	☐
☐	☐	Minimum Separation	☐	☐
☐	☐	Ladder Use/Placement	☐	☐
☐	☐	Pole Pruners Hung Safely?	☐	☐

Required? Yes	Required? No	Tailboard	In Use? Yes	In Use? No
☐	☐	Electric Hazard	☐	☐
☐	☐	Traffic	☐	☐
☐	☐	Parked Vehicles	☐	☐
☐	☐	Structures	☐	☐
☐	☐	Fences	☐	☐
☐	☐	Pets/Livestock	☐	☐
☐	☐	Trip Hazards	☐	☐
☐	☐	Slope	☐	☐
☐	☐	Public/Property Owner Access	☐	☐
☐	☐	Yard Ornaments	☐	☐
☐	☐	Other	☐	☐

Required? Yes	Required? No	Vehicle	In Use? Yes	In Use? No
☐	☐	Wheels Chocked	☐	☐
☐	☐	Positioning and Set-up	☐	☐
☐	☐	Loads Secure	☐	☐
☐	☐	Emergency Brake	☐	☐
☐	☐	Conned off	☐	☐
☐	☐	Signage	☐	☐
☐	☐	Chipper Use	☐	☐
☐	☐	Seatbelt Use	☐	☐

Herbicide

Required? Yes	Required? No		In Use? Yes	In Use? No
☐	☐	Labels	☐	☐
☐	☐	MSDS	☐	☐
☐	☐	Containers Labeled	☐	☐
☐	☐	Sprayers Labeled	☐	☐

Required? Yes	Required? No		In Use? Yes	In Use? No
☐	☐	Rubber Gloves	☐	☐
☐	☐	Proper Application	☐	☐
☐	☐	Wetland Product	☐	☐
☐	☐	Current Applicator's Lisc.	☐	☐

COMMENTS: _____

CREW LEADER:

FORESTER: _____

interim progress, distribution spray progress, tree crew deployment, cycle progress, California Pole Clearing and transmission progress reports. These reports can be found at the PacifiCorp T&D Support Services Website: http://idoc.pacificorp.us/pacificorp_organization/rmp/rmpto/rtss/vm.html. A description of three prominent reports follows.

4.7.1 Distribution Progress Report

The distribution progress report (Figure 4.12) accounts for line miles achieved on systematic distribution work compared to goals for a given year. Systematic distribution work is cycle work throughout the six state service territory, as well as interim work in the Pacific Power service territory. The goal is the recommended scheduled miles prorated by the week of the year.

The report provides a summary of line miles achieved, breaks down progress by Pacific Power and Rocky Mountain Power's service territory, includes monthly miles ahead or behind goals, a chart depicting monthly line mile progress, and progress in each state by district and where appropriate, by forester.

4.7.2 Distribution Cycle Progress Report.

The distribution cycle report records line miles achieved over the course of the current recommended cycle compared to goals (Figure 4.13). Goals are prorated monthly and compared to actual progress.

4.7.3 Tree Crew Deployment Report

The tree crew deployment report (Figure 4.14) lists tree crews, contract utility foresters and supervisors/general foremen by forester and district as of the first of each month. In addition to providing information on tree crew locations, the tree crew deployment is used for budget projections.

4.7.4 Invoice Audit Report

Foresters will compare invoices to crew composition information obtained during the crew audits (see sections 4.3.2.6 and 4.4.2.5). Each month, results will be submitted to the director of vegetation management and senior business specialist on the Invoice Audit Report (Figure 4.15). The senior business specialist will ensure discrepancies are reconciled with the appropriate contractor.

Figure 4.11. A sample PVM Statistics Report showing distribution cycle data for Oregon 2010.

PacifiCorp Vegetation Management

Data Updated on 6/13/11 15:10:25 PM

Statistics Report

FISCAL YEAR: 2011

WORK ENDING: 01/03/2010 TO 01/01/2011 INVOICE

COMPANY NAME CREW CODE

STATE OR CREW TYPE

DISTRICT CODE DST

PROJECT WORK ID

SUPERVISOR FOREMAN

FORESTER

TRIM TOTAL	% SIDE TRIMS	%CROWN REDUCTION TRIMS	%OVERHANG TRIMS	SEC/SERV TRIMS	# BRUSH TRIMS	
103,658	44.99	41.95	1.90	4,563.00	70,109	

REMOVALS TOTALS	%TREE REMOVALS	#BRUSH FT REMOVED	% BRUSH FEET REMOVED	% 4 - 11 REMOVED	% 12 - 23 REMOVED	% 24+ REMOVED
90,956	46.74	772,283	84.91	12.56	2.02	0.51

TOTAL TREESBRUSH	#STUMP APPLICATIONS	#ACRES SPRAYED	#ACRES CLEARED	#TGR APPLICATIONS		
194,614	6,098	0	0	668		

	#STUMP GROUND	#POLES CLEARED	#POLES TREATED			
	6	15	0			

TOTAL MANHOURS	%TRAVEL./ MISC MANHOURS	%INSPECT/ NOTIFY MANHOURS	%TRAFFIC/ FLAGGING MANHOURS	%CHIP/ CLEANUP MANHOURS		
147,737	7.66	13.09	9.73	41.35		

%TRIM MANHOURS	%REMOVAL MANHOURS	%TGR MANHOURS	%POLE CLEARING MANHOURS	%ROW CLEARING MANHOURS	% SPRAYING MANHOURS	%STUMP TREAT MANHOURS
22.42	3.64	0.17	0.00	0.00	0.00	0.28

TOTAL COST	TOTAL $/TREE	TRIMMING $/TRIM	REMOVAL $/REMV			
$7,797,560	$40.07	$63.34	$11.73			

TOTAL MH/TREE	TRIMMING MH/TRIM	REMOVAL MH/REMV	TRIM MH/10FT2 SAPPRUN	REMV MH/ 10FT2 SAPREM		
0.76	1.20	0.22	0.06	0.03		

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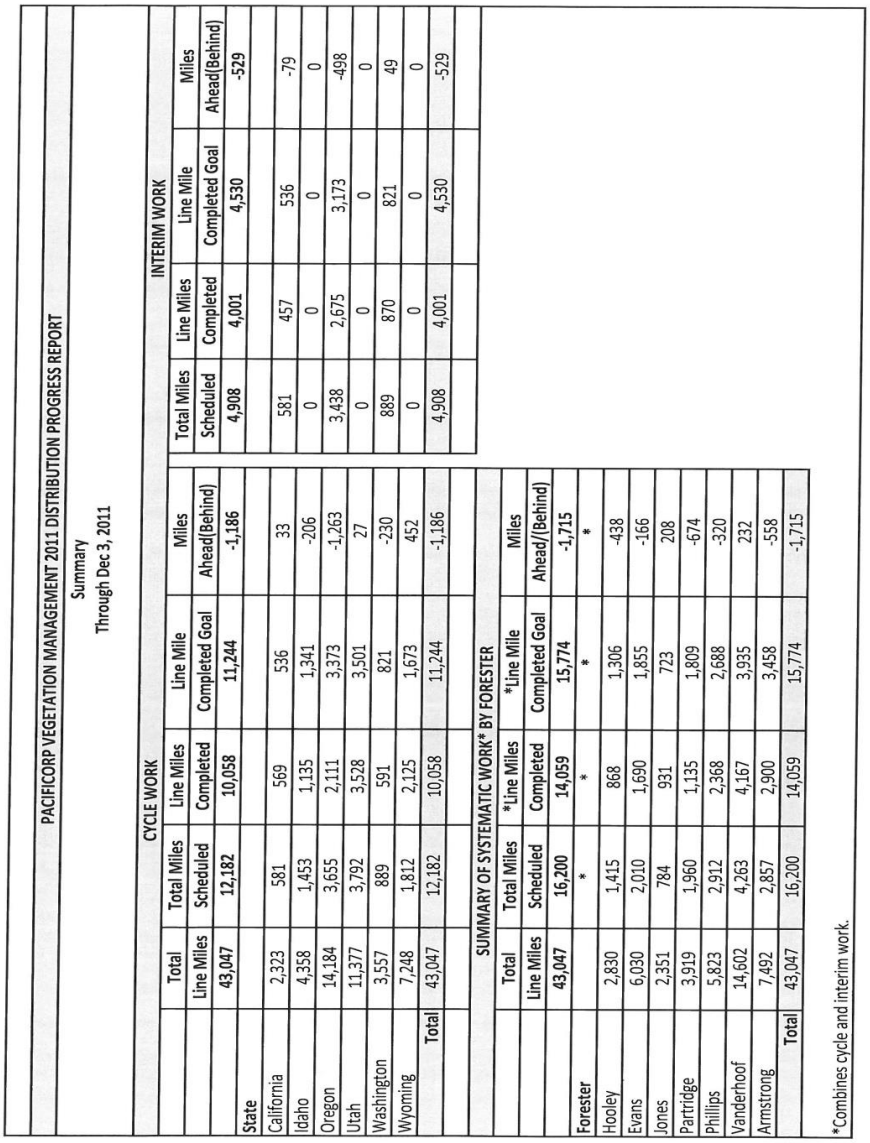
Figure 4.12 Monthly Distribution Progress Report



PACIFICORP VEGETATION MANAGEMENT 2011 DISTRIBUTION PROGRESS REPORT

Summary

Through Dec 3, 2011

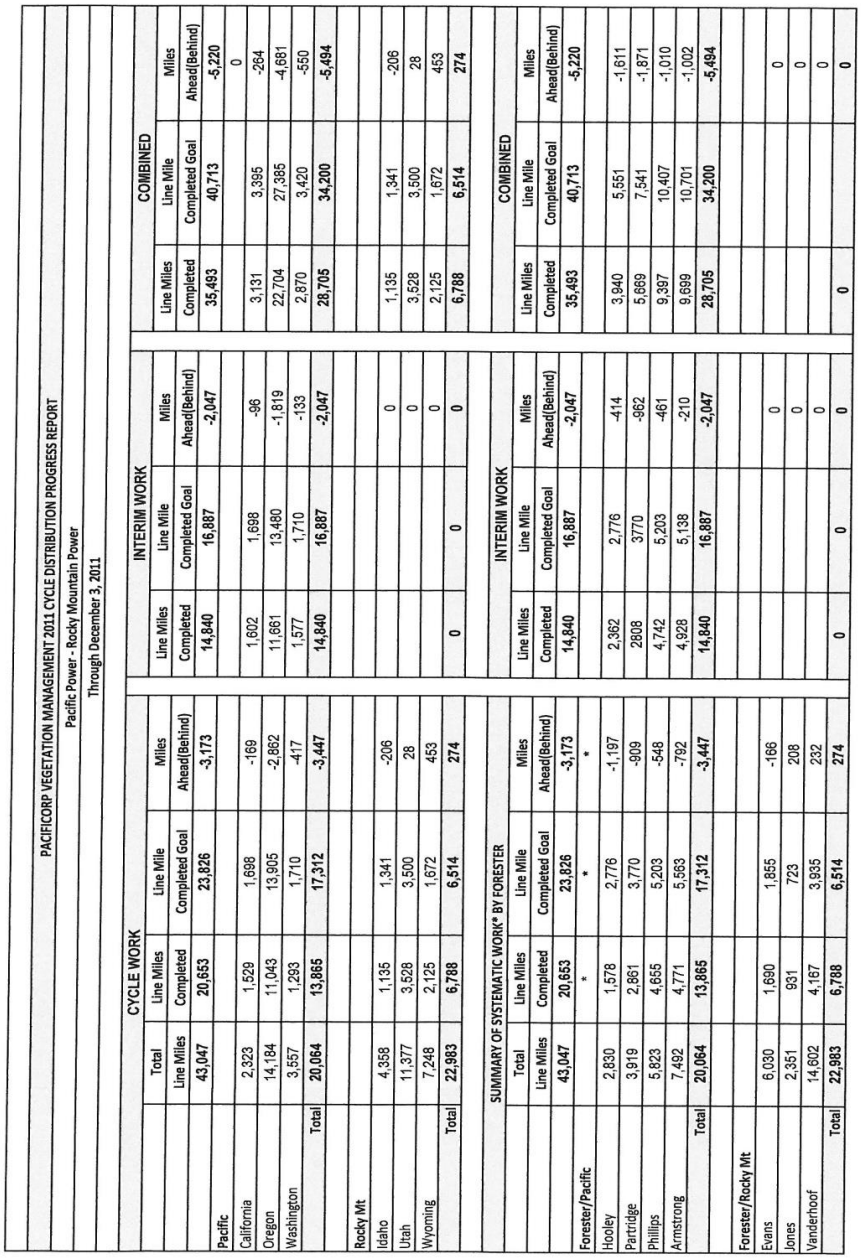
CYCLE WORK						INTERIM WORK				
	Total Line Miles	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	43,047	12,182	10,058	11,244	-1,186	4,908	4,001	4,530	-529
State									
California	2,323	581	569	536	33	581	457	536	-79
Idaho	4,358	1,453	1,135	1,341	-206	0	0	0	0
Oregon	14,184	3,655	2,111	3,373	-1,263	3,438	2,675	3,173	-498
Utah	11,377	3,792	3,528	3,501	27	0	0	0	0
Washington	3,557	889	591	821	-230	889	870	821	49
Wyoming	7,248	1,812	2,125	1,673	452	0	0	0	0
Total	43,047	12,182	10,058	11,244	-1,186	4,908	4,001	4,530	-529

SUMMARY OF SYSTEMATIC WORK* BY FORESTER					
	Total Line Miles	Total Miles Scheduled	*Line Miles Completed	*Line Mile Completed Goal	Miles Ahead/(Behind)
	43,047	16,200	14,059	15,774	-1,715
Forester		*	*	*	*
Hooley	2,830	1,415	868	1,306	-438
Evans	6,030	2,010	1,690	1,855	-166
Jones	2,351	784	931	723	208
Partridge	3,919	1,960	1,135	1,809	-674
Phillips	5,823	2,912	2,368	2,688	-320
Vanderhoof	14,602	4,263	4,167	3,935	232
Armstrong	7,492	2,857	2,900	3,458	-558
Total	43,047	16,200	14,059	15,774	-1,715

*Combines cycle and interim work.

Weeks 48

Figure 4.13. Cycle Progress Report.



PACIFICORP VEGETATION MANAGEMENT 2011 CYCLE DISTRIBUTION PROGRESS REPORT

Pacific Power - Rocky Mountain Power

Through December 3, 2011

	CYCLE WORK				INTERIM WORK			COMBINED		
	Total Line Miles	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	43,047	20,653	23,826	-3,173	14,840	16,887	-2,047	35,493	40,713	-5,220
Pacific										0
California	2,323	1,529	1,698	-169	1,602	1,698	-96	3,131	3,395	-264
Oregon	14,184	11,043	13,905	-2,862	11,661	13,480	-1,819	22,704	27,385	-4,681
Washington	3,557	1,293	1,710	-417	1,577	1,710	-133	2,870	3,420	-550
Total	20,064	13,865	17,312	-3,447	14,840	16,887	-2,047	28,705	34,200	-5,494
Rocky Mt										
Idaho	4,358	1,135	1,341	-206			0	1,135	1,341	-206
Utah	11,377	3,528	3,500	28			0	3,528	3,500	28
Wyoming	7,248	2,125	1,672	453			0	2,125	1,672	453
Total	22,983	6,788	6,514	274	0	0	0	6,788	6,514	274

SUMMARY OF SYSTEMATIC WORK* BY FORESTER

	Total Line Miles	CYCLE WORK Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	INTERIM WORK Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)	COMBINED Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	43,047	20,653	23,826	-3,173	14,840	16,887	-2,047	35,493	40,713	-5,220
Forester/Pacific		*	*	*						
Hooley	2,830	1,578	2,776	-1,197	2,362	2,776	-414	3,940	5,551	-1,611
Partridge	3,919	2,861	3,770	-909	2808	3770	-962	5,669	7,541	-1,871
Phillips	5,823	4,655	5,203	-548	4,742	5,203	-461	9,397	10,407	-1,010
Armstrong	7,492	4,771	5,563	-792	4,928	5,138	-210	9,699	10,701	-1,002
Total	20,064	13,865	17,312	-3,447	14,840	16,887	-2,047	28,705	34,200	-5,494
Forester/Rocky Mt										
Evans	6,030	1,690	1,855	-166			0			0
Jones	2,351	931	723	208			0			0
Vanderhoof	14,602	4,167	3,935	232			0			0
Total	22,983	6,788	6,514	274	0	0	0	0		0

Figure 4.14. Monthly Tree Crew Deployment Report.

PacifiCorp Vegetation Management

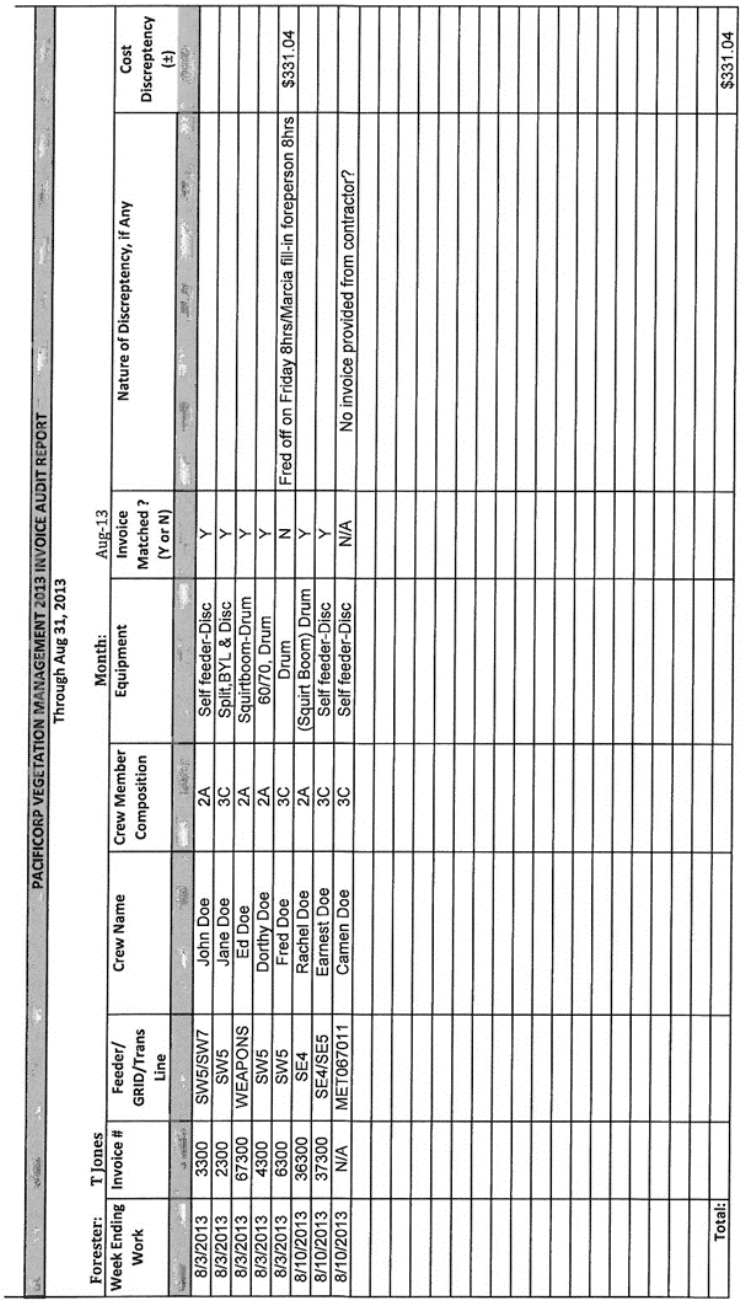
Monthly Crew Report: Summary

Date: 12/1/2011

State	Distribution & Local Trans													Main Grid Trans								Total Crews
	2 Man Lift	3 Man Lift	3 Man Climb	4 Man Climb	3 Man Skidder	2 Man Mow	2 Man Slash	2 Man Pole Clear	1 Man Chem	2 Man Flagger	For. Tech	Billed Super	Sub Total	3 Man Climb	3 Man Skidder	2 Man Slash	2 Man Pole Clear	1 Man Chem	Forest Tech	Sub Total	
California	5.0	1.0	3.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	3.0	2.75	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0
Idaho	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.00	5.0	1.0	0.0	0.0	0.0	0.0	0.3	1.0	6.0	
Oregon	30.0	12.0	6.0	0.0	0.0	0.0	0.0	0.0	0.5	6.5	12.5	8.25	55.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	57.0	
Utah	27.0	2.0	38.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	13.0	10.50	73.0	4.0	0.0	0.0	0.0	0.0	2.0	4.0	77.0	
Washington	5.0	1.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	1.5	2.00	10.0	2.0	0.0	0.0	0.0	0.0	0.5	2.0	12.0	
Wyoming	5.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.50	8.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	8.0	
TOTAL	77	17.0	49.0	0.0	0	0	0	2	13	8.5	32.3	26.00	166.0	9.0	0.0	0.0	0.0	0.0	3.3	9.0	175.0	

Forester	Distribution & Local Trans													Main Grid Trans								Total Crews
	2 Man Lift	3 Man Lift	3 Man Climb	4 Man Climb	3 Man Skidder	2 Man Mow	2 Man Slash	2 Man Pole Clear	1 Man Chem	2 Man Flagger	For. Tech.	Billed Super	Crew Sub-Total	3 Man Climb	3 Man Skidder	2 Man Slash	2 Man Pole Clear	1 Man Chem	Forest Tech	Sub Total	
Hooley	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	2.0	2.00	11.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5
Evans	9.0	1.0	8.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	6.0	3.00	20.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	22.0	
Jones	11.0	1.0	20.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	5.0	4.00	35.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	35.0	
Partridge	12.0	7.0	5.0	0.0	0.0	0.0	0.0	0.0	2.5	3.0	5.5	3.50	29.5	2.0	0.0	0.0	0.0	0.0	0.0	2.0	31.5	
Phillips	15.0	1.0	4.0	0.0	0.0	0.0	0.0	0.0	4.0	1.0	7.0	5.00	25.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	25.0	
Vanderhoof	17.0	1.0	12.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	4.3	6.00	31.0	3.0	0.0	0.0	0.0	0.0	1.8	3.0	34.0	
Armstrong	8.0	1.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	3.0	2.5	2.50	14.0	2.0	0.0	0.0	0.0	0.0	0.5	2.0	16.0	
TOTAL	77.0	17.0	49.0	0.0	0.0	0.0	0.0	2.0	12.5	8.5	32.3	26.00	166.0	9.0	0.0	0.0	0.0	0.0	4.3	9.0	175.0	

Figure 4.15. Monthly Invoice Audit Form.



PACIFICORP VEGETATION MANAGEMENT 2013 INVOICE AUDIT REPORT

Through Aug 31, 2013

Forester: T Jones Month: Aug-13

Week Ending Work	Invoice #	Feeder/ GRID/Trans Line	Crew Name	Crew Member Composition	Equipment	Invoice Matched ? (Y or N)	Nature of Discreptency, if Any	Cost Discreptency (±)
8/3/2013	3300	SW5/SW7	John Doe	2A	Self feeder-Disc	Y		
8/3/2013	2300	SW5	Jane Doe	3C	Split,BYL & Disc	Y		
8/3/2013	67300	WEAPONS	Ed Doe	2A	Squirtboom-Drum	Y		
8/3/2013	4300	SW5	Dorthy Doe	2A	60/70, Drum	Y		
8/3/2013	6300	SW5	Fred Doe	3C	Drum	N	Fred off on Friday 8hrs/Marcia fill-in foreperson 8hrs	$331.04
8/10/2013	36300	SE4	Rachel Doe	2A	(Squirt Boom) Drum	Y		
8/10/2013	37300	SE4/SE5	Earnest Doe	3C	Self feeder-Disc	Y		
8/10/2013	N/A	MET067011	Camen Doe	3C	Self feeder-Disc	N/A	No invoice provided from contractor?	
Total:								$331.04

PACIFICORP VEGETATION MANAGEMENT 2013 INVOICE AUDIT REPORT

Through Aug 31, 2013

Forester: T Jones **Month:** Aug-13

Week Ending Work	Invoice #	Feeder/ GRID/Trans Line	Crew Name	Crew Member Composition	Equipment	Invoice Matched ? (Y or N)	Nature of Discreptency, if Any	Cost Discreptency (±)
8/3/2013	3300	SW5/SW7	John Doe	2A	Self feeder-Disc	Y		
8/3/2013	2300	SW5	Jane Doe	3C	Split,BYL & Disc	Y		
8/3/2013	67300	WEAPONS	Ed Doe	2A	Squirtboom-Drum	Y		
8/3/2013	4300	SW5	Dorthy Doe	2A	60/70, Drum	Y		
8/3/2013	6300	SW5	Fred Doe	3C	Drum	N	Fred off on Friday 8hrs/Marcia fill-in foreperson 8hrs	$331.04
8/10/2013	36300	SE4	Rachel Doe	2A	(Squirt Boom) Drum	Y		
8/10/2013	37300	SE4/SE5	Earnest Doe	3C	Self feeder-Disc	Y		
8/10/2013	N/A	MET067011	Carmen Doe	3C	Self feeder-Disc	N/A	No invoice provided from contractor?	
Total:								$331.04

5. DISTRIBUTION

Distribution lines are overhead facilities that are energized less than 46 kV. Distribution primary voltage ranges from 600 to 45,000 volts, while lines energized below 600 volts are secondary**.**

5.1 Distribution New Construction Clearing

Every effort should be made by the Company not to build new line over or through trees that will need to be cleared from the facilities in the future. New distribution rights-of-way should be cleared to specification before the lines are energized. Initial clearing is important because it sets a pattern for future work.

5.2 Distribution Cycle Maintenance

Trees and vegetation should be cleared from distribution facilities on scheduled cycles. Cycle work is methodical, and facilities shall be worked systematically, either by feeder or grid map. Cycles should be based on considerations such as the time elapsed since the last scheduled work, the type of facilities, tree conditions, the number of customer complaints, the growth rate and density of predominant tree species, geography, the frequency of tree-caused outages, customer count, the existence of important accounts (hospitals, factories, mines or other facilities) customer densities, single or multiple phase wires and other factors. Trees and vegetation should be cleared from distribution facilities to last until the next scheduled cycle work.

SPECIFICATIONS

The intent of the cycle program is to:

- Systematically obtain specification clearance and maintain compliance with state regulatory rules, laws or regulations.
- Reduce inventories of trees that could potentially grow into Company facilities. This includes removing non-landscape trees 6-inch DBH or less, after providing the property owner notification (following Section 8.2).
- Improve access to facilities.
- Identify and correct readily climbable trees.
- Identify and remove tree houses built inside of criteria specified in Table 2.2.
- Clear insulated services that have stems causing strain to the point of deflection (Figure 5.1) or that are abrading the insulation to the extent they could cause an outage before the next scheduled cycle. If pruning or removal is not practical, arrangements should be made with operations to re-route facilities or have suitable material or devices installed to avoid insulation damage by abrasion.
- Prune non-insulated services and streetlight wire for one-foot of clearance.
- Prune pole to pole insulated secondaries to 2-feet of clearance from the conductors
- Prune pole to pole non-insulated services. and secondaries for three feet of clearance from the conductors
- Identify and remove high risk trees that could fall through facilities.
- Apply herbicide to saplings (< 4" DBH) of tall-growing species after property owner notification (presuming the property owner has not expressed objection to herbicide application) on the property on which other work is being performed. Spray work in other locations may be authorized at foresters discretion as directed in a work release.

- Apply tree growth regulators (TGR's) to fast-growing tree species after providing property owner notification.

5.3 Distribution Interim Maintenance

Interim work is a cycle performed half way between cycles to address fast-growing trees that will not hold for an entire cycle.On PacifiCorp's system, interim work should be prescribed in California and Oregon. Identified tree conditions on a feeder or grid should be corrected systematically in the interim half way through the scheduled cycle. Work should be limited to trees that grow six feet or more a year or hazard trees.

Interim work should be restricted to critical conditions, including:

- High risk trees.
- Trees violating specific state regulatory agency regulations.
- Trees that have grown within work thresholds specified in Table 5.2.
- Readily climbable trees inside of work thresholds in Table 5.2
- Identifying and removing tree houses built inside of criteria specified in Table 2.2.
- All work should be completed to company specifications. Non-critical conditions should be monitored until the next scheduled cycle work.
- Non-primary facilities do not require work on interim cycles unless they present a clear safety or service reliability risk.

5.4 Distribution Ticket Maintenance

Customers, district operations staff, governmental bodies, regulatory agencies or others alert vegetation management to real or perceived conflicts between trees and power lines from time to time. The intent of ticket maintenance is to determine whether or not the reported conditions present immediate, unreasonable safety or electrical service risks, and if they do, correct them.

Emergency situations should be corrected within 24 hours. Critical conditions reported by regulatory agencies and other urgent situations should be inspected within 48 hours and corrected within 7 days. Other tickets should be inspected within 10 business days from the date of request, and a determination made regarding whether or not the reported condition warrants work.

The concerned party shall be contacted regarding the inspection determination. This contact may be face to face if the customer is present, or by door hanger, letter, or telephone if they are not present.

Ticket work should be limited to critical conditions, including:

- Trees representing an unreasonable safety risk as determined by the responsible contract utility forester.
- Trees that have caused an outage.
- Trees violating specific state regulatory regulations.
- Limbs that are deflecting secondary conductors to the extent they present a high probability of tearing down the wire before the next scheduled cycle work.
- Trees that are likely to start a fire.
- Readily climbable trees.
- Trees where the property owner requires clearance so non-utility line clearance workers may work the tree. This work complies with various state line safety act and may be billed to the requesting party.

All work should be completed to Company specifications. Non-critical conditions should be monitored and corrected on the next scheduled maintenance work.

5.5 Distribution Herbicide Maintenance

Distribution herbicide maintenance should be prescribed in the interim between cycles. Saplings (< 4" DBH) of tall-growing species after property owner notification (presuming the property owner has not expressed objection to herbicide application). Procedures outlined in Chapter 7 shall be followed.

5.6 Distribution Clearance Specifications

Removal of trees that could potentially grow into distribution facilities should be pursued. When trees are pruned, branches should be cut to natural targets rather than predetermined clearance limits (following section 3.3). Consequently, the clearances in these standard operating procedures should not be used as strict boundaries requiring cuts at the precise distances indicated. Rather, they are guidelines to use in obtaining proper clearances. Accurate natural target pruning is the overriding principal, with tree structure dictating appropriate cut locations. In many cases, the best targets are outside established clearance limits. So, many properly pruned trees will have more than specified clearance from conductors.

The type of facility, tree growth rate and perscription determine distribution clearance. Trees should be removed or pruned to provide for specification clearances as described in Figures 5.2, 5.3 and 5.4 and tables 5.1, 5.2 and 5.3. The figures and table provide work thresholds and specification clearances for slow, medium and fast-growing trees. Trees that exceed work threshold distances should hold until the next scheduled cycle and not need to be pruned. However, these trees should still be considered to be removal candidates if they could grow into distribution facilities or they present a high risk of failure. If trees violate thresholds, they shall be removed or pruned to provide specification clearances.

5.6.1 Growth Rate Definitions

Slow-growing trees grow vertically less than one-foot a year. Moderate growing trees grow between one and three feet a year and fast-growing trees grow more than three feet a year.

5.6.2 Side Clearance

Side work thresholds and side clearances from conductors can be found in Tables 5.1, 5.2 and 5.3, as well as Figures 5.2 to 5.4.

Side clearances from conductors may be reduced to 18-inches for structurally sound limbs greater than 6-inches in diameter at wire height, provided the tree is not readily climbable and the tree shows no evidence of conductor contact due to wire or tree sway. High risk trees should be removed or pruned to reduce the potential threat they pose.

5.6.3 Under Clearance

Under clearances work thresholds and clearances from conductors can be found in Tables 5.1 and 5.2, as well as Figures 5.2 to 5.4.

5.6.4 Overhang Clearance

Trees overhanging primary conductors should be removed or pruned to provide at least ten feet of clearance from the conductors (Figures 5.2, 5.3 and 5.4). Increased clearance should be considered by the forester or GF/supervisor under the following types of circumstances: three-phase lines (particularly to the first protective device), rural or difficult to access areas, for weak-

wooded or fast-growing tree species, on poorly-structured trees and to accommodate foreseeable weather conditions such as frequent high wind, heavy rains, ice and snow. Dead wood that could fall or be blown into the primary conductors shall be removed. In some cases, such as three phase lines or remote areas, all overhanging branches may be removed. Overhang may be tapered, with the greatest side clearance at minimum clearance height, with gradually more overhang higher in the tree.

Figure 5.1. Trees with branches applying sufficient pressure to cause damage to insulated service and street light lines should be pruned on cycle to relieve the pressure.

Figure 5.2 Vegetation Management Distribution Primary Clearnances – Slow Growing Trees

Figure 5.2. PacifiCorp Vegetation Management Distribution Primary Clearances

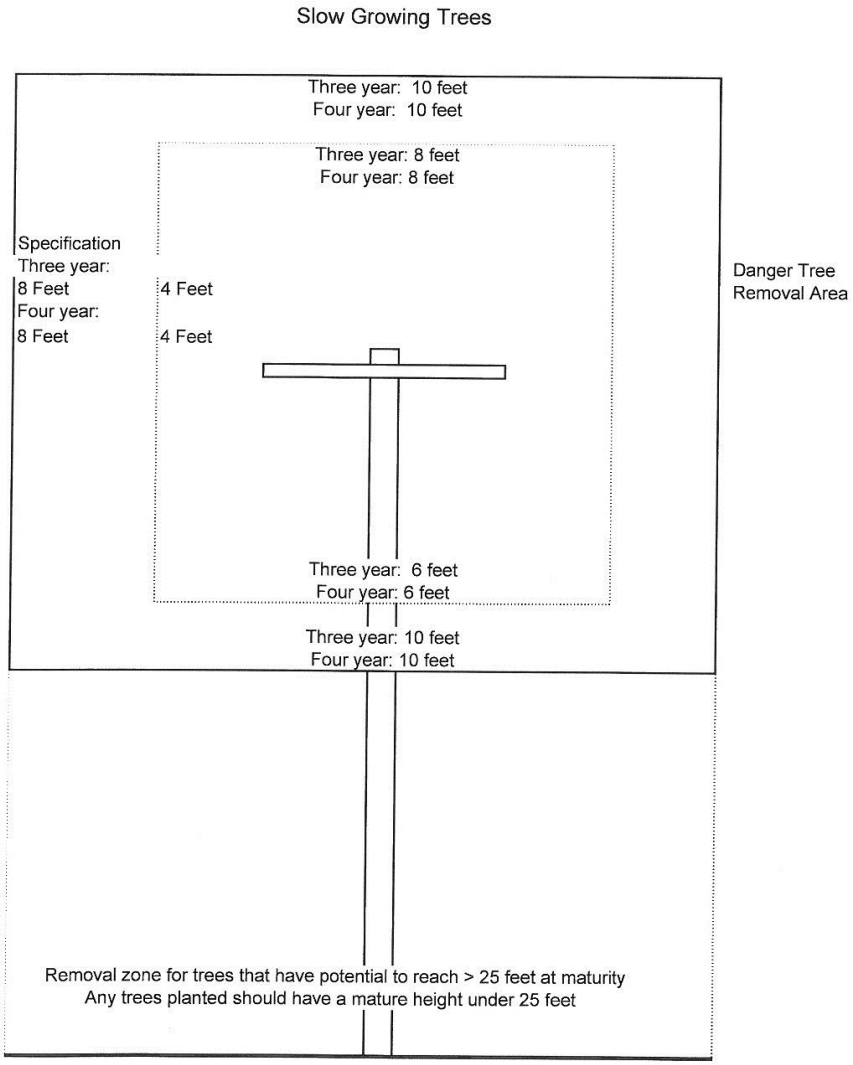


Figure 5.3 Vegetation Management Distribution Primary Clearnances – Moderate Growing Trees

Figure 5.3. PacifiCorp Vegetation Management Distribution Primary Clearances

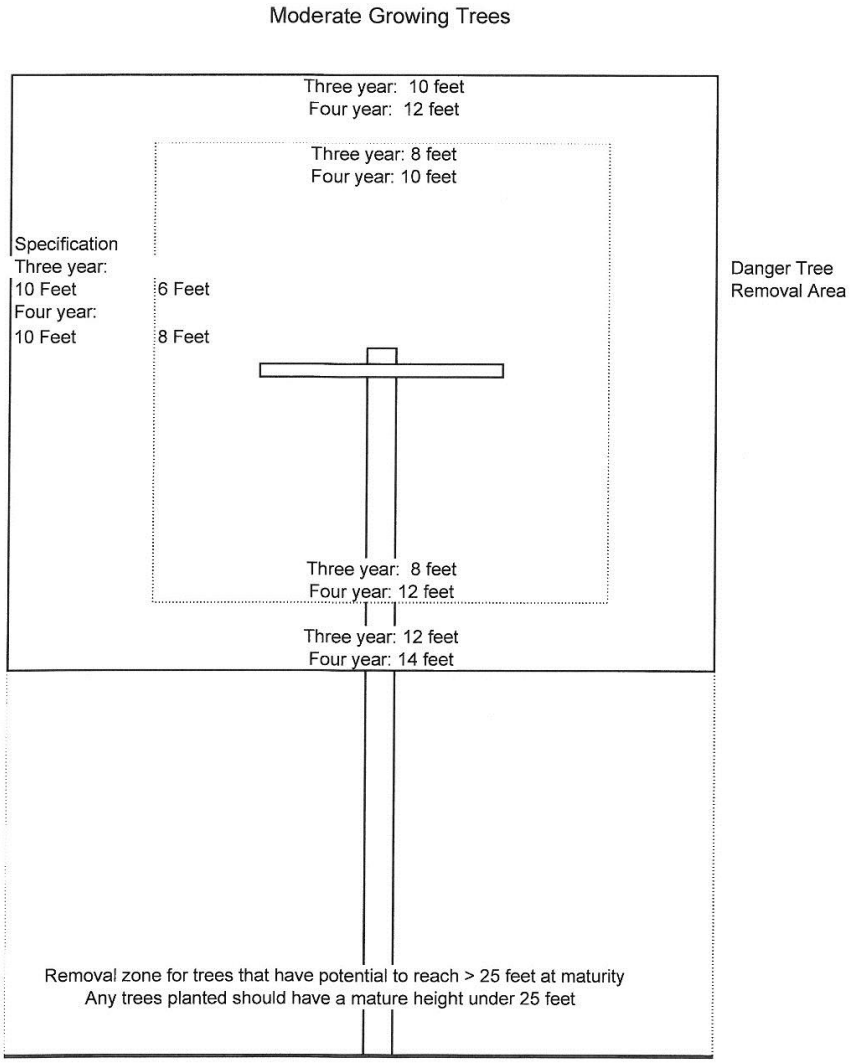


Figure 5.4 Vegetation Management Distribution Primary Clearnances – Fast Growing Trees

Figure 5.4. PacifiCorp Vegetation Management Distribution Primary Clearances

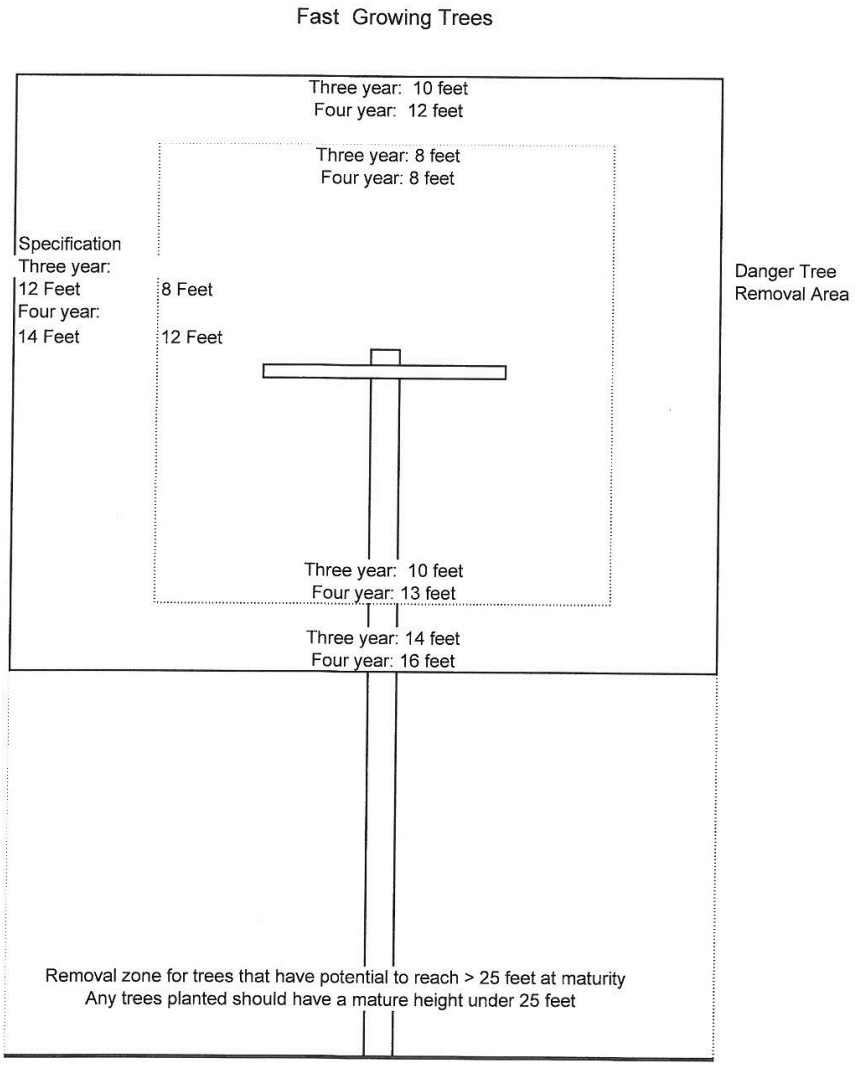


Table 5.1. Distribution primary cycle clearances.

	Slow-Growing < 1 foot/year		Moderate-growing 1-3 feet/year		Fast-growing > 3-feet/year*	
	Work Threshold	***Specification Clearance***	***Work Threshold***	***Specification Clearance***	***Work Threshold***	***Specification Clearance***
Three-year cycle						
Side Clearance	4 feet	8 feet	6 feet	10 feet	8 feet	12 feet
Under Clearance	6 feet	10 feet	8 feet	12 feet	10 feet	14 feet
Overhang Clearance	8 feet	10 feet	8 feet	10 feet	8 feet	10 feet
Four-year cycle						
Side Clearance	4 feet	8 feet	8 feet	10 feet	12 feet	14 feet
Under Clearance	6 feet	10 feet	12 feet	14 feet	13 feet	16 feet
Overhang Clearance	8 feet	10 feet	10 feet	12 feet	8 feet	12 feet

*Note: Specified clearance distances are assumed to be from conductors, Growth-rate definitions refer to vertical growth. Side and overhang growth toward the conductors are assumed to be slower. Specification clearances are minimum, and actual distances achieved at the time of work will often need to exceed those itemized above. Trees with clearances that exceed the pruning threshold should not require work, provided they will not interfere with the primary conductors or violate state tree clearance requirements before the next scheduled cycle work. Work thresholds may have to be expanded for fast-growing trees.

*Fast-growing work thresholds on four-year cycles assume interim work. Wyoming will require at least 25% greater clearances.

Table 5.2. Minimum Distribution primary interim clearances.

	Slow-Growing < 1 foot/year		Moderate-growing 1-3 feet/year		Fast-growing > 3-feet/year	
	Work Threshold	***Specification Clearance***	***Work Threshold***	***Specification Clearance***	***Work Threshold***	***Specification Clearance***
Four-year cycle						
Side Clearance	2 feet	8 feet	3 feet	10 feet	8 feet	14 feet
Under Clearance	2 feet	10 feet	5 feet	14 feet	9 feet	18 feet
Overhang Clearance	2 feet	10 feet	3 feet	10 feet	8feet	10 feet

Table 5.3. Non-primary wire cycle clearances.

Line Type	Work Threshold	Specification Clearance
Triplex service	Deflection/abrasion	Relieve pressure
Triplex pole-to-pole secondary/streetlight wire	Deflection/abrasion	2-feet
Non-insulated wire service/street light wire	Contact	1-foot
Non-insulated wire pole-to-pole secondary	Contact	3-feet
Neutral low position	Contact	2-feet
Neutral on cross arm	Primary as in Table 5.1	Primary as in Table 5.1
Guy wire	2-inch or greater diameter limb applying pressure, threatened by high risk trees	Relieve pressure or remove high risk trees.

5.6.5 Neutral and Insulated Pole-to-Pole Secondary Clearance

During cycle work, trees should be maintained to provide at least two-feet of clearance around insulated pole-to-pole secondary and neutral conductors (Table 5.3). Except trees that have already reached their maximum anticipated mature height. Tree limbs should not be allowed to remain between primary and neutral or insulated secondary conductors. Neutral conductors in a raised (primary) position should be provided secondary clearance distances during ticket or interim work, and primary specification clearance distances during cycle work.

5.6.6 Non-Insulated Open/Spaced Secondary Clearances

Trees growing around non-insulated open/spaced secondary conductors shall be pruned on cycle to provide a minimum of three-feet of clearance from the secondary wires (Table 5.2). During cycle work, trees shall be cleared from the space between primary and non-insulated open/spaced secondary conductors. Side clearances may be reduced to one foot for structurally sound limbs greater than 6-inches in diameter at wire height.

5.6.7 Insulated Service and Insulated Street Light Line Clearances

Stems that are causing strain to the point of deflection (Figure 5.1) or that are abrading the insulation to the extent they could cause an outage before the next scheduled cycle should be pruned to relieve the pressure (Table 5.2). If pruning or removal is not practical, arrangements should be made with operations to have the facility re-routed or have suitable

material or devices installed to avoid insulation damage by abrasion.

If the customer desires to remove other limbs or trees around these lines, they must arrange for a temporary disconnection to allow the desired work to be done safely. PacifiCorp does not clear trees for street light illumination, unless required to by specific language in a franchise agreement.

5.6.8 Non-insulated Service Line and Non-Insulated Street Light Line Clearances

Trees should be pruned on cycle to provide at least one-foot of clearance around non-insulated service and street light lines (Table 5.3). If the customer desires to remove other limbs or trees around these lines, contract utility foresters or crew leaders should inform the customer to call the customer service line to arrange for a temporary disconnection of the facilities to allow safe completion the desired tree work, as required by law.

5.6.9 Other Facility Clearances

5.6.9.1 Guy Wires.

Trees or branches two-inches or more in diameter applying direct pressure to or threatening to fall on or through
poles or guy wires shall be removed or pruned on cycle (Table 5.3).

5.6.9.2 Poles

One-third of the circumference around poles shall be cleared of vegetation to a distance of 5-feet to allow linemen a climbing path.

5.6.9.2.1 Vines

Vines shall be removed on cycle from poles and guys, cut at ground level, and treated with an approved herbicide (see Section 7.3). They shall be reported as brush or tree removed (if they are over 4" in dbh). Vines clearly part of a landscape and rooted well away from the pole may be pruned and reported as saplings pruned. Vines shall be pulled off the bottom 5-feet of poles after they have been cut. The facility point shall be documented by the tree crew and given to their supervisor/GF, who shall report it to operations to clear the remainder of the pole, and arrangements made with PacifiCorp journeymen linemen for the job.

5.6.9.3 Telecom and Private Electrical Lines

Trees should not be pruned or removed expressly to provide clearance for television cable, telephone lines or private electrical facilities unless authorized in advance by the appropriate forester.

5.6.9.4 Street Light Illumination

Trees shall not be pruned to improve street light illumination, unless required by specific language in a franchise agreement.

5.7 Pole Clearing

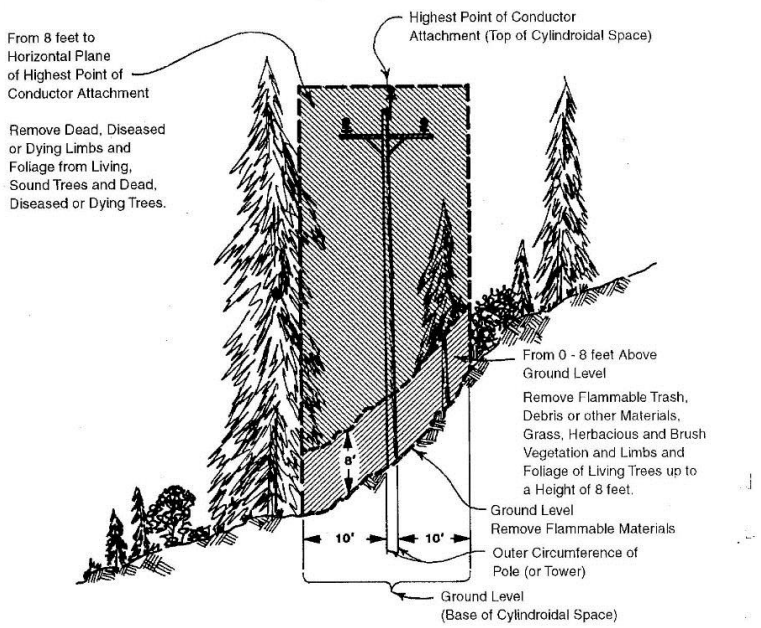
California Resource Code 4292, requires a ten-foot radius cylinder of clear space from pole top to bare ground around "subject" poles in delineated resource areas during designated fire season. Trees or saplings with trunks within clearance zone should have eight feet of vertical clearance from the ground to the highest limb (Figure 5.5.
Subject poles have fuses, air switches, clamps or other devices that could create sparks and start fires (Nichols et al. 1995). This cleared space should be established and maintained by pruning and removing above ground branches and plant parts. After removingvegetation to bare ground for a 10-foot radius around subject poles,

herbicides, including soil sterilants, should be applied, unless expressly prohibited or is against the customer's wishes.

5.8 Padmount Transformers

Padmount transformers should not be cleared as part of normal distribution cycle or interim maintenance. They may be cleared in response to facility point inspection requests should operations require access and a work order is provided. Qualified line clearance tree workers are not required to clear padmount transformers, so contractors responsible for landscape maintenance around substations may be assigned to remove shrubs and other low-growing vegetation that is interfering with padmount transformers

Figure 5.5. California pole clearing requirements (from Nichols et al. 1995).



6. TRANSMISSION VEGETATION MANAGEMENT PLAN (STANDARD OPERATING PROCEDURES)

Transmission facilities are overhead lines energized to greater than 45kV. Typical transmission voltages on PacifiCorp's system are 46kV, 69kV, 115kV, 138kV, 161kV, 230kV, 345kV and 500kV. Facility voltage and type determine the amount of transmission clearance needed. Table 6.1 provides specification clearances for transmission rights-of-way.

Transmission work shall comply with the ANSI A300 (Part 7): *American National Standard for Tree Care Operations (Integrated Vegetation Management a Electric Utility Rights-of-way* [ANSI 2012a]) and the ISA *Best Management Practice: Integrated Vegetation Management for Electric Utility Rights-of-way* (Miller 2014). As well as Tree Risk A300 (Part 9): *American National Standard for Tree Care Operations (Tree Risk Assessment)* and ISA *Best Management Practice: Tree Risk Assessment* (Smiley, Matheny and Lilly, 2011).

Transmission work on lines at or above 200 kV and those designated by the Western Electricity Coordinating Council as an element of the major transfer path in the bulk electric system, including those that extend greater than one mile beyond the fenced area of the generating station switchyard to the point of interconnection with a Company facility or do not have a clear line of site form the generating station switchyard fence to the point of interconnection with a Company facility shall also conform to the North American Electric Reliability Corporation's (NERC) Reliability Standard FAC-003 (NERC 2008) along with other chapters in this manual.

6.1 Work Objective

The objective of systematic transmission work is to improve the reliability of PacifiCorp's transmission system by preventing outages from vegetation located on transmission rights-of-way and minimizing outages from vegetation located adjacent to the right-of-way.

6.2 Philosophy

PacifiCorp's vegetation management philosophy for transmission lines is to utilize integrated vegetation management best practices wherever possible to conduct cover type conversion and to cultivate stable, low-growing plant communities comprised of plants that will never interfere with transmission lines in their lifetime.

Reliability and safety are most effectively protected through establishing and maintaining a right-of-way consistent with the wire-border zone concept (see section 6.8.1.4.1). When the line is less than 50 feet off the ground, the wire-border zone should be cleared of all incompatible vegetation unless an easement fails to provide appropriate authority or there are legal impediments preventing it.

6.3 Initial Clearing and Construction

Newly constructed transmission lines should be cleared to full specifications prior to being energized. In densely vegetated areas, rights-of-way usually have to be completely cleared as the initial stage of establishing a wire-border zone (Figures 6.1 and 6.1)

6.4 Inspection

Transmission lines falling under the auspices of FAC-003 should be inspected at least once a year by ground or air, depending on the anticipated growth of vegetation and any other environmental or operational factors that could affect the relationship of vegetation to the transmission line.

Local transmission (non-FAC-003 lines) over built on distribution should be inspected in conjunction with distribution cycle work.

Line Patrolmen have responsibility for inspecting transmission lines subject to FAC-003 and reporting conditions to vegetation management. In addition, each area forester shall meet twice each year to discuss vegetation conditions with the line patrolman assigned to the area.

Line Patrolmen encountering a tree that poses a threat of causing a transmission outage at any moment shall follow procedures in PacifiCorp Operating Procedure PCC-215, in order to comply with Requirement R4 of NERC Standard FAC-003 (*Transmission Vegetation Management Program*). Line patrolmen must:

- Immediately notify the grid operator by phone and describe the nature and extent of the threat.
- Complete and process the Emergency Tree Action Form.
- Communicate the vegetation conditions to vegetation management for urgent attention.

Examples of tree conditions that pose a threat of causing a transmission outage at any moment include (but are not limited to) trees that violate or pose a risk within 72 hours of violating NERC Minimum Vegetation Clearance Distance (MVCD), uprooted trees that are leaning toward the line and pose a risk of immediate failure and trees with structural failures that may cause them to break in part or whole onto the transmission facilities (See Smiley, Matheny and Lilly 2011).

6.4.1 Additional Inspection

Foresters should annually select lines among those subject to FAC-003 for annual inspection. This inspection is to be done in addition to that performed by line patrolmen. These inspections supplement, rather than substitute for, those conducted by line patrolmen. Foresters should assign representatives to complete these inspections. Using Level 1 assessments from the ISA *Best Management Practices: Tree Risk Assessment (Smiley Matheny and Lilly 2011).*

Such inspection should identify trees that pose a threat of causing an outage at any moment, and trees that could possibly violate work thresholds within the next year. Company plan and profiles should be used in the field itemizing maximize sag and sway along with range finders to confirm the MVCD has not been violated. Locations should be noted on an activity report, and assigned to a tree crew for work, with the appropriate forester's approval.

If the inspections discover a tree that poses a high likelihood of posing an outage at any moment, contract utility foresters shall contact the appropriate forester within three hours. Foresters shall immediately request the appropriate line patrolman to inspect the line according to the imminent threat procedure described in section 6.4.

6.5 Work Plan

The Vegetation Management A300 standard (ANSI 2012a) and the ISA integrated vegetation management best management practice (Miller 2014) recommend against cycle-based

transmission work thresholds. Rather, work should be scheduled depending on line voltage, line importance, vegetation conditions that violate the action thresholds in Table 6.1, location, predominant species' growth rates, threatened and endangered species, archeological sites, topography and other factors.

A comprehensive approach that exercises the full extent of legal rights is superior to incremental management in the long term because it reduces overall encroachments, and it ensures that future planned work is sufficient at all locations on the right-of-way. Removal of trees in the right-of-way is superior to pruning and shall be pursued whenever legal rights exist to do so. Removal minimizes the possibility of conflicts between energized conductors and vegetation.

6.5.1 Annual Work Plan

PacifiCorp performs vegetation management work in accordance with annual work plans that details the circuits and facilities to be managed during a calendar year. MS Project is encouraged as planning software. Plans should include:

- A list of facilities subject to scheduled work.
- If only a portion of a line is scheduled, the line segment must be identified (e.g. structure to structure).
- Dates when work is anticipated to start and end on each project (Gantt charts are recommended).
- A description of the type of control methods, (cycle, herbicide, mowing, aerial, etc.)

6.5.1.1 Annual Work Plan Adjustments

The annual work plan may be adjusted during the year to account for changes in conditions that require a circuit, line segment or project to be moved into or out of the work plan. Examples of reasons for adjustments include, but are not limited to, vegetation growth in excess of anticipated levels, vegetation inspection results, new construction projects or removal of existing facilities. Adjustments to the annual work plan shall be documented as they occur and shall be authorized by the director of vegetation management.

6.6 Action Thresholds

The action thresholds in Table 6.1 provide roughly ten-foot buffers from the NERC MVCD. Trees identified within the action thresholds should be scheduled for work within twelve months.

6.7 Clearances

6.7.1 Minimum Clearances Following Work

Minimum clearances from conductors to be achieved at the time of work are in Table 6.1. These distances should be increased, depending upon local conditions and the expected time frame to return for future vegetation management work. Local conditions may include appropriate vegetation management techniques, fire risk, reasonably anticipated tree and conductor movement, species types and growth rates, species failure characteristics, local climate and rainfall patterns, line terrain and elevation, location of the vegetation within the span, worker approach distance requirements and other factors.

6.7.1.1 Side Clearance in Transmission Rights-of-Way

Specification side clearances to be obtained following work s are presented in Table 6.1. Consider potential sway of

conductors in fresh gale-force (36 mph) or greater wind, particularly mid span, where clearances could need to be increased to accommodate conductor sag and swing in high temperature and winds. If there is any question regarding the need to extend clearances, error should be made on the side of caution.

Table 6.1. Transmission clearance requirements (in feet).

	500 kV	345 kV	230 kV	161 kV	138 kV	115 kV	69 kV	45 kV
Maximum Flash Distances (MVCD)	8.5	5.3	5.0	3.4	2.9	2.4	1.34	N/A
Action thresholds	18.5	15.5	15.0	13.5	13.0	12.5	10.5	5
*Minimum clearances following work	50	40	30	25	25	25	25	20

The Minimum Vegetation Clearance Distance (MVCD) represents minimum clearances that should be maintained from conductors at all times, considering the effects of ambient temperature on conductor sag under maximum design loading, and the effects of wind velocities on conductor sway. MVCDs in this chart are for 10,000-11,000 feet above sea level (the maximum in Table 2 of FAC-003-04) and apply across PacifiCorp's service territory regardless of elevation. Action thresholds indicate work should be scheduled within the next year. They are roughly MVCD plus 10 feet, with the exception of the 46kV, for which no MVCD exists.

6.7.2 MVCD

NERC Minimum Vegetation Clearance Distances (MVCD) are established in FAC-003 (NERC 2008), and represent radial distances from the lines inside of which trees should not encroach (Table 6.1) Trees that violate MVCDs shall be corrected within 24 hours of their identification following PacifiCorp SOP-PCC-215. *Transmission Grid Operations Operating Procedure.*

6.7.3 Structure Clearances

Trees and brush should be cleared within a twenty-five foot radius of transmission "H" or metal structures, a ten-foot radius of single pole construction and a five-foot radius of guy anchors. Clearing activities shall not damage poles, structures, guys or anchors. Grasses, forbs, ferns and other herbaceous species may be left around structures and guys.

6.7.4 Guy Wires

Trees or branches two-inches or more in diameter applying direct pressure to or threatening to fall on or through poles or guy wires shall be removed or pruned.

6.8 Integrated Vegetation Management

The purpose of vegetation management on utility rights-of-way is to Establish sustainable plant communities that are compatible with the electric facilities, wherever possible. These communities are stable, low-growing, compatible with conductors, diverse, and establish a sustainable supply of forage, escape and nesting cover, movement corridors for wildlife, reduced fire risk, and more open access to the line (Yanner and Hutnik 2004). Establishing native vegetation will also reduce the invasion of noxious weeds into the corridor (BPA 2000).

6.8.1 IVM Control Methods

Control methods are the processes used to achieve objectives. Many cases call for a combination of methods. There are a variety of controls from which to choose, including manual, mechanical, chemical, biological, and cultural options (Miller 2014). Ground disturbance shall be minimized on all rights-of-way.

6.8.1.1 Manual Control Methods

Manual methods involve workers using hand-carried tools, such as chainsaws, handsaws, pruning shears. Manual techniques are selective and can be used where others may not be appropriate, including urban or developed areas, environmentally sensitive locations (such as wetlands or places inhabited by sensitive species), in the vicinity of archeological sites and on steep terrain.

6.8.1.2 Mechanical Control Methods

Machines are used for mechanical control. They are efficient and cost effective, particularly for clearing dense vegetation during initial establishment, or reclaiming neglected or overgrown rights-of-way (Figure 6.3). On the other hand, mechanical control methods can be non-selective and disturb sensitive sites, such as wetlands, archeologically rich localities or developed areas. At times, machines leave behind petroleum products, leaks and spills from normal operation. Furthermore, heavy equipment can be risky to use on steep terrain, where they may be unstable. So, they are not always appropriate.

6.8.1.3 Chemical Control Methods

Tree growth regulators and herbicides must be used according to directives on

their labels. Applicators are not only required to comply with label instructions, but also all other laws and regulations pertaining to tree growth regulator and herbicide use (see Chapter 7).

6.8.1.3.1 Tree Growth Regulators

Tree growth regulators (TGRs) are designed to reduce growth rates by interfering with natural plant processes. TGRs can be used to slow some fast-growing species, and be helpful where removals are prohibited or impractical.

6.8.1.3.2 Herbicides

Herbicides control plants by interfering with specific botanical biochemical pathways. There are a variety of herbicides, each of which behaves differently in the environment and in their effects on plants, depending on the formulation and characteristics of the active ingredient. While appropriate herbicide use reduces the need for future intervention, if misused they can cause unintended environmental harm due to drift, leaching and volatilization.

6.8.1.4 Biological Control Methods

Biological control uses natural processes to control undesirable vegetation. For example, some plants, including certain grasses, release chemicals that suppress other species growing around them. Known as allelopathy, this characteristic can serve as a type of biological control against incompatible species. Promoting wildlife populations is also a form of biological control. Birds, rodents and other animals can encourage compatible plant communities by eating seeds or shoots of undesirable plants.

A biological control known as cover-type conversion provides a competitive advantage to short-growing, early successional plants, allowing them to thrive and eventually out-compete unwanted tree species for sunlight, essential elements and water. Cultural methods also take advantage of seed banks of native, compatible species lying dormant on site. In the long run, cultural control is the most desirable method where it is applicable.

The early successional plant community is relatively stable, tree-resistant and reduces the amount of work, including herbicide application, with each successive treatment.

While it is a type of biological control, cover-type conversion employs a combination of manual, mechanical, herbicide and cultural methods. For example, although encouraging allelopathic plants and increasing wildlife populations by improving habitat are types of biological controls, they are also forms of cultural control.

Tree-resistant communities are created in two stages. The first involves non-selectively clearing the right-of-way of undesirable trees using the best applicable control method or methods. The second develops a tree-resistant plant community using selective techniques, including herbicide applications to release the seed bank of native, compatible species for germination.

Cover type conversion, uses herbicides to remove incompatible tall-growing trees and other vegetation from the right-of-way in order to establish a stable, low-growing plant community. The specific IVM technique selected for a particular site is based upon various conditions, which include terrain, accessibility, environmental considerations (wetlands, streams, etc.) cultural factors, worker and public health, economics and other factors.

6.8.1.4.1 Wire-Border Zone

Over sixty years of research on transmission rights-of-way has demonstrated that integrated vegetation management applied to creating distinct, compatible plant communities not only effectively manages vegetation on rights-of-way, but also enhances wildlife habitat, at least in forested areas (Yanner and Hutnik 2004). The wire zone-border zone concept was developed by W.C. Bramble and W.R. Byrnes (Bramble et al 1991).

On flat terrain, the wire zone is the right-of-way portion directly under the wires and roughly 10-feet to the field side of the outside phases. The border zone ranges from ten-feet outside the outer phases to the right-of-way edge (Figure 6.4a). The border zone should be reduced or eliminated on up-slopes where wire sag and sway may preclude leaving trees of any type. It may also extend on down-slopes (Figure 6.4b). Species that could grow into the wires at any time in their lives should not be allowed in the border zone.

Properly managed, wire zone-border zone linear corridors not only effectively protect the electric facilities, but also can become an asset for forest ecology and forest management (Bramble et al 1991, Yanner, Bramble and Byrnes 2001, Yanner and Hutnik 2004).

6.8.1.4.1.1 Region A

Region A is the area where lines are less than 50 feet off the ground (Figure 6.5). The 50 foot height should be from maximum engineered sag mid-span, with attention to side slope and potential sway of conductors in high wind. The right-of-way in Region A should be cleared following the wire zone - border zone recommendations of Bramble and Byrnes (Bramble et. al. 1991 [Figure 6.4a]).

After clearing, the Region A wire zone should consist of grasses, legumes, herbs, ferns and low-growing shrubs (under 5-feet at maturity). The border zone should consist of tall shrubs or short trees (up to 25 feet in height at maturity), grasses and forbs. These cover types benefit the right-of-way by competing with and excluding undesirable plants.

6.8.1.4.1.2 Region B

Region B occurs where the lines are between 50 and 100 feet off the ground from maximum engineered sag (Figure 6.5). In Region B, a border zone regime should be established throughout the right-of-way.

Note that many transmission structures are over 50 feet high. In cases where they are, a border zone community can be maintained near structures. Care should be taken to maintain access to the structure.

6.8.1.4.1.3 Region C

Region C is where the lines are 100 feet or more off the ground (Figure 6.5). Tall-growing trees may be allowed in Region C, provided they have at least 50 feet of clearance. Trees with less than 50 feet of clearance should be selectively removed.

6.8.1.5 Cultural Control Methods

Cultural methods modify habitat to discourage incompatible vegetation. Cultivated landscapes of compatible plants and agricultural crops are examples of cultural control.

6.9 Transmission Rights-of-Way - Widths

Right-of-way clearing should conform to the width indicated on the easement or permit. Removals in Regions A and B shall be done in transmission

rights-of-way wherever legal rights allow. They should also be done when trees have grown within 50 feet of the line in Region C.

Transmission lines may be constructed on the edge of dedicated road right-of-way where there may or may not be an easement or permit on the adjoining property allowing encroaching vegetation to be cleared. In these cases or others where the easement or permit does not specify a width, right-of-way dimensions in Table 6.2 apply. However, if no authority exists to remove trees, at minimum work should conform to Tables 6.1.

Easements should be researched through PacifiCorp Right-of-Way Services referencing the *Plan and Profile.* The *Plan and Profile* may also be useful in determining if the age of the line qualifies it for a prescriptive easement (see Section 8.3.1.1 and Table 8.1). Ground disturbance should be minimized on all rights-of-way.

6.10 Post Work Assessment

Foresters should audit transmission work following procedures outlined in Section 4.4. The audits should objectively assess quality, adherence to specifications, production, herbicide and other matters. Moreover, audits should provide the tree crew leader with feedback on production, professionalism, equipment, safety and crew efficiency. Results shall be documented on an *Audit Report* (Figure 4.7). Following systematic work, the entire length of completed line shall be inspected by the contractor to verify work complies with PacifiCorp specifications.

6.11 Mitigation Measures

NERC Requirement R5 directs transmission owners to develop mitigation measures to achieve sufficient clearances for protection of the transmission facilities when it identifies locations on the right-of-way where the transmission owner is restricted from performing work that may lead to a vegetation encroachment into the MVCD prior to the implementation of the next annual work plan, the owner shall take corrective action to ensure continued vegetation management to prevent encroachments.

Whenever the restriction is caused by a landowner, the refusal process in Chapter 8 shall be followed. If the refusal process has been completed without attaining clearances that would prevent encroachment into the MVCD before the next scheduled work, such locations should be documented on the *Work Release* (Figure 4.2). These sites should be reported in writing to the appropriate line patrolmen within 30 days. The line patrolmen should report annually on these site's status. Moreover, foresters or their contract designee should inspect the site biannually.

Figure 6.1 In densely vegetated areas, rights-of-way usually have to be completely cleared as the initial stage of establishing a wire-border zone.

Figure 6.2. Line 4 in California following work (note the trees mid-span where the line is more than 100-feet off the ground).

Lorelei Phillips photo

Figure 6.3. Right-of-way reclamation using mechanical control. In this case, a slashbuster.

TABLE 6.2. Active transmission right-of-way widths.

Facility	Distance from Center	Urban Width	Rural Width
46 kV Single pole	25 feet	50 feet	50 feet
69 kV Single pole	25 feet	50 feet	50 feet
115 kV Single pole	30 feet	60 feet	60 feet
138 kV Single pole	30 feet	60 feet	60 feet
161 kV Single pole	40 feet	80 feet	80 feet
230 kV Single pole	40 feet	80 feet	80 feet
69 kV H frame	40/50 feet	80 feet	100 feet
115 kV H frame	40/50 feet	80 feet	100 feet
138 kV H frame	40/50 feet	80 feet	100 feet
161 kV H frame	40/50 feet	80 feet	100 feet
230 kV H frame	62½ feet	125 feet	125 feet
345 kV H frame	75 feet	150 feet	150 feet
345 kV Steel tower	75 feet	150 feet	150 feet
500 kV Steel tower	87½ feet	175 feet	175 feet

Note rights-of-way should be cleared to those specified in the easement. If no easement exists or if no width is specified in the easement, rights-of-way in this table apply. Widths conform to PacifiCorp Transmission Construction Standard TA 181

Figure 6.2. Line 4 in California following work (note the trees mid-span where the line is more than 100-feet off the ground).

Lorelei Phillips photo

Figure 6.4a. Bramble and Byrnes Wire Zone - Border Zone (adapted from Yahner, Bramble and Byrnes, 2001).

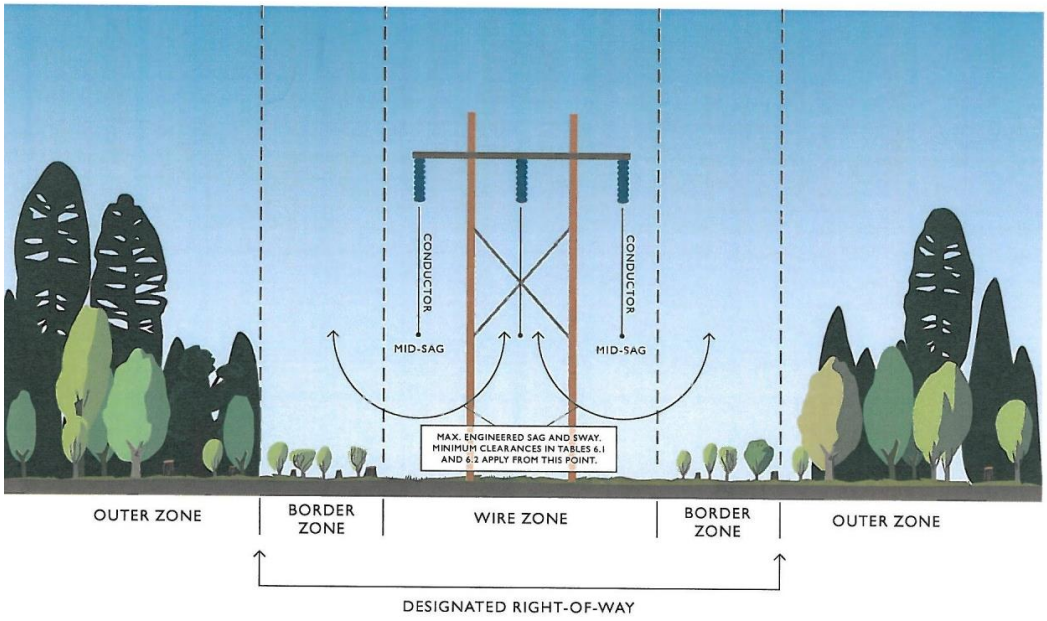
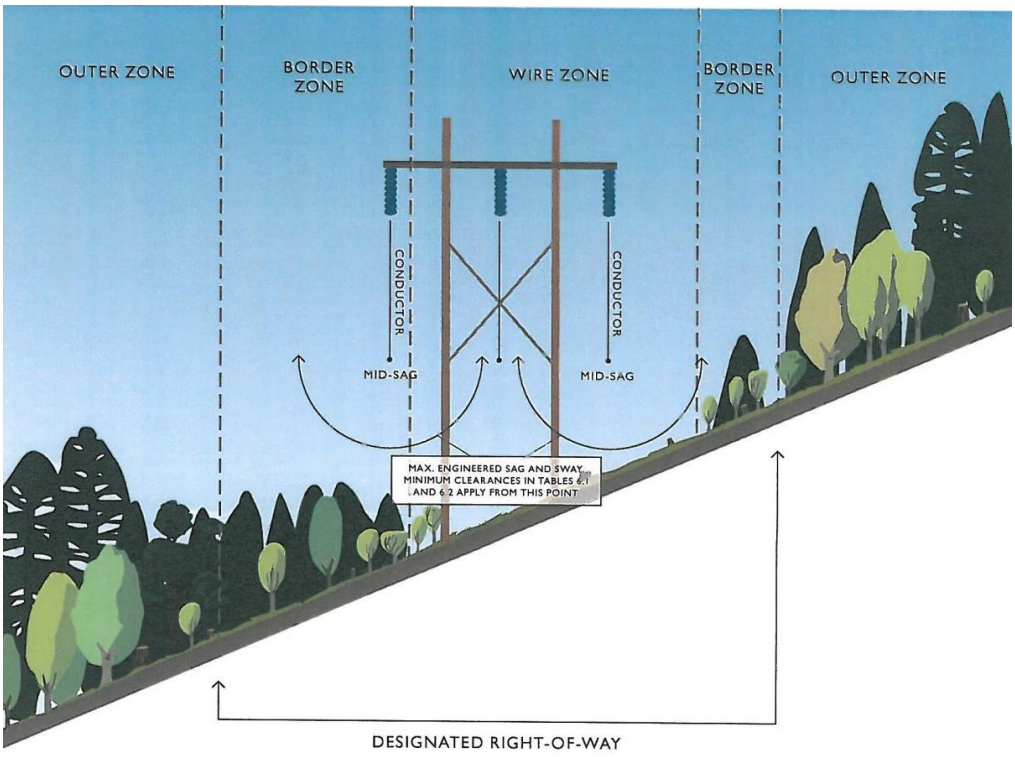
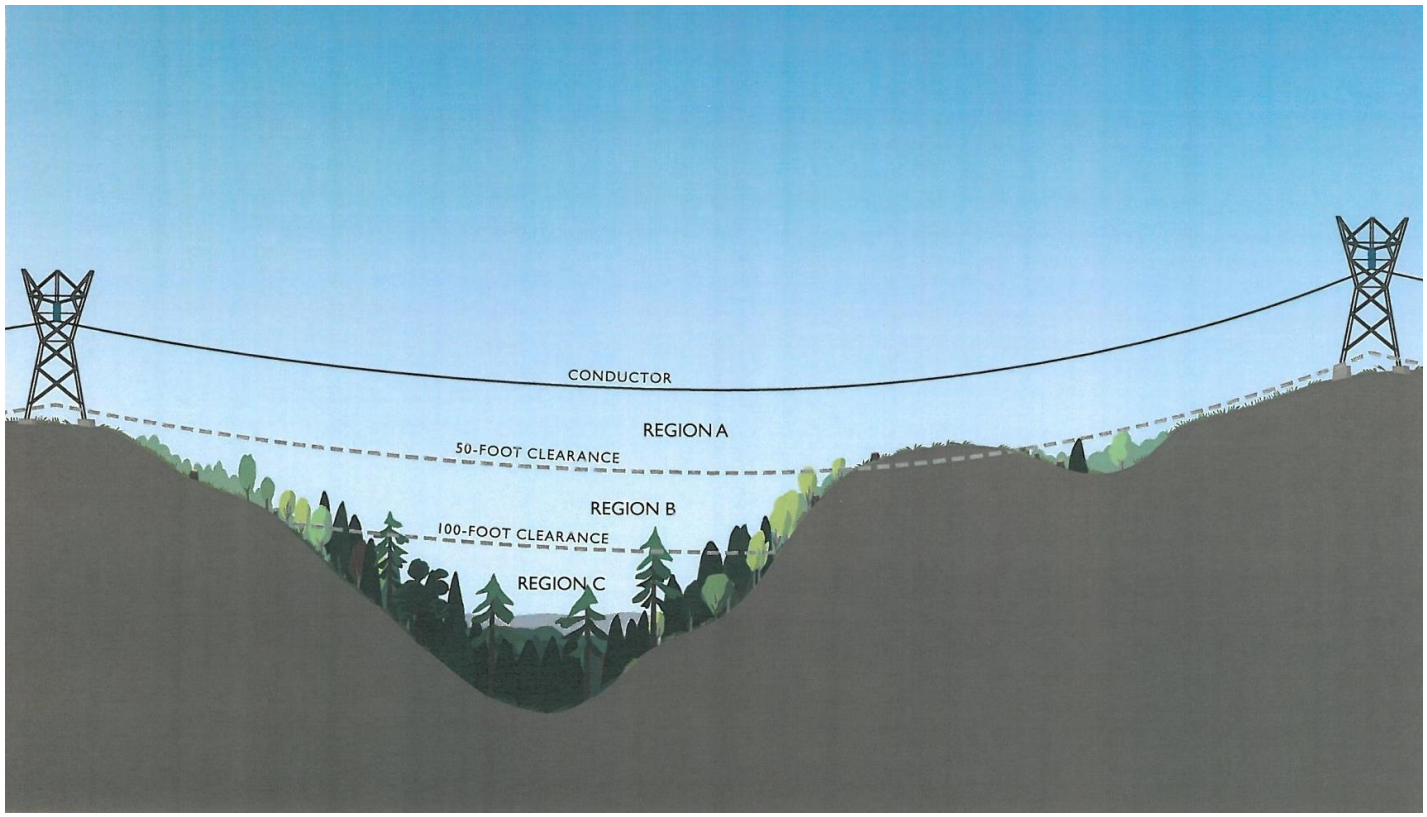


Figure 6.4b. The border zone may be reduced or eliminated on up-slopes where wire sag and sway could bring it into contact with trees, and can be extended on down-slopes.



Brad Gouch drawings (Figures 6.4 and 6.5).

Figure 6.5. Under clearance regions.



Region Definitions:
Region A: Where conductor to ground clearance is less than 50 feet (from maximum engineered sag and sway.
Region B: Where the conductor to ground clearance is 51-100 feet (from maximum engineered sag and sway.
Region C: Where the conductor to ground clearance is over 100 feet (from maximum engineered sag and sway.

Appropriate Region Plant Species:
Region A: Grasses, legumes, ferns and low-growing shrubs (<5' at maturity).

Region B: Region A species as well as large shrubs and short-growing trees (<25' at maturity).
Region C: All tree and shrub species.

6.12 High Risk Trees

High risk trees are structurally unsound and could strike a target (such as electric facilities) when they fail. Off right-of-way hazard trees shall be identified following Smiley, Matheny and
Lilly (2011) using an initial Level 1 assessment and bearing prevailing winds in mind.

Trees on the uphill and windward sides of rights-of-way should receive particular scrutiny. Hazard trees should be either removed or pruned to reduce the exposure. Work shall be performed in a manner that neither damages trunks nor disturbs root systems of adjacent trees. Damaged trees could decline, decay or die, threatening the conductors if they fall.

Federal and state agencies could request high risk trees to be topped to create "wildlife trees". PacifiCorp may honor such requests provided the safety of the tree workers or the integrity of facilities are not compromised, and the trees are topped below a height that would allow them to contact Company facilities should they fall.

PacifiCorp manages multitudes of trees across its over 15,000 mile transmission system. In every mile of line, the Company potentially has hundreds or thousands of trees, any one of which could compromise public safety and electrical service reliability. It is impossible to completely secure an electrical system from that level of exposure. Nevertheless, PacifiCorp has a responsibility to make a reasonable effort to maintain vegetation to reduce risks to both the public and power supply.

6.13 Vegetation Screens

Vegetation screens may be required by federal or local authorities in some locations at high visibility areas such as major road crossings. Where these mandates exist, vegetation screens should consist of border zone communities and be located near structures (where the line is unlikely to sag), if possible. If no border zone species are present, tall-growing trees may be left provided they have at least the minimum clearances in Table 6.1 following scheduled work.

Leaving tall-growing trees in transmission rights-of-way should be discouraged because they impede cover type conversion. So, trees should be removed (gradually over a number of years, if need be), rather than be pruned to obtain proper clearances, if at all possible. Vegetation screens should be no more than twenty-five feet from frequented vantage points into the right-of-way. Areas where tall-growing species are retained as screens shall be documented and monitored annually by line patrolmen. If remaining trees violate work thresholds specified in Table 6.1, within 30 days line patrolmen should report them to Vegetation Management for correction.

6.14 Merchantable Timber

Rights-of-way could contain merchantable timber. Merchantable timber is defined as trees with at least six-inch diameter at breast height (DBH), that are recoverable and have a market in the local area. Merchantable timber belongs to the property owner unless the easement or permit states otherwise. If merchantable timber needs to be felled, the property owner should be contacted regarding timber recovery.

After the merchantable timber is felled, it should be de-limbed and left in total tree length on the right-of-way for recovery by the owner. In limited cases, PacifiCorp may decide to purchase merchantable timber from the property owner and retain or transfer ownership to

another party. A forest practice permit from the appropriate state department of forestry may be required for timber recovery.

6.15 Transmission Safety Procedures

The following safety procedures shall be followed by all tree crews on PacifiCorp transmission facilities.

6.15.1 Pre-work Communication with Dispatch

Operative communication capability is mandatory at all times on transmission rights-of-way Communication with dispatch is critical for tree crew safety. Every morning before starting transmission work, tree crews shall call the dispatcher from the right-of-way by radio or telephone and provide the following information to comply with *Power Delivery System Operations System policy SOP-152* (Figure 6.6):

- Name of crew leader
- Name of company
- Contact information (radio or cell number)
- Name of transmission line
- Line section (substation names between which work is to occur, such as "Alvey to Dixonville," or "Ben Lomond to Terminal")
- Location of work (structure number, address or both)
- How long the crew will be working at that location
- Radio or cellular telephone number of the crew
- Name of GF/supervisor and their cellular telephone number

If radio or telephone contact cannot be made with the dispatcher from the right-of-way, non-emergency work shall not be performed at that site. The crew should relocate to work where they can communicate with the dispatcher. Satellite phones might be necessary in remote locations to provide the required communication.

6.15.2 Post-Work Communication with Dispatch

Each afternoon after completing transmission work for the day, tree crews shall call the dispatcher and provide the following information (Figure 6.6):

- Name of crew foreman
- Name of company.
- Contact information (radio or cell number)
- Name of transmission line
- Line section (substation names between which work occurred, such as "Alvey to Dixonville," or Ben Lomond to Terminal").
- Location where work was performed
  Crew members and equipment are off the right-of-way or in the clear.

6.15.3 Safe Working Procedure

If a tree cannot be felled or pruned safely, work shall not proceed. If a tree or limb falls into the conductors, work shall stop immediately and emergency procedures outlined in Figure 2.1 followed Minimum approach distances (Table 2.1) shall not be violated. Remember, transmission conductors can sag considerably at mid-span during hot

weather, ice buildup and heavy electrical loads. Trees that have safe clearance in the morning may not have safe clearance in the afternoon. Conditions could require a hold or clearance. Clearances on some transmission lines can take weeks or months to schedule. See Section 2.1.1 for hold and clearance instructions.

6.16 Monthly Progress Tracking

Figure 6.6. Transmission communication procedure with Dispatch (operative communication is mandatory at all times on transmission rights-of-way. Satellite phones could be necessary in remote locations).

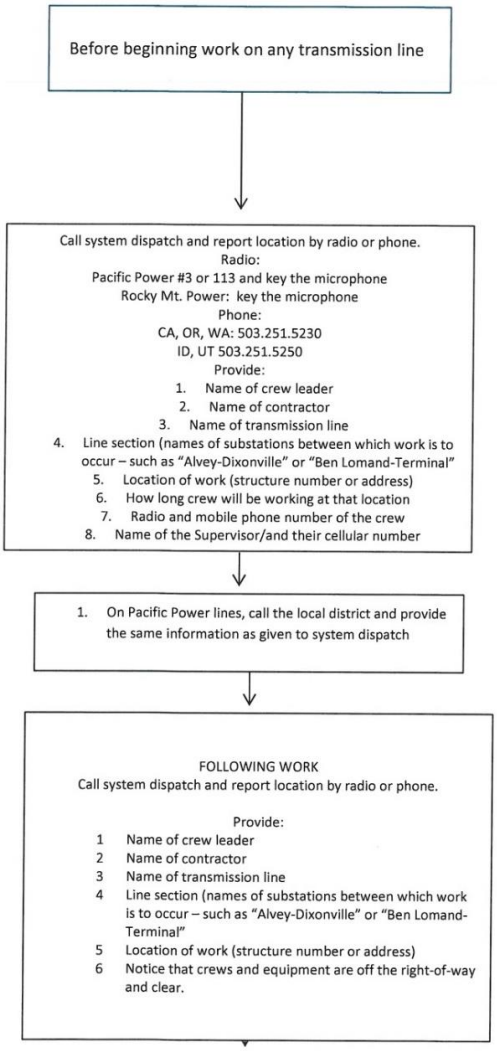


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Figure 6.7. Summary pages of main grid and local transmission monthly reports.

PACIFICORP VEGETATION MANAGEMENT 2011 MAIN GRID TRANSMISSION PROGRESS REPORT

Through Dec 31, 2011

STATE SUMMARY

	TOTAL Line Miles	Line Miles Scheduled	Line Miles Completed	Line Miles Goal	Line Miles Ahead/Behind
	7,160	795	803	795	8
State					
California	129	23	11	23	-11
Idaho	1,206	99	99	99	0
Misc States	66	0	0	0	0
Montana	137	46	30	46	-16
Oregon	1,131	224	224	224	0
Utah	2,329	207	230	207	23
Washington	284	160	168	160	8
Wyoming	1,877	37	41	37	4
TOTAL	7,160	795	803	795	8

FORESTER SUMMARY

	TOTAL Line Miles	Line Miles Scheduled	Line Miles Completed	Line Miles Goal	Line Miles Ahead/Behind
	7160	795	803	795	8
Forester					
Armstrong	609	306	311	306	5
Evans	1865	127	142	127	14
Jones	64	21	21	21	0
Partridge	284	35	42	35	8
Phillips	734	58	46	58	-12
Vanderhoof	3,534	239	237	239	-2
Hooley	71	9	4	9	-5
Total	7,160	795	803	795	8

PACIFICORP VEGETATION MANAGEMENT 2011 LOCAL TRANSMISSION PROGRESS REPORT

Summary

Through Dec 31, 2011

LOCAL TRANSMISSION WORK

	Total Line Miles	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	7,936	2,136	2,316	2,136	180
State					
California	572	106	116	106	10
Idaho	797	38	46	38	8
Oregon	1,836	279	340	279	61
Utah	3,747	1,445	1,587	1,445	142
Washington	324	131	89	131	-42
Wyoming	660	137	138	137	1
Total	7,936	2,136	2,316	2,136	180

SUMMARY OF WORK BY FORESTER

	Total Line Miles	Total Miles Scheduled	Line Miles Completed	Line Mile Completed Goal	Miles Ahead(Behind)
	7,936	2,136	2,316	2,136	180
Forester		*	*	*	*
Hooley	356	9	41	9	32
Evans	2,304	977	1,035	977	58
Jones	766	330	413	330	83
Partridge	594	259	191	259	-68
Phillips	1,038	90	138	90	48
Vanderhoof	2,134	313	323	313	10
Armstrong	744	158	176	158	18
Total	7,936	2,136	2,316	2,136	180
Weeks					
52					

Progress on the annual work plan for NERC Transmission Lines shall be tracked on the *PacifiCorp Main Grid Transmission MASTER* for lines under the auspices of NERC Standard FAC-003. Progress on the annual work plan for other transmission lines shall be tracked on the monthly *Local Transmission Progress Report.* Both reports track miles achieved against plan on a monthly basis (Figure 6.7).

6.17 Quarterly WECC Audit Report

PacifiCorp is required to report outages on transmission lines subject to FAC-003.

7. CHEMICAL PRODECURES

Herbicides and tree growth regulators (TGRs) are an integral part of PacifiCorp's Vegetation Management program. Chemical applications shall be performed according to federal, state and local regulations. Labels are the law, and chemical use must comply with labeling. PacifiCorp's director of vegetation management shall approve all products and mixes. Property owners shall be notified at least five days, but no more than six weeks in advance, whenever chemicals are to be used on their property. Property owner objection to herbicide use shall be honored.

The company making the application is responsible for chemical purchase and storage, record keeping as well as container disposal. Crew leaders in all states except California shall hold a valid applicator's license. Applicators shall either hold that license, or work under the direct supervision of a certified applicator as required in the state in which they are working. Tree crews found working without a crew leader or applicator without a valid applicators license for the state in which they are working may be shut down at the forester's discretion. Supervisors/GFs of qualified applicators shall hold a certified applicator's license in the state or states in which they supervise crews**.**

7.1 Closed Chain of Custody

Closed chain of custody best practices are encouraged. CU*tility Arborist Association Best Management Practices: Field Guide to Closed Chain of Custody for Herbicides n the Utility Vegetation Management Industry* (Goodfellow and Holt 2011).

Closed chain of custody is a concept in which ready-to-use, diluted concentrate formulations are utilized in closed delivery systems. Closed chain of custody includes herbicide shipping, distribution, storage, and mixing, which includes returning empty containers for refilling and reuse.

7.2 Chemical Reports

All chemical applications shall be documented in the *Daily Report* (Figure 4.6) or other method approved by a Company forester. The company making the application shall be responsible for maintaining reports for review by the state departments of agriculture.

When chemical work is done on or adjacent to PacifiCorp Hydro properties, copies of chemical reports shall be provided to the plant manager weekly.

7.3 Herbicide Applications

Herbicide applications shall be pursued wherever possible as a vegetation management tool. Herbicides prevent sprouting from stumps of deciduous trees and should be used on saplings of tall-growing species to reduce future inventories (Figures 7.1 and 7.2). Herbicides are essential in cover type conversion necessary in establishing the wire zone-border zone method on transmission lines.

When properly used, herbicides are effective and efficient, minimize soil disturbance, and enhance plant and wildlife diversity. Herbicide application can benefit wildlife by improving forage as well as escape and nesting cover. In some instances, noxious weed control is a desirable objective on utility rights-of-way that can be satisfied through herbicide treatment.

Herbicide use can control individual plants that are prone to re-sprout or sucker

after removal. When trees that re-sprout or sucker are removed without herbicide treatment, dense thickets develop, impeding access, swelling workloads, increasing costs, blocking lines-of-site, and deteriorating wildlife habitat (Yanner and Hutnik 2004 [Figures 7.1 and 7.2]).

Treating suckering plants allows early successional, compatible species to dominate the right-of-way and out-compete incompatible species, ultimately reducing work.

7.3.1 Selectivity

Herbicides can be selective or non-selective depending on their type. Selective herbicides only control specific kinds of plants, when applied according to the label. For example, synthetic auxins are a class of selective herbicides that control broadleaved plants, but do not harm grass species. By contrast, non-selective herbicides work against both broadleaved plants and grasses. Non-selective herbicides can be effective where a wide variety of target plant species are present, like those often found during initial clearing or reclaiming dense stands of invasive or other undesirable vegetation.

Application techniques can also be either selective or non-selective. Selective applications are used against specific plants or pockets of plants. Non-selective techniques target areas rather than individual plants (see *Application Methods*). Non-selective use of non-selective herbicides eliminate all plants in the application area. Non-selective use of a selective herbicide controls treated plants that are sensitive to the herbicide, without differentiating between compatible or incompatible species. Selective use of either would only control targeted vegetation. Selective use is preferable unless target vegetation density is high.

7.3.2 Herbicide Best Management Practices

PacifiCorp is dedicated to ensuring proper application of approved herbicides to minimize the effects on non-target vegetation, human health, fish and wildlife species, and water quality (Childs 2005).

Herbicide applications shall (Childs 2005):

- Follow all product label mandatory provisions such as registered uses, maximum use rates, application restrictions, worker safety standards, restricted entry levels, environmental hazards, weather restrictions, and equipment cleansing.
- Follow all product label advisory provisions such as mixing instructions, protective clothing and others matters.
- Have on site a copy of the label and SDS sheets.
- Be made in the presence of a licensed applicator valid for the state in which work is performed.

7.3.3 Wetlands and Waterbodies

The effects of herbicides on wetland and water resources should be minimized by utilizing buffer zones (Table 7.1). Buffer zones reduce the movement of herbicides from the application site into adjoining water bodies. They must be followed unless instructed otherwise by competent authorities. Climate, geology and soil types should be considered when selecting the herbicide mix with the lowest relative risk of migrating to water resources (Childs 2005)

Figure 7.1. Untreated rights-of-way quickly fill in with thickets of sprouts following mowing

Jay Neil photo

Figure 7.2. Incompatible species treated in the Line 72 right-of-way in, Oregon two years after reclamation. Herbicide treatments help maintain the right-of-way and are used to convert it to a wire zone-border zone prescription (Figure 6.3)

Table 7.1. Buffer Widths to Minimize Impacts on Non-Target Resources (adapted from Childs 2005).

Herbicide Ecological Toxicities and Characteristics	Buffer Width from Water Resource per Application Method			
	Spot	Localized	Broadcast	Mixing, Loading, Cleaning
Practically Non-toxic to Slightly Toxic	Up to the Edge	Up to Edge	50 feet	100 feet
Moderately Toxic, or Label Advisory for Ground/Surface Water	25 feet	35 feet	300 feet	250 feet
Highly Toxic to Very Highly Toxic	35 feet	100 feet	Noxious weed control only. Buffers shall comply with local regulations	250 feet

7.3.4 Spills

Mixing, loading and cleaning equipment are critical activities that present the greatest exposure to accidents or spills (Miller 1993). Spills should adhere to Section 2.2.5. Spills can be avoided by using closed chain of custody best management practices.

7.3.5 Inappropriate Applications

There are situations where herbicide applications are inappropriate. If application company representatives are uncertain whether or not applications are appropriate, they shall consult the appropriate forester. Inappropriate situations include (but are not limited to):

- Areas where the property owner expresses objections to herbicide use.
- Areas where herbicide could drift or leach into organic farms.
- Governmental lands where herbicides are prohibited.
- Conditions of heavy precipitation or strong winds. If these conditions exist, the treatment should be deferred until weather improves.
- Periods of high temperatures, which can cause product volatility and damage off-target plants. This is particularly important for foliar applications. During high temperatures, treatment should be deferred until weather cools. Note that vineyards can be especially sensitive to synthetic auxins.
- Trees that could be root grafted to desirable trees.
- Trees that are near desirable plants where the herbicide could move into contact with off target foliage or roots.
- Trees that are sufficiently close agricultural crops or harvestable, edible plants that contamination could be reasonably expected

If there is any uncertainty regarding whether or not an application is appropriate, contact the forester with responsibility for the area.

7.3.6 Application Methods

Herbicide application methods are categorized by the quantity of herbicide

used, the character of the target, vegetation density and site parameters. Dyes can be used in the herbicide mix to mark areas that have been treated. Treatments include individual stem, broadcast and aerial treatments. Ninety-five percent control shall be obtained.

7.3.6.1 Individual Stem Treatment

Individual stem treatments are selective applications. They include stump, basal, injection, frill, selective foliar and side-pruning applications. Due to their specific nature, proper individual stem applications work well to avoid damage to sensitive or off target plants. However, they are impractical against broad areas or sites dominated by undesirable species.

Stump applications are a common individual stem treatment, where herbicides are applied to the stump cut surface around the cambium and to the top side of the bark. Water-based formulations require immediate stump treatment, while oil herbicides can be applied hours, days or even weeks after cutting.

Injections involve inserting herbicide into a tree. Frill (commonly called "hack and squirt") treatments, consist of herbicide application into cuts in the trunk. Injections or frill treatments are especially useful against large incompatible trees to be left standing for wildlife.

Basal applications often use a herbicide in an oil-based carrier at the base of stems and root collar. The oil penetrates the bark, carrying the herbicide into the plant. Although basal applications can be made year round, dormant treatment is often best on deciduous plants, when they do not have foliage that can obstruct access to individual stems.

Selective foliar applications are done by spraying foliage and shoots of specific target plants. They can be either low or high volume treatments. For low volume applications, comparatively high concentrations of herbicide active ingredient are made in lower volumes of water than would be used with high volume treatment. Foliar applications are only made during the active growing season, normally late spring to early fall.

Side pruning is a technique where non-translocatable herbicides are applied to control specific branches growing toward the electric facility. Treating large branches could damage trees in the same way as removing them through pruning.

7.3.6.2 Broadcast Treatment

Broadcast treatments are nonselective because they control all plants sensitive to a particular herbicide in a treatment area. They can provide a degree of selectivity with proper herbicides. Even then, broadcast treatments do not differentiate between compatible and incompatible plants that the herbicide controls. Broadcasting is particularly useful to control large infestations of incompatible vegetation (including invasive species) in rights-of-way or along access roads.

Broadcast techniques include high-volume foliar, cut-stubble and bare ground applications. High volume foliar applications are similar to high volume selective foliar applications. The difference is that broadcast high volume foliar treatments target a broad area of incompatible species, rather than individual plants or pockets of plants. Cut-stubble applications are made over areas that have just been mowed. Bare-ground treatments are used for clearing all plant material in a prescribed area, such as in substations or around poles to protect against fire. Bare-ground applications are usually granular or liquid applications following mechanical removal of

vegetation, or used as a pre-emergent in maintaining graveled areas such as substations.

7.3.6.3 Aerial Treatment

Aerial treatments are made by helicopter (rotary wing) or small airplane (fixed wing). Rotary wing aircraft provide the most accuracy, because helicopters can fly more slowly and are more maneuverable than airplanes. However, airplanes are less expensive to operate than helicopters. Aerial control methods are also nonselective, but can provide a level of selectivity with proper herbicides. Aerial applications can be useful in remote or difficult to access sites, and be cost effective and quick, especially if large areas need to be treated. They also can be used where incompatible vegetation dominates a right-of-way. The primary disadvantage of aerial application is that it carries the threat of off-target drift, so it must be performed under low-wind conditions with low toxicity herbicides.

7.4 Approved Herbicides

A list of approved products appears in the following sections. PacifiCorp's director of vegetation management must authorize other chemicals.

7.4.1 Stump Application

- 2, 4-D
- Glyphosate
- Picloram
- Triclopyr

7.4.2 Low Volume Basal Application

- Imazapyr
- Triclopyr

7.4.3 Foliar Application

- 2, 4-D
- Aminopyralid
- Fosamine ammonium
- Glyphosate
- Imazapyr
- Metasulfuron methyl
- Picloram
- Sulfometuron methyl
- Triclopyr

7.4.4 Soil Application

- Diuron
- Imazapyr
- Picloram
- Sulfentrazone
- Tebuthiuron

7.5 Tree Growth Regulators

Tree Growth Regulator (TGR) applications are intended to retard fast-growing trees so that they will not interfere with facilities or violate state regulatory agency tree policy before the next scheduled maintenance.

7.5.1 Approved TGR Application Chemicals

- Fluprimidol
- Paclobutrazol

8. CUSTOMER RELATIONS

Representatives of vegetation management meet with more customers than any other Company department. As a result, customers often develop an impression of the entire Company based on their experience with PacifiCorp vegetation management. Since vegetation management work is often controversial, excellent customer service is imperative for a successful program. Company and contract personnel must be professional, prompt, fair and courteous to customers.

8.1 Educational Information

PacifiCorp has a variety of educational materials about tree-power line conflicts and planting the right tree in the right place.

8.1.1 Trees and Power Lines Brochure

The *Trees and Power Lines* brochure is a companion to the "yellow door card" (see Section 8.2.1). It explains the need for line clearance work, as well as natural target pruning. It also provides color pictures of how properly pruned trees could look following line clearance.

8.1.2 Small Trees for Small Places

The *Small Trees for Small Places* is a publication in PDF format available at PacificPower.net or RockyMountainPower.net. It provides tree selection tree planting and electrical safety information. It offers an easy to use chart on ornamental and adaptive characteristics of 100 different species that can be used adjacent to power lines. Not all these trees can be used everywhere in PacifiCorp's service territory. However, with a choice of 100 small-statured trees, there should be several to use in any given location around PacifiCorp's system.

8.1.3 Right Tree in the Right Place Poster

The *Right Tree in the Right Place* poster provides illustrations and descriptions of small trees that are suitable across PacifiCorp's service territory. It also relates information about proper utility tree pruning and tree planting.

8.2 Notification for Tree Work

Notification for tree work is not required by any state tariff in PacifiCorp's service territory. However, PacifiCorp vegetation management attempts to notify property owners or tenants prior to vegetation management work at home and business sites. PacifiCorp area foresters should authorize any line clearance work to be done without property owner or tenant notification. In cases of municipal, county, state or federal properties, the proper agency representative shall be notified. The appropriate customer and community relations manager should be notified prior to meeting with governmental officials.

Notification, including that for tree or chemical work, should be by letter, phone, personal visit or door card at least five business days, but no more than six weeks, prior to the crew arriving. Notification shall be documented on an *Activity Report* (Figure 4.3). Notification cards shall not be placed in U.S. Mail boxes. Notification cards should be used only where the owner or tenant is likely to be present on a regular basis. Some circumstances, such as work on historic, unique or unusual trees, could

warrant personal contact with the customer.

8.2.1 Door hangers

PacifiCorp has a variety of door hangers (Figure 8.1). These door hangers come in Pacific Power and Rocky Mountain Power versions. Pacific Power door hangers shall be used in California, Oregon and Washington. Rocky Mountain Power printings shall be used in Idaho, Utah and Wyoming.

8.2.1.1 Distribution (Yellow)

PacifiCorp's yellow distribution door hanger, and should be used to notify customers of upcoming distribution cycle or interim work. The door hanger has contract utility forester contact information, an explanation of the need for line clearance work, of how the work will be performed and how much clearance is required. The door hanger informs customers that volunteer trees (those not planted as part of a landscape) six or fewer inches in diameter at breast height will be removed. It also includes drawings of shapes customers could expect from the work, and tips about tree planting (Figure 8.2). Grow into facilities at some time in their life approx. 10 ft. each side of center

8.2.1.2 Ticket (Blue)

The blue door hanger should be used to communicate with customers who have called in requests for tree work. It has four check boxes with the most common responses to customer requests. The tree(s):

- Do not pose an immediate threat to electric service.
- Are not affecting PacifiCorp facilities.
- Are growing in proximity to service lines, but do not threaten electric service. If a customer wishes to have the tree pruned, PacifiCorp can disconnect the line to enable the customer to safely perform the work or hire a professional tree care company to do it for them.
- Are the customer's responsibility because they have more than ten feet from distribution primary conductors.

The form also has space for comments, and contract utility forester contact information.

8.2.1.3 Distribution Removal (Ivory)

The white door hanger is a tree removal request, to fulfill PacifiCorp's requirement for written permission to remove trees where no easement granting authority exists to do so (see Section 2.7.1). The white door hanger identifies trees to be removed, has check boxes indicating whether or not the logs will be cut to firewood length and the stumps treated with herbicide. The door card also provides contact information for the forest tech, or comments and a sketch to help the customer understand the request.

8.2.1.4 Rural Transmission (Purple)

The rural transmission door hanger explains the need to remove trees under transmission lines. It relates the process the customer can expect, how trees and debris will be left. It informs customers that herbicide could be used on their property, and that we have a coupon program for tree replacement. It provides information on the voltage of the line and widths of the right-of-way. The door hanger also has a wire zone-border zone

Figure 8.1 Various PacifiCorp Vegetation Management door hangers .

illustration and offers contract utility forester contact information.

8.2.1.5 Urban Transmission (Forest Service Green)

The green transmission door hanger is for use in urban or developed areas. It differs from the rural door hanger insofar as it doesn't have a diagram of the wire-border zone concept. It still stresses removal.

8.2.1.6 TGR (Grey)

The grey TGR door hanger is for notifying customers about upcoming tree growth regulator application on their property. It provides space to see what trees will be treated and contract utility forester contact information.

8.2.1.7 Herbicide (Grey)

The grey herbicide door hanger is for notifying customers about upcoming herbicide application on their property.

8.2.1.8 Tree Crew Request (Orange)

The orange door hanger is for tree crews to use to ask customers for their cooperation with upcoming tree work. It provides information about when a tree crew will arrive on site, and has check

Figure 8.2. "Yellow" door hanger.

The Steps for Tree Removal, Pruning and/or Herbicide Application

- This door card is the first step in the process. We are leaving it between one and six weeks before work on your property is planned.
- Please call the arborist listed on the other side of this door card within a week of receiving the verbal or this written notice, with questions or to notify us of any issues on your property.
- Tree crews will remove, prune or treat the trees with herbicides or tree growth regulators as indicated on the front of the card. The main trunk and large limbs will be left for your use. In addition, brush and trees that are under 6-inches in diameter and not intentionally planted as part of the landscape will be removed and treated with herbicide.
- We offer coupons to replace incompatible trees with utility-friendly species that you can plant in appropriate locations on your property. Talk with the forest technician about this option.
- This service is provided at no cost to you.
- If you have questions, please contact the arborist listed on the other side of this door card.

Here are some shapes you may expect from proper pruning around power lines.

For more information on electrical safety, tree pruning or planting the right tree in the right place, we invite you to visit **rockymountainpower.net/trees**.

Para más información, llame al 1-888-225-2611 y podrá hablar con un representante que hable español. ***Este servicio se ofrece sin ningún costo para usted.***

Tree Maintenance & Power Line Safety

It's a pleasure to provide you with safe, reliable, reasonably priced electricity. Keeping trees away from power lines is one of the most important ways to ensure you and your neighbors receive reliable electric service. It also helps keep you and our employees safe.

☐ After routinely inspecting the power lines on your property it's prudent to remove the following trees:

_____

☐ Additionally, we need to prune trees on your property to provide clearance of at least 10 to 14 feet of the overhead power line and/or from the power line running along the side of the trees:

_____

☐ The trees listed below will be treated with tree growth regulator to reduce the rate at which the tree(s) regrow into overhead power lines and also to reduce the frequency in which the tree(s) need to be pruned by our tree crews:

_____

☐ An herbicide will be applied in low volumes to non-landscape trees and brush stumps to prevent future growth. The herbicide is registered with the U.S. Environmental Protection Agency and will be applied in accordance with label requirements and federal, state and local regulations.

We hope you understand the reasons for the actions mentioned above and apologize for any inconvenience. **To understand what happens next, please review the steps for this work on the reverse side of this card.**

For more information on electrical safety, tree pruning or planting the right tree in the right place, we invite you to visit **rockymountainpower.net/trees**.

If you have questions please call:

Arborist: _____

Phone: _____ Date: _____

Comments: _____

_____

Para más información, llame al 1-888-225-2611 y podrá hablar con un representante que hable español. ***Este servicio se ofrece sin ningún costo para usted.***

05/13
VMRMP026
yellow

ROCKY MOUNTAIN POWER

boxes for requests to move something (like a car) from under the tree or secure a dog. It also can be used for permission to dive on property and has space for comments.

8.2.1.9 Pole Clearing

The pole clearing door hanger is to notify California customers of upcoming work to comply with California Resource Code 2492 (see Section 5.6)

8.2.2 Other Customer Contact Forms

In addition to door hangers, PacifiCorp has two forms for use in customer communication. The *Property Owner Permission* form has check boxes requesting authorization for tree removal, tree and brush disposal, mowing, notification of herbicide and TGR application. It provides a space for the property owner's signature. Property owner signatures are required for tree removal, but not brush disbursal or herbicide application.

PacifiCorp also has a *Refusal /Complaint Form.* This form should be completed by contract utility foresters, supervisors/GFs, tree crews or foresters whenever a customer has concerns about upcoming or recently completed work. It identifies the property owner, the type of project and the nature of the refusal or complaint. These documents should be kept in a permanent file.

8.2.3 Crew Arrival on Site

When crews arrive for work at a residential site, they should make a courtesy knock on the door and let the homeowner or tenant know they are about to begin work. If no one is home, the crew should proceed with the planned tree work.

8.3 Customer and Property Owner Refusal Procedure

The customer refusal process is presented in Figure 8.3. Detailed records must be kept of every conversation, including the date and time it occurred, and summary of the matters discussed. If a vegetation management representative makes a failed attempt to contact a refusal by phone, the date and time of the call should also be noted.

8.3.1 Contract Utility Forester Refusal Procedure

When a property owner refuses to allow the work necessary to satisfy PacifiCorp specifications, the contract utility forester shall complete a *Property Owner Refusal/Complaint Report* and notify their supervisor/GF, and area forester within two working days and before any work is performed on the property. Contract utility foresters shall not compromise clearances.

8.3.1.1 Easements

After documenting the refusal, the contract utility forester should research the right-of-way to determine PacifiCorp’s property rights for that location. PacifiCorp often owns easements, copies of which are available from PacifiCorp right-of-way services. In addition, states grant prescriptive rights if the line has existed for specified length of time. This time period varies depending on the state (Table 8.1). This information should be provided to the appropriate GF/supervisor.

8.3.2 Crew Leader Refusal Procedure

When a property owner refuses to allow the crew leader to obtain specification clearances, the crew leader shall complete a *Property Owner*

Refusal/Complaint Report and notify their GF/supervisor, contract utility forester, or area forester within two working days and before any work is performed on the property. Crew leader notification initiates the refusal procedure from the beginning.

8.3.3 General Foreman/Supervisor Procedure

The supervisor/GF should contact the property owner within two weeks of being informed of a refusal to try to resolve the situation. The GF/Supervisor should review the documentation surrounding the refusal before contacting the customer. GF/supervisors should not compromise work below the specification without written authorization from the responsible area forester. If a prescriptive or written easement exists, the supervisor/GF should inform the customer of our rights under those easements. Notwithstanding, the general foreman/supervisor should not have the trees worked without customer consent.

If the general foreman/supervisor cannot resolve the refusal to full specification, he or she shall refer it to their area forester by turning in the *Property Owner Refusal/Complaint Report.,* along with any associated easement information.

8.3.4 Regional Forester Procedure

When aregional forester receives a refusal that the contract utility forester and general foreman/supervisor have been unable to resolve, within two weeks he or she shall contact the property owner to attempt to resolve the refusal. The forester may compromise work below the specifications, provided that trees have not grown within work thresholds in Tables 5.1 or 6.1 and the agreement will not present unreasonable safety or electric service risks. This section is not intended to defer judgment to property owners on how much clearance to allow. Neither is it intended to justify clearances outside of specification in order to avoid dealing with an escalated complaint.

If the forester cannot resolve the refusal, the customer shall be sent two letters by the same certified post. One is a description of the legal authority under which the Company is acting and the other letter summarizing the circumstances of the refusal and setting date and time that the tree will be worked. The date shall be at least five business days from the time the letter is postmarked. The refusal letter should reference the applicable written or prescriptive easement if they exist. The forester shall alert the director of vegetation management, transmission and distribution support managing director, as well as the appropriate operations manager, customer and community manager, wires director, and regulatory analyst about the letters. The regulatory analyst will inform the proper regulatory agency about the action. If it appears the media could become involved, the Media Hotline should be notified.

Once the letter is sent, tree crews shall be dispatched to work the site to specifications at the assigned date and time, regardless of whether or not a right-of-way or prescriptive easement exists. The forester or GF/supervisor should be on site during work. Records shall be kept for use in potential litigation. Before and after photos of the site should be taken.

TABLE 8.1. Prescriptive easement time requirements by state

State	Time
California	5 years
Idaho	20 years
Oregon	10 years
Utah	20 years
Washington	10 years
Wyoming	10 years

Figure 8.3. Refusal process.

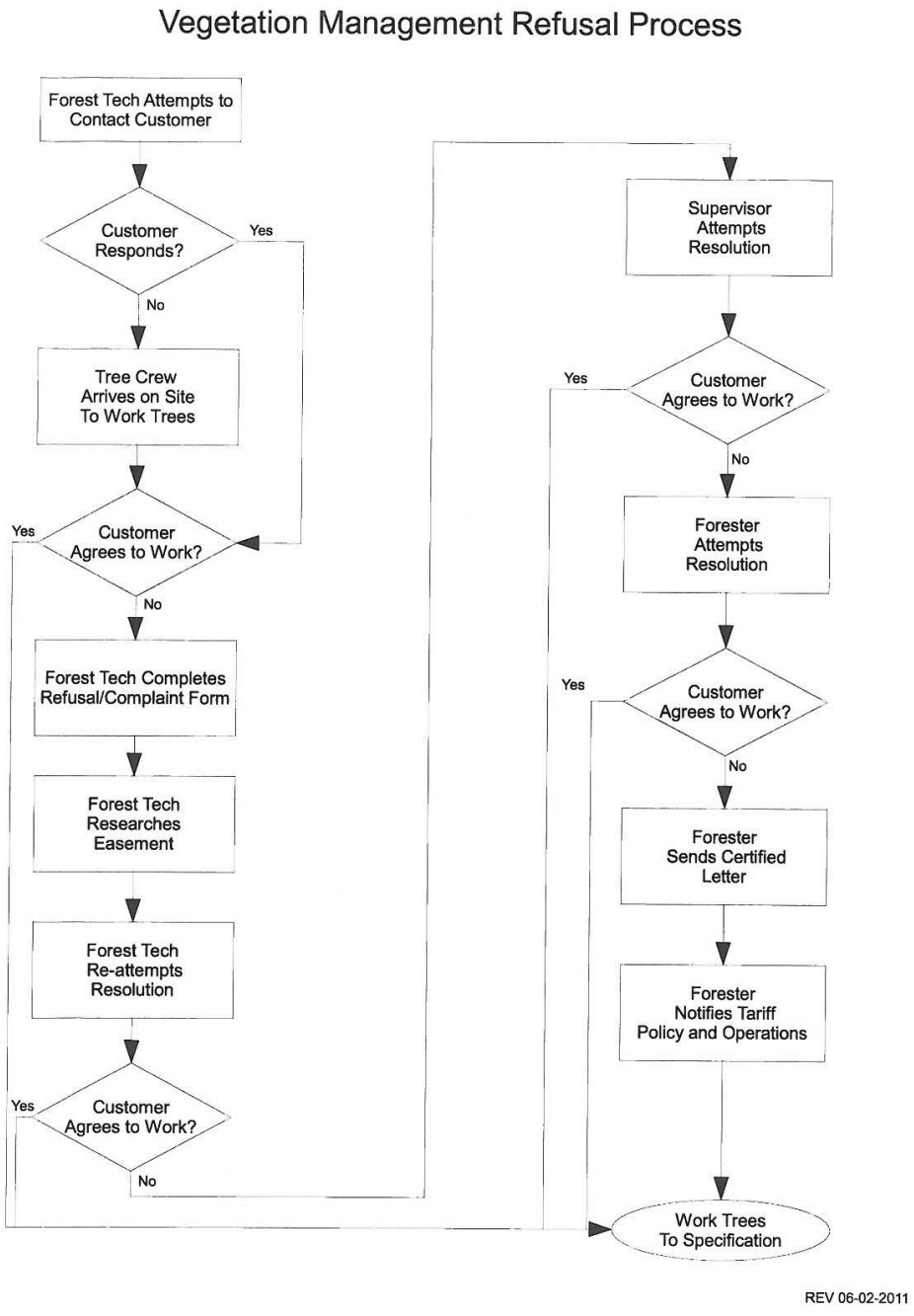

Figure 8.4. Information surrounding refusals should be documented and electronically filed with the appropriate project.

8.4 Customer and Property Owner Complaints

Customer and property owner complaints regarding any aspect of the vegetation management program shall be addressed promptly, fairly and professionally. PacifiCorp should be notified of complaints using a *Property Owner Refusal/ Complaint Report.* Customers will be contacted within 48 hours of receipt of the complaint. Documentation surrounding the refusal should be digitally filed to be accessed with other information from the specific project for use the next time through.

8.5 Commission Complaints

Response to commission complaints should take the highest priority. Commission responses should be made the same day and go through tariff policy with assistance from the vegetation management service coordinator. It is important to provide timelines with appropriate summaries of vegetation management's interaction with the subject party. Response for data request should be provided by the next business day if at all possible, but no later than three business days. Foresters should take the lead in Commission responses.

8.6 Customer Survey

PacifiCorp has Pacific Power and Rocky Mountain Power customer surveys. Surveys are vitally important for quality control, and for giving customer's a voice regarding vegetation management's performance.

The survey asks customers to rate from 1 (lowest) to 5 (highest) Vegetation Management's performance relative to five questions:

- Our notification clearly explained the work we would be doing.
- The workers were friendly and courteous.
- The work was completed as you understood it would be.
- The property was left neat and orderly.
- Overall, I am satisfied with how the work was handled.
- It also allows space for comments and for the customer to identify him/herself.

Tree crews should leave customer surveys on each property on which utility tree work is performed. For work on municipal or other government agency trees, a survey should be provided to the appropriate management authority. The area forester should also see that surveys are left on properties where they conduct crew audits. The survey is self-addressed and postage paid for the respondent's convenience.

9. DEFINITIONS

Allelopathy. Production of a chemical by one plant to suppress competing plants of other species.

BMP. Best management practice

Border zone. The Region A right-of-way portion that extends from the right-of-way edge to 10 feet from the outside phases.

Branch bark ridge. Area of raised bark between two stems. The ridge is formed as the two stems grow together, pushing the bark outward. A raised branch bark ridge is often a sign of a strong branch attachment.

Branch collar. Wood formed around a branch attachment. It contains wood from both the branch and parent stem.

Branch core. Area in the trunk of a tree that traces the branch back to its origins as a bud on a twig.

Branch protection zone. Area in the branch core that undergoes chemical change in response to wounding or disease in the branch. The chemicals protect the tree by inhibiting or preventing diseases from passing from the branch to the parent stem.

Caliper. The diameter of a tree six inches off the ground.

Cambium. Area of cell division responsible for stem diameter growth.

Clearance. Line de-energizing for safety purposes. Clearances require 48 hour notices to all customers that will be effected by the outage.

Company. PacifiCorp.

Crown reduction. Reduction of the top or sides of the tree by thinning cuts (lateral or branch collar cuts).

Crown Restoration. Restoring a previously headed stem's natural structure by thinning sprouts emanating from the old wound. Crown restoration should be done incrementally over the course of several cycles. The crowns of many third order trees may be so damaged they may never be restored.

Cycle buster. Fast-growing tree species that will not hold for a complete cycle.

Cycle work. Cycle work is described in section 5.2. It involves systematic work, addressing trees that have grown within work thresholds outlined in Tabe 5.1, and includes removals, herbicide and TGR treatments as outlined in the *Work Release.*

DBH. Diameter at breast height.

Danger tree. A tree on or off the right-of-way that may contact electric facilities either through growth or if it should fall.

Decurrent form. Trees lacking a strong central leader, resulting in a spreading crown (for example, American elm [*Ulmus americana]*).

Distribution line. Lines energized between 600 and 45,000 volts.

Drip line. The horizontal extent of the crown out to the branch tips.

Drop-crotch. Archaic term for lateral cut.

Excurrent form. Tree with a strong central leader (for example, Ponderosa pine [*Pinus ponderosa]*).

Fast -growing species. Tree species that vertically grows more than three feet per year.

Flush cut. A final pruning cut flush with the parent stem (the trunk, for example) that cuts into or removes the branch collar. Flush cuts are damaging and inappropriate.

GF. General foreman.

Hazard tree. Dead, dying, diseased, deformed, or unstable trees which have a high probability of falling and contacting a substation, distribution or transmission conductors, structure, guys or other Company electric facility.

Heading cut. Internodal cut on a stem, or a cut made to an inappropriate lateral.

Hold. Deactivating the automatic re-closers and the line. Holds are issued to a Journeyman lineman who, in the event of an outage, is responsible for ensuring that it is save to re-energize the line.

Included bark. Bark included in the juncture between two stems. It is a structural defect that can lead to stem failure.

Integrated Vegetation Management (IVM). Integrated vegetation management is a system of managing vegetation in which undesirable vegetation is identified, action thresholds are considered, all possible control options are evaluated, and selected control(s) are implemented (ANSI 2012a).

Interim Work. Scheduled work in the interim half way between cycles. For example, most of Oregon is on a four years cycle. Two years after completing cycle work, feeders will be scheduled for a systematic pass to work trees that will interfere with primary conductors before the end of the current cycle. Work should be limited to trees that grow six feet or more a year or hazard trees.

ISA. International Society of Arboriculture.

kV. One thousand volts.

Lateral cut. A cut that shortens a branch to a lateral no less than one-third the diameter of the original stem and removing no more than one-half the lead's foliage.

Lead. An upright trunk or major limb with a dominant role in the tree crown, and a lateral is a branch off a parent stem

Low-growing tree species. Trees with a potential mature height under 25 feet.

Merchantable timber. Trees with a DBH of 6 inches or more, which are

recoverable and have a market in the area.

Moderate-growing species. Tree species that can be expected to vertically grow between one and three feet per year under normal conditions.

MVCD. Minimum vegetation clearance distance. Maximum flash distance established by FAC-003.

Natural target. Proper final pruning cut location at a strong point in a tree's disease defense system. They are branch collars and proper laterals.

Pruning. Scientifically-based arboricultural practice of removing tree parts.

Readily climbable tree. Readily climbable trees have low limbs that are accessible from the ground and sufficiently close together so that the tree can be climbed by a child or average person without using a ladder or special equipment. Vehicles do not render trees climbable. Climbable trees should have a main stem or major branch that would support a child or average person either within arm's reach of an uninsulated energized electric line or within such proximity to the electric line that the climber could be injured by direct or indirect contact. They are located near homes, schools, parks, businesses or other locations where people (particularly children) frequent.

Refusal. A case where a property owner does not allow trees to be cleared from PacifiCorp facilities to specification.

Region A. The area in transmission rights-of-way where the wire is less than 50 feet off the ground.

Region B. The area in transmission rights-of-way where the wire is between 50 feet and 100 feet off the ground.

Region C. The area in transmission rights-of-way where the wire is more than 100 feet off the ground.

Round over. A traditional line clearing technique that lowers a tree to a specified clearance distance and sculpts it into a ball. Round overs are a damaging practice that expressly violate PacifiCorp specifications.

Sapling. Tree under four inches in diameter at breast height.

Secondary line. Wire energized to less than 600 volts.

Service line. A secondary line that runs between the electric supply and the customer.

Shall. A mandatory requirement.

Short-growing tree. A tree with a potential mature height of 25 feet or less.

Should. A strongly advisory recommendation. It shall be followed unless there is a compelling reason not to.

Slash. Brush and stems under 6 inches in diameter removed from trees during vegetation management operations.

Slow-growing species. Tree species that can be expected to vertically grow less than one foot per year.

Subordination. Removing the terminal, typically upright or end portion of a parent branch or stem to slow the growth rate so other portions of the tree grow faster (Gilman 2002).

Tall-growing species. Tree species that grow to 25 feet or more at maturity.

TGR. Tree Growth Regulator. In the context of these specifications, TGR refers to chemicals that slow growth of some tree species.

Transmission lines. Wire energized over 45 kV

Trimming. Reducing the length of toenails, hair, the amount of budgets and other things, Christmas tree decoration and unskilled removal of tree parts.

Volunteer. A naturally seeded, non-landscape tree.

Wetland. Wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface (EPA 2004) http://www.epa.gov/owow/wetlands/vital/what.html.

Whorl. A node in a pine tree where three or more limbs commonly originate.

Wire zone. Right-of-way portion that is directly under the wires and within 10 feet to the field side of the outside phases (Bramble et al. 2001).

Work threshold. Distance from conductors inside of which trees should be pruned or removed during cycle work.

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Attachment P1-5

Draft Noxious Weed Plan

ATTACHMENT P1-5
UPDATED REVISED DRAFT NOXIOUS WEED PLAN

Draft Noxious Weed Plan

Boardman to Hemingway Transmission Line Project

1221 West Idaho Street
Boise, Idaho 83702

September 2018; July 2020 (Modified by Oregon Department of Energy during ASC – PO Phase); November 2021 (Modified by Idaho Power during Contested Case Phase)

Agency Review Process

The agency review process outlined in this section aligns with the OAR 345-025-0016 agency consultation process applicable to monitoring and mitigation plans.

As described in the draft Noxious Weed Plan, the certificate holder, or its contractor(s), will develop preconstruction noxious weed inventories and will control and treat weed prior to, during and after construction. The draft Noxious Weed Plan will be finalized, as described throughout the plan. In addition, the plan may be amended at any time during construction, subject to the agency review process outlined below.

To afford an adequate opportunity for applicable local, state and federal agencies to review the draft plan prior to finalization and implementation, and any future plan amendments, the certificate holder shall implement the following agency review process.

Step 1: Certificate Holder's Update of Draft Plan or Future Plan Amendment: The certificate holder may develop one Noxious Weed Plan to cover all noxious weed control activities for the entire facility; or, may develop individual plans per county, segment or phase, as best suited for facility construction. Based on the draft Noxious Weed Plan included as Attachment P1-5 of the Final Order on the ASC, the certificate holder shall update the draft plan(s) based on the final facility design and agency review. If the plan(s) are amended following finalization, the certificate holder shall clearly identify and provide basis for any proposed changes.

Step 2: Certificate Holder and Department Coordination on Appropriate Review Agencies and Agency Review Conference Call(s): Prior to submission of the updated draft plan, or any future amended plans, the certificate holder shall coordinate with the Department's Compliance Officer to identify the appropriate federal, state and local agencies to be involved in the plan review process. In this instance, "appropriate" federal agencies are based on landownership where facility components would be sited. "Appropriate" local agencies include the local planning department of the jurisdiction where facility components would be sited. Once appropriate federal, state and local agency contacts are identified by the Department and certificate holder, the Department's Compliance Officer will initiate coordination between agencies to schedule review/planning conference call(s).The Department and certificate holder may agree to schedule separate conference calls per county.

The intent of the conference call(s) are to provide the certificate holder, or its contractor, an opportunity to describe details of the updated draft or amended plan; and, agency plan review schedule. Agencies may provide initial feedback on requirements to be included in the plan during the call, or may provide written comments during the 14-day comment period. The Department will request that any comments provided be supported by an analysis and local, state or federal regulatory requirement (citation).

The certificate holder may coordinate with appropriate review agencies, in advance of or outside of the established agency review process; however, this established agency review process is necessary under OAR 345-025-0016 and may result in more efficient plan finalization and amendment if managed in a consolidated process, utilizing the Department's Compliance Officer as the lead Point of Contact.

Step 3: Agency Review Process: Either with, or prior to, the agency conference call(s), the certificate holder shall distribute electronic copies of the draft, or future amended, plan(s) requesting that the Department coordinate agency review comments within 14-days of receipt, or as otherwise determined feasible. Following the 14-day agency review period, the Department will consolidate comments and recommendations into the draft, or amended, plan(s), using a Microsoft Word version of the plan provided by certificate holder. Within 14-days of receipt of the agency review comments, the certificate holder shall provide an updated final version of the plan, incorporating any applicable regulatory requirements, as identified during agency review or must provide reasons supporting exclusion of recommended requirements. Final plans will be distributed to applicable review agencies by the Department, including the certificate holder's assessment of any exclusions of agency recommendations, and a description of their opportunity for dispute resolution.

Step 4: Dispute Resolution: If any review agency considers the final, or amended, plan(s) not to adhere to applicable state, federal or local laws, Council rules, Council order, or site certificate condition or warranty, the review agency may submit a written request of the potential violation to the Department's Compliance Officer or Council Secretary, requesting Council review during a regularly scheduled Council meeting. The Council would, as the governing body, review the violation claim and determine, through Council vote, whether the claim of violation is warranted and identify any necessary corrective actions.

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ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
BOR	Bureau of Reclamation
DOI	Department of the Interior
EFSC	Energy Facility Siting Council
GPS	Global Positioning System
IPC	Idaho Power Company
kV	kilovolt
O&M	operation and maintenance
ODA	Oregon Department of Agriculture
ODOE	Oregon Department of Energy
ORS	Oregon Revised Statute
OSWB	Oregon State Weed Board
Plan	Noxious Weed Plan
Project	Boardman to Hemingway Transmission Line Project
PUP	Pesticide Use Proposal
ROW	right-of-way
SPCC	Spill Prevention, Control, and Countermeasures
USFS	United States Forest Service

1.0 INTRODUCTION

1.1 Background

Idaho Power Company (IPC) is proposing to construct and operate approximately 296.6 miles of new transmission line known as the Boardman to Hemingway Transmission Line Project (Project). The Project will include a 500-kilovolt (kV) single-circuit line, rebuilding of a portion of a 230-kV transmission line, rebuilding of a 138-kV transmission line, and a removal of a portion of an existing 69-kV transmission line between Boardman, Oregon, and the Hemingway Substation (located approximately 30 miles southwest of Boise, Idaho). The Project includes ground-disturbing activities associated with the construction of above-ground, single- and double-circuit transmission lines involving towers, access roads, multi-use areas, light-duty fly yards, pulling and tensioning sites as well as associated stations, communication stations, and electrical supply distribution lines.

The Project area, or Site Boundary, as defined in Oregon Administrative Rule 345-001-0010(55) includes "the perimeter of the site of a proposed energy facility, its related or supporting facilities, all temporary laydown and staging areas, and all corridors and micrositing corridors proposed by the applicant." The Site Boundary for this Project includes the following facilities in Oregon:

- The Proposed Route, consisting of 270.8 miles of new 500-kV electric transmission line, removal of 12 miles of existing 69-kV transmission line, rebuilding of 0.9 mile of a 230-kV transmission line, and rebuilding of 1.1 miles of an existing 138-kV transmission line;
- Four alternatives that each could replace a portion of the Proposed Route, including the West of Bombing Range Road Alternative 1 (3.7 miles), West of Bombing Range Road Alternative 2 (3.7 miles), Morgan Lake Alternative (18.5 miles), and Double Mountain Alternative (7.4 miles);
- One proposed 20-acre station (Longhorn Station);
- Ten communication station sites of less than ¼ acre each and two alternative communication station sites;
- Permanent access roads for the Proposed Route, including 206.3 miles of new roads and 223.2 miles of existing roads requiring substantial modification, and for the Alternative Routes including 30.2 miles of new roads and 22.7 miles of existing roads requiring substantial modification; and
- Thirty temporary multi-use areas and 299 pulling and tensioning sites of which four will have light-duty fly yards within the pulling and tensioning sites.

The Project features are fully described in Exhibit B, and the location of the Project features and the Site Boundary is described in Exhibit C and Table C-24. The location of the Project features and the Site Boundary is outlined in Exhibit C.

This Noxious Weed Plan (Plan) includes a discussion of 1) the Plan purpose, goals, and objectives, 2) the regulatory framework, 3) current status of noxious weeds within the Site Boundary, 4) noxious weed management practices, 5) monitoring and reporting, and 6) herbicide application, handling, and cleanup.

1.2 Purpose

Invasive plant species are non-native, aggressive plants with the potential to cause significant damage to native ecosystems and/or cause significant economic losses. Invasive plants are opportunistic plant species that readily flourish in disturbed areas, are difficult to control, and thereby, can compete with and/or prevent native plant species from re-establishing. Invasive plants are a concern for federal, state, and local agencies because of their potential to degrade wildlife habitat, reduce native plant diversity, adversely affect agricultural production, and impact the general ecological health and diversity of native ecosystems. Noxious weeds are a subset of invasive plants that are officially designated by a federal, state, or local agency as injurious to public health, agriculture, recreation, wildlife, or property (Sheley and Petroff 1999).

Soil disturbances, such as those caused by the construction and operation and maintenance (O&M) of the Project, could result in the establishment of new populations and spread of existing populations of noxious weeds. The purpose of this Noxious Weed Plan is to describe the measures IPC will undertake to control noxious weeds and prevent the introduction of these species prior to construction and during construction and O&M of the Project. It is the responsibility of IPC and the Construction Contractor(s), working with the appropriate land management agencies and the Oregon Department of Energy (ODOE), to ensure noxious weeds are identified and controlled during the construction and O&M of Project facilities and that all federal, state, county, and other local requirements are satisfied.

This Plan is applicable Project-wide, and it is expected modifications to this Plan will be made once final Project design is complete and agreements are reached with applicable federal and state land management agencies and ODOE, as well as with counties and individual landowners. The Final Noxious Weed Plan (see Section 7.0) will meet the standards of all applicable federal and state land management agencies, ODOE, as well as county weed boards.

Measures that will be taken to restore areas that have been impacted by construction activities are discussed in the Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3). Methods in which vegetation along the transmission line will be managed during O&M of the Project are described in the Vegetation Management Plan (Exhibit P1, Attachment P1-4).

1.3 Goals and Objectives

The goal of this Plan is to describe methods for early detection, containment, and control of noxious weeds that will be implemented during Project construction and operation. This Plan describes the known status of noxious weeds within the Site Boundary, the regulatory agencies responsible for the control of noxious weeds, and steps IPC will take in controlling and preventing the establishment and spread of noxious weeds during Project construction and O&M activities. General preventive and treatment measures are described in Section 4.0 of this Plan. Monitoring (Section 5.0) to evaluate effectiveness of the prescribed noxious weed prevention and control measures will be implemented during the operational phase of the Project. In addition to providing updated information, the final Noxious Weed Plan (Section 7.0) will include information on locations of significant noxious weed populations within the Project construction footprint and proposed treatment methods, as applicable.

The objectives of this Plan and the focus of IPC's noxious weed control efforts will be to prevent and control the spread of new infestations resulting from Project activities. While this Noxious Weed Plan discusses noxious weeds across the entirety of the Site Boundary, for Energy Facility Siting Council (EFSC) purposes, IPC will only be responsible for the control of noxious weeds within Project rights-of-way (ROW) and that are a result of the company's

construction- or operation-related, surface-disturbing activities. For EFSC purposes, IPC is not responsible for controlling noxious weeds that occur outside of the Project ROWs or for controlling or eradicating noxious weeds that were present prior to the Project. With respect to pre-existing noxious weed infestations, IPC recognizes Oregon Revised Statute (ORS) Chapter 569 imposes onto occupiers of land within a weed district certain obligations to control and prevent weeds; if IPC identifies pre-existing weed infestations within a Project ROW, IPC will work with the relevant landowner or land management agency to address the same consistent with ORS Chapter 569.

Goals, objectives, and noxious weed control activities for the Project include:

- Inventory the existing occurrence, distribution, and abundance of noxious weeds in the Project ROW prior to construction;
- Monitor and document the occurrence, distribution, and abundance of noxious weeds in the Project ROW following the completion of construction activities along each Project segment;
- Reduce infestations of noxious weeds caused by Project-related activities and prevent the spread of new and existing populations within the Project ROW both during construction as well as operations of the Project;
- Ensure any occurrences of threatened and endangered plants along the transmission line are not negatively impacted by noxious weed-control activities by including site-specific planning where needed; and
- Coordinate and consult with appropriate land-management personnel, as appropriate, regarding noxious weed inventory and control activities conducted by IPC.

2.0 REGULATORY FRAMEWORK

The following provides a brief overview of federal and state legislation and regulatory compliance applicable to noxious weeds that have been considered in development of this Plan.

2.1 State of Oregon

In Oregon, noxious weeds are defined under ORS 569.175 as “terrestrial, aquatic, or marine plants designated by the State Weed Board under ORS 569.615 as among those representing the greatest public menace and as a top priority for action by weed control programs.” Noxious weeds have been declared by ORS 569-350 as a menace to public welfare and control of these plants is the responsibility of private landowners and operators, and county, state, and federal governments. The Oregon State Weed Board (OSWB) was established under ORS 561.650. The OSWB provides direction to control noxious weeds at the state level and develops and maintains the State Noxious Weed List. The OSWB and the Oregon Department of Agriculture (ODA) classify noxious weeds in Oregon in accordance with the ODA Noxious Weed Classification System (ODA 2016a). There are three designations under the State’s system:

- **Class “A” State Listed Noxious Weed:** A weed of known economic importance which occurs in the state in small enough infestations to make eradication or /containment possible; or is not known to occur in Oregon, but its presence in neighboring states makes future occurrence seem imminent.
- **Recommended action:** Infestations are subject to eradication or intensive control when and where found.

- **Class "B" State Listed Noxious Weed:** A weed of economic importance that is regionally abundant but may have limited distribution in some counties.
- **Recommended action:** Limited to intensive control at the state, county, or regional level as determined on a site-specific, case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the primary control method.
- **Class "T" Designated State Noxious Weeds:** Priority noxious weed species selected and designated by the OSWB as the focus of prevention and control actions by the Noxious Weed Control Program. "T"-designated noxious weeds are selected annually from either the "A" or "B" list and the ODA is directed to develop and implement a statewide management plan for these species.

In addition to the state-listed noxious weeds, the five Oregon counties crossed by the Project (Baker, Malheur, Morrow, Umatilla, and Union) each maintain a county-designated noxious weed list. These lists also classify noxious weeds into different categories (typically Class A, B, and C); however, the definition of each class differs slightly from the state classification system and differs slightly by county. IPC will review the state and county lists annually to ensure that monitoring and control actions are targeting the appropriate species.
Recommended actions for noxious weeds in the five Oregon counties crossed by the Project are as follows:

- **Class "A" County Noxious Weed:** Recommended for mandatory control county-wide in Baker, Malheur, and Morrow counties and subject to intensive control where found in Umatilla and Union counties.
- **Class "B" County Noxious Weed:** Recommended for moderate to intensive control at the county level in Baker County; subject to intensive control or eradication where feasible at the county level in Malheur and Morrow counties; limited to intensive control county-wide as determined on a case-by-case basis in Umatilla County; recommended for moderate control and/or monitoring at the county level in Union County.
- **Class "C" County Noxious Weeds:** Recommended for moderate control at the county level in Baker County; treated at landowner's discretion in Malheur County. Morrow, Umatilla, and Union counties do not currently list Class C noxious weeds.
- Baker, Malheur, Morrow, Umatilla, and Union county weed management agencies were contacted to inquire about noxious weeds of greatest concern in each of the counties, as well as to determine if each county requires or implements specific noxious weed control methods or best management practices. No specific best management practices were requested by any of the county weed management personnel contacted.

2.2 Federal Noxious Weed Act of 1974 (as amended 1990)

The Federal Noxious Weed Act of 1974 (7 United States Code 2801-2813) defines a noxious weed as "a plant which is of foreign origin, is new to, or is not widely prevalent in the United States, and can directly or indirectly injure crops or other useful plants, livestock, or the fish and wildlife resources of the United States, or the public health." This act directs each federal agency to develop and coordinate a management program for control of undesirable plants on federal lands under the agency's jurisdiction.

2.3 Executive Order 13112

Executive Order 13112 (1999) directs federal agencies to: (1) identify actions that may affect the status of an invasive species; (2)(a) prevent introduction of such species; (b) detect and control such species; (c) monitor population of such species; (d) provide for restoration of native

species; (e) conduct research on invasive species and develop technologies to prevent introduction of such species; (f) promote public education of such species; and (3) not authorize, fund, or carry out actions likely to cause the introduction or spread of invasive species in the United States or elsewhere unless the benefits of the action clearly outweigh the harm and the agencies take steps to minimize the harm.

2.4 U.S. Department of Agriculture, Forest Service

United States Forest Service (USFS) Manual 2900 - Invasive Species Management directs each Forest Supervisor to "manage aquatic and terrestrial invasive species (including vertebrates, invertebrates, plants, and pathogens)" on all National Forest System lands. Per the manual, invasive species management activities of National Forest System lands will be conducted according to the following objectives: 1) prevention, 2) early detection and rapid response, 3) control and management, 4) restoration, 5) organizational collaboration. Additionally, the Decision Memo for Forest Plan Amendment #48 (USFS 2017) outlines the use of the 11 herbicides approved for use on the Wallowa-Whitman National Forest.

2.5 Bureau of Land Management

The Bureau of Land Management (BLM) defines a noxious weed as "a plant that interferes with management objectives for a given area of land at a given point in time." BLM Manual 9015 (BLM 1992) directs the BLM to manage noxious weeds and undesirable plants on BLM lands by preventing establishment and spread of new infestations, reducing existing population levels, and managing and controlling existing stands. Required management for ground-disturbing actions includes determining the risk of spreading noxious weeds associated with the project and ensuring contracts contain provisions which hold contractors responsible for the prevention and control of noxious weeds caused by their operations if the activity is determined to be moderate to high risk. Additionally, herbicide treatment of noxious weeds on BLM lands in Oregon follows the guidelines outlined in the Decision Record for Integrated Invasive Plant Management for the Vale District (BLM 2016a). The district-wide decision identified 17 herbicides available for use on BLM lands crossed by the Project.

2.6 Bureau of Reclamation

The Bureau of Reclamation (BOR) is responsible for identification and proper management of pests on BOR lands in accordance with federal, state, and local policies, laws, and standards. The BOR's Reclamation Manual (BOR 1996a, 1996b) includes standards and directives for pest management and Integrated Pest Management (Reclamation Manual ENV-01). Additionally, the Department of the Interior (DOI) Departmental Manual (609 DM 1; DOI 1995) states that "it is the DOI's policy to control undesirable plants on the lands, waters, or facilities under its jurisdiction to the extent economically practicable and as needed for resource/environmental protection and enhancement, as well as the accomplishment of resource management objectives and the protection of human health." This manual also provides directives and standards for control of undesirable plants and implementation of Integrated Pest Management programs on DOI lands including BOR land. In keeping with this policy, the use of Integrated Pest Management techniques is emphasized. These techniques combine the use of chemical controls (pesticides), mechanical controls (mowing, pulling), environmental controls (cultural methods), and biological controls (insects).

3.0 NOXIOUS WEEDS IN THE SITE BOUNDARY

This section of the Plan describes the known status of noxious weed species within the Site Boundary based on existing information, as well as results of field surveys of the Site Boundary. Section 3.1 discusses the state of Oregon listed noxious weeds that have the potential to occur in the counties crossed by the Project. Section 3.2 discusses the noxious weeds species identified within the Site Boundary based on existing BLM and USFS databases and those observed during field surveys.

3.1 Oregon State Noxious Weeds Lists

The ODA updates the state of Oregon noxious weed list each year (ODA 2016a). Currently, 140 plant species are listed as noxious in Oregon. As stated above, in addition to the state list of noxious weeds, the five Oregon counties crossed by the Project each maintain a county designated noxious weed list.

Table 1 lists the Oregon state listed noxious weeds known to occur within the counties that will be crossed by the Project. This list is based on information obtained from publicly available sources including the Oregon WeedMapper (ODA 2016b), Oregon Noxious Weed Profiles (ODA 2016c), the INVADERS database (University of Missoula-Montana 2016), and the U.S. Department of Agriculture Natural Resources Conservation Service PLANTS database (NRCS 2016). Based on these sources, 91 state and/or county listed noxious weed species have the potential to occur within the Site Boundary (Table 1).

Table 1. Designated Noxious Weeds Known to Occur or with the Potential to Occur within the Site Boundary

Scientific Name (Synonym Name)	Common Name	Oregon State Noxious Weed Category[1]	Oregon County Noxious Weed Category[2]	Project Counties in Which Known to Occur
Abutilon theophrasti	Velvetleaf	B	B (Baker, Union)	Baker,Union
Acroptilon repens (*Centaurea repens*)	Russian knapweed	B	A (Union) B (Baker, Malheur[3], Morrow, Umatilla)	Baker, Malheur, Morrow, Umatilla, Union
Aegilops cylindrica	Jointed goatgrass	B	A (Baker, Malheur) B (Morrow, Umatilla, Union)	Baker, Malheur, Morrow, Umatilla, Union
Ailanthus altissima	Tree of heaven	B	B (Baker)	Baker, Malheur, Morrow, Umatilla, Union
Alhagi maurorum (*A. pseudalhagi*)	Camelthorn	A	A (Malheur, Umatilla)	Umatilla
Alliaria petiolata	Garlic mustard	B, T	A (Union, Umatilla)	Umatilla
Ambrosia artemisiifolia	Ragweed	B	B (Umatilla) C (Malheur)	Malheur, Morrow, Umatilla, Union
Amorpha fruticosa	Indigo bush	B	B (Baker)	Baker, Malheur, Morrow, Umatilla
Anchusa officinalis	Common bugloss	B, T	A (Union, Umatilla) B (Baker)	Baker, Umatilla, Union
Bassia scoparia (*Kochia scoparia*)	Kochia; burning bush	B	B (Morrow, Umatilla) Agricultural Class B[5] (Union) C (Malheur)	Baker, Malheur, Morrow, Umatilla, Union
Bromus tectorum[6]	Cheatgrass	–	C (Malheur)	Baker, Malheur, Morrow, Umatilla, Union
Buddleja davidii (*B. variabilis*)	Butterfly bush	B	A (Baker)	Umatilla
Butomus umbellatus	Flowering rush	B, T	A/T (Baker)	Umatilla
Cannabis sativa	Marijuana	–	A (Umatilla)	Malheur
Cardaria chalepensis (*Lepidium chalepensis*)	Lens-podded whitetop	B	B (Baker, Malheur)	Malheur

Scientific Name (Synonym Name)	Common Name	Oregon State Noxious Weed Category[1]	Oregon County Noxious Weed Category[2]	Project Counties in Which Known to Occur
Cardaria draba *(Lepidium draba)*	Whitetop; hoary cress	B	A (Baker, Morrow, Union) B (Baker, Malheur, Umatilla)	Baker, Malheur, Morrow, Umatilla, Union
Carduus nutans	Musk thistle	B	A (Morrow) B (Baker, Malheur, Umatilla)	Baker, Malheur, Morrow, Umatilla, Union
Centaurea calcitrapa	Purple starthistle	A, T	A (Baker, Malheur, Umatilla)	Umatilla
Centaurea diffusa	Diffuse knapweed	B	A (Baker, Malheur, Morrow) B (Umatilla, Union)	Baker, Malheur, Morrow, Umatilla, Union
Centaurea nigrescens (*C. debeauxii; C. jacea x nigra; C. pratensis*)	Meadow knapweed Short-fringe knapweed	B	A (Malheur, Union)	Baker, Umatilla, Union
Centaurea solstitialis	Yellow starthistle	B	A (Baker, Malheur, Morrow, Union) B (Umatilla)	Baker, Malheur, Morrow, Umatilla, Union
Centaurea stoebe subsp. *micranthos* *(C. maculosa)*	Spotted knapweed	B, T	A (Baker, Malheur, Umatilla) B (Morrow, Union)	Baker, Malheur, Morrow, Umatilla, Union
Centaurea virgata *(C. triumfetti)*	Squarrose knapweed	A, T	A (Malheur)	Baker, Malheur, Union
Centromadia pungens subsp. *pungens*[8] (*Hemizonia pungens*)	Spikeweed; common tarweed	B	A (Baker, Morrow)	Morrow, Umatilla
Ceratocephala testiculata (*Ranunculus testiculatus*)	Bur buttercup	–	A (Umatilla) C (Baker)	Baker, Malheur, Morrow, Umatilla, Union
Chondrilla juncea	Rush skeletonweed	B, T	A (Baker, Malheur, Morrow, Umatilla, Union)	Baker, Malheur, Morrow, Umatilla, Union
Cichorium intybus	Chicory	–	B (Baker)	Morrow, Umatilla, Union
Cicuta douglasii[9]	Water hemlock	–	B (Morrow)	Malheur, Morrow, Umatilla, Union
Cirsium arvense	Canada thistle	B	B (Baker, Malheur,	Baker, Malheur, Morrow, Umatilla, Union

			Morrow, Umatilla, Union)	

Scientific Name (Synonym Name)	Common Name	Oregon State Noxious Weed Category[1]	Oregon County Noxious Weed Category[2]	Project Counties in Which Known to Occur
Cirsium vulgare	Bull thistle	B	B (Baker) Agricultural Class B[5] (Union) C (Malheur)	Baker, Malheur, Morrow, Umatilla, Union
Conium maculatum	Poison hemlock	B	A (Baker) B (Morrow, Umatilla) Agricultural Class B[5] (Union) C (Malheur)	Baker, Malheur, Morrow, Umatilla, Union
Convolvulus arvensis	Field bindweed	B, T	B (Baker, Morrow, Umatilla) C (Malheur)	Baker, Malheur, Morrow, Umatilla, Union
Conyza canadensis[9]	Horseweed; mares tail	–	A (Baker) Agricultural Class B[5] (Union)	Malheur, Union
Crupina vulgaris	Common crupina	B	A (Baker, Malheur, Morrow, Union, Umatilla)	Baker, Umatilla
Cuscuta spp.	Dodder	B	B (Morrow) C (Malheur)	Baker, Malheur, Morrow, Umatilla, Union
Cynoglossum officinale	Houndstongue	B	A (Baker, Morrow) B (Malheur, Union)	Baker, Malheur, Morrow, Umatilla, Union
Cyperus esculentus	Yellow nutsedge	B	C (Malheur)	Malheur, Morrow, Umatilla
Cytisus scoparius	Scotch broom	B	A (Union)	Baker, Umatilla, Union
Datura stramonium	Jimsonweed	–	A (Malheur)	Morrow, Union
Dipsacus fullonum	Fuller's teasel	–	B (Baker)	Baker, Morrow, Umatilla, Union
Elymus repens (*Agropyron repens*)	Quackgrass	–	B (Umatilla) Agricultural Class B[5] (Union) C (Malheur)	Malheur, Umatilla
Equisetum arvense[9]	Western horsetail	–	C (Malheur)	Baker, Malheur, Umatilla, Union

Euphorbia esula	Leafy spurge	B, T	A (Baker, Malheur, Morrow, Umatilla, Union)	Baker, Malheur, Morrow, Umatilla, Union
Euphorbia myrsinites	Myrtle spurge	B	A (Umatilla, Union) B (Baker, Morrow)	Baker, Malheur, Morrow, Umatilla, Union
Galium aparine[9]	Catchweed bedstraw	–	Agricultural Class B[5] (Union)	Baker, Malheur, Morrow, Umatilla, Union

Scientific Name (Synonym Name)	Common Name	Oregon State Noxious Weed Category[1]	Oregon County Noxious Weed Category[2]	Project Counties in Which Known to Occur
Halogeton glomeratus	Halogeton	B	C (Malheur)	Malheur
Hedera helix	English ivy	B	–	Union
Hibiscus trionum	Venice mallow	–	B (Baker)	Malheur
Hieracium aurantiacum (Pilosella aurantiacum)	Orange hawkweed	A, T	A (Union)	Morrow, Union
Hieracium caespitosum (*H. pratense; Pilosella caespitosum*)	Meadow hawkweed	B, T	A (Union)	Umatilla, Union
Hieracium piloselloides (Pilosella piloselloides)	King-devil hawkweed Tall hawkweed	A	A (Union)	Umatilla
Hyoscyamus niger	Black henbane	–	A (Baker)	Baker, Morrow, Umatilla
Hypericum perforatum	St. Johnswort; Klamathweed	B	A (Malheur) B (Baker, Morrow, Umatilla)	Baker, Malheur, Morrow, Umatilla, Union
Iris pseudacorus	Yellow flag iris	B	A (Baker, Morrow, Umatilla) B (Union)	Baker, Malheur, Umatilla, Union
Isatis tinctoria	Dyer's woad	B	A (Malheur)	Baker, Malheur, Umatilla, Union
Lathyrus latifolius	Perennial peavine	B	–	Baker, Morrow, Umatilla, Union
Lepidium latifolium	Perennial pepperweed	B, T	A (Baker, Malheur[10], Union) B (Malheur[10], Morrow)	Baker, Malheur, Morrow, Umatilla, Union

Linaria dalmatica	Dalmation toadflax	B, T	A (Baker, Malheur, Morrow) B (Umatilla, Union)	Baker, Malheur, Morrow, Umatilla, Union
Linaria vulgaris	Yellow toadflax	B	A (Malheur, Morrow) B (Baker)	Baker, Morrow, Umatilla, Union
Lythrum salicaria	Purple loosestrife	B	A (Baker, Morrow, Umatilla) B (Malheur, Union)	Baker, Malheur, Morrow, Umatilla, Union
Melilotus officinalis	Sweet clover	–	C (Malheur)	Baker, Malheur, Umatilla, Union
Myriophyllum spicatum	Eurasian watermilfoil	B	-	Morrow, Umatilla, Union

Scientific Name (Synonym Name)	**Common Name**	**Oregon State Noxious Weed Category[1]**	**Oregon County Noxious Weed Category[2]**	**Project Counties in Which Known to Occur**
Onopordum acanthium	Scotch thistle	B	A (Baker, Morrow) B (Malheur, Umatilla, Union)	Baker, Malheur, Morrow, Umatilla, Union
Orobanche minor	Small broomrape	B	–	Baker
Panicum miliaceum	Wild proso millet	–	A (Malheur)	Baker
Phalaris arundinacea	Reed canarygrass; ribbongrass	B, T	–	Baker, Malheur, Morrow, Union
Phragmites australis	Common reed	B	B (Malheur)	Malheur, Morrow, Umatilla, Union
Polygonum cuspidatum (Fallopia japonica)	Japanese knotweed	B	A (Baker, Union, Umatilla)	Baker, Malheur. Morrow, Umatilla, Union
Polygonum sachalinensis (*Fallopia sachalinense*)	Giant knotweed	B	A (Union)	Morrow, Umatilla
Potentilla recta	Sulfur cinquefoil	B	A (Malheur) B (Baker, Union)	Baker, Malheur, Morrow, Umatilla, Union
Rorippa sylvestris	Creeping yellow cress	B	A (Umatilla)	Morrow, Umatilla, Union
Rubus armeniacus	Armenian (Himalayan) blackberry	B	–	Baker, Malheur, Morrow, Umatilla, Union
Salsola tragus (S. iberica; S. kali)	Russian thistle	–	Agricultural Class B[5] (Union) C (Baker, Malheur)	Malheur, Morrow, Umatilla
Salvia aethiopis	Mediterranean sage	B	A (Malheur, Morrow) Watch List (Baker)	Baker, Malheur, Morrow, Umatilla Union
Secale cereal	Cereal rye	–	B (Morrow, Umatilla)	Union
Senecio jacobaea	Tansy ragwort	B, T	A (Baker, Malheur, Morrow, Umatilla, Union)	Baker, Malheur, Morrow, Umatilla, Union

Silybum marianum	Milk thistle	B	A (Malheur)	Umatilla
Solanum elaeagnifolium	Silverleaf nightshade	A	A (Malheur)	Baker, Umatilla
Solanum rostratum	Buffalobur	B	A (Baker, Malheur)	Baker, Malheur, Umatilla, Union
Sonchus arvensis	Perennial sowthistle	–	B (Morrow)	Baker, Morrow, Umatilla
Sorghum halepense	Johnsongrass	B	A (Malheur) B (Morrow, Umatilla)	Malheur, Morrow, Umatilla
Sphaerophysa salsula	Swainsonpea; Alkali swainsonpea	B	A (Malheur) B (Umatilla)	Morrow, Umatilla

Scientific Name (Synonym Name)	Common Name	Oregon State Noxious Weed Category[1]	Oregon County Noxious Weed Category[2]	Project Counties in Which Known to Occur
Taeniatherum caput-medusae	Medusahead rye	B	A (Union) B (Morrow) C (Baker, Malheur)	Baker, Malheur, Morrow, Umatilla, Union
Tamarix ramosissima	Saltcedar	B, T	A (Baker) B (Malheur)	Baker, Malheur, Morrow, Umatilla, Union
Tanacetum vulgare	Common tansy	–	B/T (Baker)	Baker, Umatilla
Tribulus terrestris	Puncturevine	B	B (Baker, Morrow, Umatilla, Union) C (Malheur)	Baker, Malheur, Morrow, Umatilla, Union
Ventenata dubia	Ventenata; North Africa grass	–	B (Baker, Malheur, Morrow, Union)	Baker, Umatilla, Union
Verbascum blattaria	Moth mullein	–	C (Baker)	Baker, Malheur, Umatilla, Union
Verbascum thapsus	Common mullein	–	C (Baker)	Baker, Umatilla, Union
Xanthium spinosum	Spiny cocklebur	B	A (Malheur)	Baker, Malheur, Morrow, Umatilla, Union

[1] – = not applicable
[2] This column includes county listed noxious weeds for the five counties in Oregon crossed by the Project.
[3] Owners or occupants in Malheur County with Russian knapweed infestations are required to control a minimum 20 percent of their annual infestation per discreet parcel of land per year. This includes a 50-foot buffer plus additional amounts that total 20 percent of the infestation.
[5] Agricultural Class B is defined as "…a weed of economic importance, specifically in Union county agriculture, which is both locally abundant and abundant in neighboring counties."
[6] Due to the widespread nature of cheatgrass (*Bromus tectorum*) within the Site Boundary, this species was not mapped during surveys and is not included in Table 2.
[8] Considered native in California, but introduced in Oregon (Baldwin and Strother 2006; Jaster et al. 2016).
[9] This species is native to Oregon.
[10] Perennial pepperweed is a "B" weed in the portion of Malheur County that the Project overlaps, though considered an "A" weed in a portion of Malheur County south of the Project.

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3.2 Current Noxious Weed Inventories and Surveys

Surveys for Oregon State and/or Baker, Malheur, Morrow, Umatilla, or Union county listed noxious weeds were conducted within the Site Boundary between 2011 through 2016 (Exhibit P1, Attachment P1-7a, Biological Survey Summary Report). Populations of target noxious weeds (i.e., species on the state or county lists) observed were mapped using Trimble Global Positioning System (GPS) units. Additionally, existing site-specific disturbances and land uses (e.g., grazing, grading, etc.) that could be contributing to the introduction, spread, or viability of weed populations were also recorded. Surveys were based on the current state and county noxious weed lists at the time of the surveys; therefore, some species listed in Table 1 were not surveyed for in all years.

Approximately 67 percent of the Site Boundary was surveyed during Terrestrial Visual Encounter Surveys, which included surveys for noxious weeds, conducted between 2011 through 2016 (Figure 1). Surveys were conducted in all areas with signed right-of-entry agreements. Those areas that were not surveyed, due to unsigned right-of-entry agreements or changes in the Proposed Route and alternative route, will be surveyed following issuance of the site certificate. Additionally, a preconstruction noxious weed inventory of areas that will be disturbed during construction will be conducted (see Section 3.3).

In addition to surveys of the Site Boundary conducted by Tetra Tech between 2011 through 2016, the BLM National Invasive Species Information Management System and USFS Current Invasive Plants Inventory databases (BLM 2016b; USFS 2016) were queried to determine known populations of noxious weeds within the Site Boundary. Table 2 lists the 36 noxious weed species observed within the Site Boundary during the 2011 through 2016 field surveys or recorded as occurring within the Site Boundary in the BLM and USFS databases and summarizes the acres of observed or recorded noxious weeds that occur within the Project construction and operation footprint.

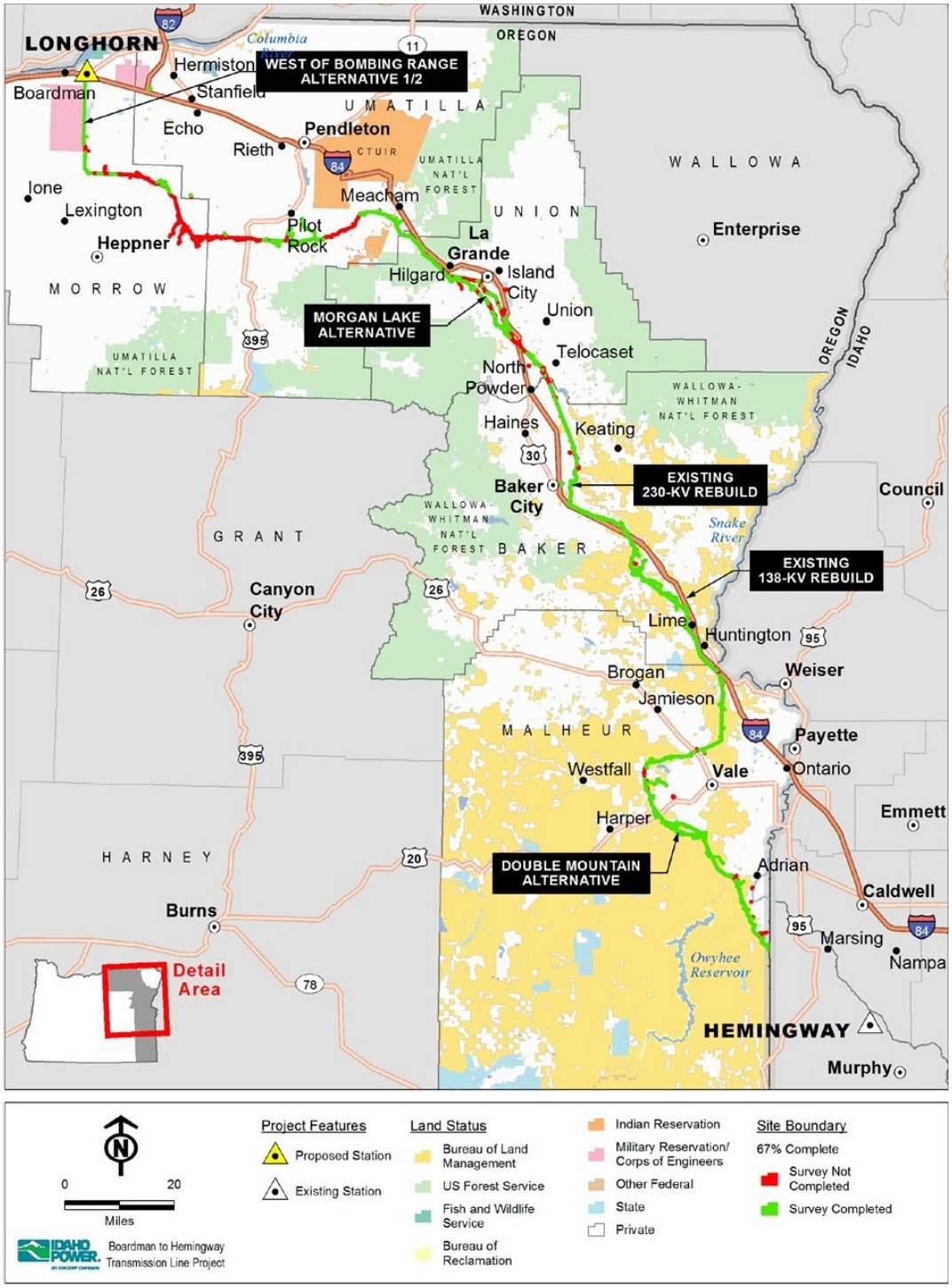

Figure 1. Terrestrial Visual Encounter Surveys within the Site Boundary 2011–2016

Table 2. Oregon State and County Listed Noxious Weeds Observed during 2011–2016 Field Surveys or From Existing Databases

Scientific Name (Synonym Name)	Common Name	Counties Where Observed[1]	Estimated Acres within Site Boundary	Estimated Acres within Construction Footprint[2]	Estimated Acres within Operation Footprint[2]
Acroptilon repens (*Centaurea repens*)	Russian knapweed	Morrow	5.51	1.42	0.49
		Umatilla	12.95	9.92	–
		Union	0.50	0.50	–
Aegilops cylindrica	Jointed goatgrass	Baker	37.06	3.43	2.11
		Umatilla	21.74	4.70	1.88
		Union	0.50	0.13	0.06
Ailanthus altissima	Tree of heaven	Umatilla	0.50	0.06	0.05
Bassia scoparia (*Kochia scoparia*)	Kochia; burning bush	Baker	6.18	1.23	0.78
		Malheur	6.27	1.27	0.11
		Morrow	4.92	1.80	0.20
		Umatilla	1.19	–	–
		Union	0.50	0.50	0.00
Cardaria draba (Lepidium draba)	Whitetop; hoary cress	Baker	208.80	40.10	9.31
		Malheur	185.80	44.50	7.42
		Union	6.08	5.98	–
Carduus nutans	Musk thistle	Baker	4.26	0.59	0.23
		Malheur	6.50	1.24	0.35
		Union	10.07	0.23	0.16
Centaurea diffusa	Diffuse knapweed	Baker	4.98	1.11	0.19
		Malheur	1.81	0.08	0.04
		Morrow	23.58	4.53	0.77
		Umatilla	0.45	0.32	0.04
		Union	11.79	1.69	0.19
Centaurea stoebe subsp. *micranthos (C. maculosa)*	Spotted knapweed	Baker	0.58	0.08	0.04
		Malheur	1.91	0.11	0.06
		Morrow	0.10	–	–
		Umatilla	1.99	–	–
Centromadia pungens subsp, *pungens* (*Hemizonia pungens*)	Spikeweed; common tarweed	Morrow	0.46	–	–
Ceratocephala testiculata (*Ranunculus testiculatus*)	Bur buttercup	Baker	26.95	9.69	1.23
		Malheur	185.07	43.91	9.61
		Umatilla	0.10	0.10	–
Chondrilla juncea	Rush skeletonweed	Baker	9.07	0.21	0.17
		Malheur	326.80	67.73	16.65
		Morrow	0.06	–	–
Cichorium intybus	Chicory	Baker	0.10	0.03	0.02
		Union	10.85	2.68	0.59

Scientific Name (Synonym Name)	Common Name	Counties Where Observed[1]	Estimated Acres within Site Boundary	Estimated Acres within Construction Footprint[2]	Estimated Acres within Operation Footprint[2]
Cirsium arvense	Canada thistle	Baker	10.70	3.26	0.46
		Malheur	3.95	0.56	0.35
		Morrow	7.23	1.30	0.23
		Umatilla	28.61	4.94	1.14
		Union	21.61	4.08	0.83
Cirsium vulgare	Bull thistle	Baker	1.70	0.17	0.09
		Morrow	0.10	–	–
		Umatilla	3.45	0.33	0.14
		Union	3.15	0.67	0.32
Conium maculatum	Poison hemlock	Baker	1.90	0.18	0.16
		Morrow	0.33	0.33	–
		Umatilla	0.16	0.06	–
Convolvulus arvensis	Field bindweed	Baker	67.77	8.90	2.96
		Malheur	59.52	22.24	2.71
		Umatilla	27.34	3.71	1.43
		Union	4.88	0.71	0.56
Cynoglossum officinale	Houndstongue	Baker	24.20	3.41	2.29
		Umatilla	21.81	5.70	1.46
		Union	63.42	8.67	2.50
Dipsacus fullonum	Fuller's teasel	Baker	3.52	0.49	0.42
		Morrow	0.33	–	–
		Umatilla	23.21	3.66	1.21
		Union	3.82	0.11	0.06
Euphorbia esula	Leafy spurge	Baker	0.69	0.04	0.03
Galium aparine	Catchweed bedstraw	Baker	1.09	–	–
		Union	0.10	0.01	–
Halogeton glomeratus	Halogeton	Malheur	6.45	1.14	0.70
		Umatilla	0.10	0.02	0.01
Hypericum perforatum	Klamathweed; St. Johnswort	Baker	0.10	0.05	0.02
		Umatilla	24.38	6.27	1.23
		Union	10.48	2.06	0.21
Lepidium latifolium	Perennial pepperweed	Baker	4.24	0.65	–
		Malheur	5.52	0.33	0.16
Linaria dalmatica	Dalmation toadflax	Malheur	0.24	0.04	0.03
Linaria vulgaris	Yellow toadflax	Umatilla	9.92	9.92	–
Melilotus officinalis	Sweet clover	Baker	0.82	0.03	0.02
		Malheur	1.00	0.02	0.01
		Umatilla	0.10	–	–
Onopordum acanthium	Scotch thistle	Baker	156.38	25.30	9.61
		Malheur	263.13	72.69	10.71
		Morrow	2.51	0.13	0.07
		Umatilla	3.19	0.37	0.15
		Union	16.43	5.56	0.88

Scientific Name (Synonym Name)	Common Name	Counties Where Observed[1]	Estimated Acres within Site Boundary	Estimated Acres within Construction Footprint[2]	Estimated Acres within Operation Footprint[2]
Potentilla recta	Sulfur cinquefoil	Baker	0.09	–	–
		Union	19.06	1.86	1.29
Salsola tragus (S. iberica; S. kali)	Russian thistle	Baker	20.33	7.81	1.50
		Malheur	75.94	18.19	3.62
		Morrow	38.89	17.80	6.10
		Umatilla	5.32	1.47	0.33
		Union	0.46	0.09	0.08
Salvia aethiopis	Mediterranean sage	Malheur	5.61	1.38	–
Taeniatherum caput-medusae	Medusahead rye	Baker	156.28	23.79	6.83
		Malheur	101.65	29.35	4.64
		Morrow	0.10	0.03	0.02
		Umatilla	124.58	24.92	5.20
		Union	41.92	7.88	2.22
Tamarix ramosissima	Saltcedar	Malheur	102.86	17.59	4.87
		Umatilla	0.74	0.22	0.10
Tribulus terrestris	Puncturevine	Baker	0.23	0.16	0.04
		Union	0.40	0.10	0.08
Ventenata dubia	Ventenata; North Africa grass	Baker	0.50	0.31	0.05
		Union	0.50	0.49	0.04
Verbascum blattaria	Moth mullein	Baker	0.09	–	–
		Malheur	0.10	–	–
		Umatilla	0.10	–	–
Verbascum thapsus	Common mullein	Baker	17.23	3.31	1.41
		Malheur	0.10	–	–
		Umatilla	0.50	0.03	0.02
		Union	9.01	3.07	0.31

[1] Not every noxious weed listed is considered noxious in the state of Oregon or in every county where observed. Refer to Table 1 for state and county designations.
[2] "–" = not observed within construction or operation footprint.

4.0 PRECONSTRUCTION NOXIOUS WEED INVENTORY

4.1 Procedures for Preconstruction Inventory

Prior to commencing preconstruction noxious weed surveys, IPC will contact all appropriate land management agencies to review noxious weed lists, discuss noxious weed identification, and exchange existing data on known noxious weed locations. The surveys will be conducted during the growing season that is appropriate for observing and identifying noxious weed species. Surveyors will be trained to identify Oregon flora, specifically native plants, noxious weeds and T&E plant species. IPC will conduct the preconstruction noxious weed inventory in the following areas:

- Transmission line: Entirety of the ROWs and/or easements;
- New roads: Entirety of the ROWS and/or easements;

- Existing roads needing substantial improvement: Only areas involving ground-disturbing construction and/or improvement (e.g., new cutouts);
- Communication stations: Entirety of the ROWs and/or easements;
- Multi-use areas: Entirety of the temporary ROWs and/or licenses; and
- Pulling and tensioning sites: Entirety of the temporary ROWs and/or licenses.

4.2 Results of Preconstruction Inventory

The results of the preconstruction surveys will be included in the Final Noxious Weed Plan and will appear in the following form:

- A preconstruction noxious weed inventory map delineating pre-existing noxious weed infested areas; and
- A table(s) identifying the acreage(s) of each noxious weed species by county and areas set forth above in Section 4.1.

5.0 NOXIOUS WEED MANAGEMENT

This section of the Plan describes the steps IPC will take to prevent and control the establishment and spread of noxious weeds during both construction and operation of the Project. For EFSC purposes, IPC will only be responsible for controlling noxious weeds that are within Project ROWs and that are a result of the company's construction- or operation- related, surface-disturbing activities in the following areas:

- Transmission line: Entirety of the ROWs and/or easements;
- New roads: Entirety of the ROWs and/or easements;
- Existing roads needing substantial improvement: Only areas involving ground-disturbing construction and/or improvement (e.g., new cutouts);
- Communication stations: Entirety of the ROWs and/or easements;
- Multi-use areas: Entirety of the temporary ROWs and/or licenses; and
- Pulling and tensioning sites: Entirety of the temporary ROWs and/or licenses.

These areas where surface disturbing activities will occur are collectively referred to as "work sites." For EFSC purposes, IPC is not responsible for controlling noxious weeds that occur outside of the Project ROWs or for controlling or eradicating noxious weeds present prior to the Project. With respect to pre-existing noxious weed infestations, IPC recognizes ORS Chapter 569 imposes onto occupiers of land within a weed district certain obligations to control and prevent weeds; if IPC identifies pre-existing weed infestations within a Project ROW, IPC will work with the landowner or land management agency to address the same consistent with ORS Chapter 569.

The management of noxious weeds will be considered throughout all stages of the Project and will include:

- Educating all construction personnel regarding locations of noxious weed infestations and the importance of preventive measures and treatment methods.
- Implementing measures to prevent the spread of noxious weeds during construction, operation, and maintenance activities.
- Treating noxious weed infestations both before and after Project construction.

Weed control and prevention measures will adhere to all agency standards and guidelines.

5.1 Education and Personnel Requirements

Prior to construction, all construction personnel will be instructed on the importance of controlling noxious weeds. As part of start-up activities, and to help facilitate the avoidance of existing infestations and identification of new infestations, Idaho Power will provide information and training to all construction personnel regarding noxious weed identification and management. The importance of preventing the spread of noxious weeds in areas not currently infested, and controlling the proliferation of noxious weeds already present in the Project ROW, will be emphasized.

IPC will ensure that noxious weed management actions will be carried out by specialists with the following qualifications:

- Experience in native plant, non-native and invasive plants, and noxious weed identification specific to listed noxious weeds per affected county;
- Experience in noxious weed mapping;
- If chemical control is used, specialists must possess a Commercial or Public Pesticide Applicator License from the ODA or possess an Immediately Supervised Pesticide Trainee License and be supervised by a licensed applicator;
- Training in weed management or Integrated Pest Management with an emphasis in weeds; and
- Experience in coordination with agency and private landowners.

5.2 Prevention

Measures will be implemented to prevent the spread of noxious weeds during construction activities, reclamation efforts, and O&M activities. Detailed information regarding reclamation is contained in Exhibit P1, Attachment P1-3, Reclamation and Revegetation Plan.

5.2.1 Vehicle Cleaning

To prevent the spread of noxious weeds during construction, all Construction Contractor(s) vehicles and equipment will be cleaned using high-pressure air or water equipment prior to arrival at the work sites. Specifically, all Construction Contractor(s) will clean construction vehicles and equipment at the Project multi-use areas or other cleaning stations each night or morning prior to returning to the Project construction areas. IPC will include in the Final Noxious Weed Plan additional protocols for frequency of cleaning vehicles as construction progresses along the ROW. The cleaning activities will concentrate on tracks, feet, or tires and the undercarriage with special emphasis on axles, frame, cross members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs will be swept out or vacuumed. Additionally, when moving from noxious weed-contaminated areas to other areas along the transmission line ROW, all construction vehicles and equipment will be cleaned using compressed water or air in designated wash stations before proceeding to new locations. IPC may avoid such cleaning if the Company demonstrates, in consultation with ODOE and the relevant county weed department, that Idaho Power has sufficiently controlled the weed contamination or that seasonal limitations will be effective in avoiding the spread of the noxious weeds. All washing of construction vehicles and equipment must be performed in approved wash stations.

Vehicle cleaning stations will be located within each of the Project multi-use areas as identified in Exhibit B and Exhibit C of this application as well as other locations as necessary. IPC will include in the Final Noxious Weed Plan a detailed design identifying all of the components of the wash stations, including rock surface and geomembrane layer to provide a barrier between

noxious weeds and seeds and the soil for approval by the appropriate land management agency and ODOE. IPC will also provide a description of how residue from the wash station will be disposed of for approval by the appropriate land management agency and the ODOE. Where feasible, construction will begin in noxious weed-free areas before operating in noxious weed- infested areas. The feasibility of this approach will be determined after survey data is completed to identify noxious weed- free and weed-infested areas.

5.2.2 Flagging and Restricted Access

Prior to construction, areas of noxious weed infestations identified during the preconstruction surveys will be flagged by the Construction Contractor(s) and reviewed by the appropriate land management agency and ODOE. This flagging will alert construction personnel to the presence of noxious weeds and will prevent access to these areas until noxious weed control measures, as applicable, have been implemented.

All movement of construction vehicles outside of the ROW will be restricted to pre-designated access, contractor-acquired access, or public roads. All construction sites and access roads, including overland access routes, will be clearly marked or flagged at the outer limits prior to the onset of any surface-disturbing activity. All personnel will be informed that their activities must be confined within the marked or flagged areas. Disturbance of soils and vegetation removal will be limited to the minimum area necessary for access and construction.

Preventive measures, such as quarantine and closure, will be implemented to reduce and contain existing noxious weed populations. Flagging will alert personnel and prevent access into areas where noxious weeds occur. Construction disturbance will be minimized in these areas until control measures have been implemented, with the exception of reclamation treatments, as applicable. Construction personnel will inspect, remove, and appropriately dispose of noxious weed seed and plant parts found on their clothing and equipment.

5.2.3 Soil Management

Where preconstruction surveys have identified noxious or invasive weed species infestations, topsoil and other soils will be placed next to the infested area and clearly identified as coming from an infested area. Movement of stockpiled vegetation and salvaged topsoil will be limited to eliminate the transport of soil-borne noxious weed seeds, roots, or rhizomes, and will be marked as containing noxious seed materials to avoid mixing with weed-free soil. Topsoil will be returned to the area it was taken from and will not be spread in adjacent areas. If the topsoil is not suitable for backfill, it will be spread in another previously disturbed area and clearly identified for future weed treatments as applicable. As directed by the BLM or USFS, the Construction Contractor(s) may be required to provide additional treatments (i.e., pre-emergent pesticides) to prevent return of noxious weeds.

Soil stockpiles in areas containing noxious weeds will be kept separate from soil removed from areas that are free of noxious weed species, and the soil will be replaced in or near the original excavation. If requested by the applicable land management agency, soil stockpiles will be covered with plastic if the soil stockpile will be in place for 2 weeks or longer and is not actively being used. On lands managed by the USFS or per private landowner request, stockpiles will not be covered with plastic.

5.2.4 Reclamation

To help limit the spread and establishment of noxious weeds in disturbed areas, desired vegetation needs to be established promptly after disturbance. IPC will rehabilitate significantly disturbed areas as soon as possible after ground-disturbing O&M activities and during the optimal period. To minimize potential damage from wildland fires, IPC will not reseed areas within a 20-foot radius around structures. IPC will treat and reseed disturbed areas in

accordance with the Final Reclamation and Revegetation Plan. This includes reseeding significantly disturbed areas with a non-invasive seed mix approved by the applicable land management agency, ODOE, or landowner and the Oregon Seed Certification Service.

5.2.5 Materials Management

Straw, hay, mulch, gravel, seed, and other imported materials must be certified weed-free. If certified weed-free materials are not available, then alternative materials will be used with agency approval. For example, certified weed-free gravel is not available in Oregon. The Final Noxious Weed Plan will address noxious weed inventory and treatment of gravel pits from which material will be drawn.

5.3 Treatments

Noxious weed control measures will be implemented prior to construction, during construction, and following construction. Control of noxious weeds will be implemented through mechanical, biological, and chemical control measures. IPC will be responsible for providing the necessary personnel or hiring a contractor, with qualifications demonstrating experience in listed noxious weeds in each of the five counties for which facility components would be sited, to implement noxious weed control procedures. In the event new noxious weed populations are identified on the Project in the future, the protocols and methods outlined in this Plan will be followed.

Methods to control noxious weeds associated with Project activities may include mechanical, biological, or chemical measures. Each of these control methods is briefly described below. Noxious weed control measures will be implemented in accordance with existing state and county regulations and applicable land management agency or ODOE requirements. Control measures will be based on species-specific and site-specific conditions (e.g., proximity to water or riparian areas, agricultural areas, occurrence of special status plant species, plant phenology, and season of application) and will be coordinated with the appropriate land management agencies and ODOE, as well as the OSWB and county weed boards or weed control districts, and the Project's weed management specialist. Following preconstruction surveys, the weed management specialist will provide a detailed control methodology for each noxious weed species to be controlled. These species-specific control methodologies will be documented in the Final Noxious Weed Plan.

For EFSC purposes, IPC will only be responsible for treating noxious weeds that are within Project ROWs and that are a result of the company's construction- or operation-related, surface-disturbing activities in the following areas:

- Transmission line: Entirety of the ROWs and/or easements;
- New roads: Entirety of the ROWs and/or easements;
- Existing roads needing substantial improvement: Only areas involving ground-disturbing construction and/or improvement (e.g., new cutouts);
- Communication stations: Entirety of the ROWs and/or easements;
- Multi-use areas: Entirety of the temporary ROWs and/or licenses; and
- Pulling and tensioning sites: Entirety of the temporary ROWs and/or licenses.

For EFSC purposes, IPC is not responsible for treating noxious weeds that occur outside of the Project ROWs or for controlling or eradicating noxious weeds that were present prior to the Project. With respect to pre-existing weed infestations, IPC recognizes ORS Chapter 569 imposes onto occupiers of land within a weed district certain obligations to control and prevent weeds; if IPC identifies pre-existing weed infestations within a Project ROW, IPC will work with the relevant landowner or land management agency to address the same consistent with ORS Chapter 569.

5.3.1 Types of Treatments

5.3.1.1 Mechanical

Mechanical control methods rely on removal of plants and/or cutting roots with a shovel or other hand tools or equipment that can be used to remove, mow, or disc weed populations. Mechanical methods are useful for smaller, isolated populations of noxious weeds in areas of sensitive habitats, or if larger populations occur in agricultural lands, where tillage can be implemented. Some rhizomatous plants can spread by discing or tillage; therefore, implementation of this method will be species specific. If such a method is used in areas to be reclaimed, subsequent seeding will be conducted to re-establish a desirable vegetative cover that will stabilize the soils and slow the potential re-invasion of noxious weeds. Discing or other mechanical treatments that disturb the soil surface within native habitats will be avoided in favor of herbicide application, which is an effective means of reducing the size of noxious weed populations as well as preventing the establishment of new colonies.

5.3.1.2 Biological

Biological control involves the use of living organisms (insects, diseases, and livestock) to control noxious weeds to achieve management objectives. Many noxious weed and invasive plants species have been introduced recently into North America and have few natural enemies to control their population. The biological control agent is typically adapted to a specific species and selected for their ability to attack critical areas of the plant that contribute to its persistence. One component of the ODA's Weed Control Policy is developing and managing a biological weed control program (ODA 2016a). Biological controls will be utilized where appropriate along the Project ROW in coordination with county weed supervisors or appropriate land management agency.

5.3.1.3 Chemical

Chemical control can effectively remove noxious weeds through use of herbicides. Herbicide treatments can be effective for large populations of noxious weeds where other means of control may not be feasible. On federally managed lands, the type of herbicide and method of use will be approved by the applicable land-managing agency prior to their use. On private and state lands, appropriate federal and state approved herbicides will be used.

BLM (2016a) lists herbicides acceptable for use on BLM-administered lands in the Vale District. In addition to being approved by the BLM nationally, the herbicides are registered with the Environmental Protection Agency and the State of Oregon (BLM 2016a). USFS (2017) outlines the use of the 11 herbicides approved for use on the Wallowa-Whitman National Forest. The herbicides listed in Appendix A – Agency-Approved Herbicides may be used in the Project area after coordination with the Construction Contractor(s) and after submittal of a Pesticide Use Proposal (PUP) (see below). Revisions to the approved pesticide list will occur in conjunction with agency-approved pesticide list updates.

Application of herbicides on BLM or USFS land will also require submittal of PUPs, which identify and describe the location of the area to be treated, the target species, the herbicide and application rate, and application method to be used, as well as describing all anticipated impacts to non-target species and susceptible areas (BLM 2016a). PUPs may also be required for treatment on BOR-managed lands. Herbicides approved for use within the Project ROW will be reviewed and approved by the BLM, USFS, ODA, and County Weed Supervisors or Superintendents prior to beginning construction and/or prior to use. Prior to any herbicide application on federally controlled lands, a PUP that includes the dates and locations of application, target species, herbicide, adjuvants, and application rates and methods (e.g., spot spray vs. boom spray) and anticipated impacts to non-target species and susceptible areas will

be submitted. Herbicide will not be applied prior to notification and receipt of written approval from the applicable land management agency, ODOE, or private landowner.

A licensed commercial pesticide (herbicide) operator (or IPC staff licensed applicator or supervised trainee), certified by the ODA, will perform the application using herbicides selected and approved by the appropriate land management agency and ODOE in accordance with applicable laws, regulations, and permit stipulations. The pesticide applicator will have readily available copies of the appropriate safety data sheets for the herbicides used. All pesticide applications must follow Environmental Protection Agency label instructions, as well as federal, state, and/or county regulation, BLM and USFS recommendations, and landowner agreements. Application of herbicides will be suspended in accordance with herbicide labels and county, state, and federal regulations (e.g., strong winds, etc.), and all herbicide spills will be reported in accordance with applicable laws and requirements.

Transportation, mixing, and storage of herbicides will include the following provisions:

- Concentrate will be transported only in approved containers in a manner that will prevent tipping or spilling, and in a location isolated from the vehicle's driving compartment, food, clothing, and safety equipment.
- Mixing will be done over a drip-catching device in an area devoid of sensitive vegetation and in an area that will limit human, pet, and wildlife exposure. Flowing water, wetlands, or other areas of sensitive resources where herbicides may be applied will be detailed in the Final Noxious Weed Plan. Areas of flowing water, wetlands, or other sensitive resources where herbicide use will be prohibited will be described in the Final Noxious Weed Plan and be identified on construction maps and flagged.
- All herbicide equipment and containers will be inspected daily for leaks.
- Disposal of spent containers will be in accordance with the herbicide label.

Herbicides may be applied using a broadcast applicator mounted on a truck or all-terrain vehicle, backpack sprayers, hand sprayers, or any other agency-approved method as conditions dictate. Herbicide applications will be conducted by licensed operators or under the supervision of a licensed operator in accordance with state laws and BLM and USFS weed policies. Vehicle-mounted sprayers (e.g., handgun, boom, and injector) may be used in open areas readily accessible by vehicle. Where allowed, a broadcast applicator will likely be used. In areas where noxious weeds are more isolated and interspersed with desirable vegetation, noxious weeds will be targeted by hand application methods (e.g., backpack spraying), thereby avoiding other plants. Herbicide applications will follow all label and land manager guidelines, especially for treatments near threatened and endangered species and waterbodies. Calibration checks of equipment will be conducted at the beginning and periodically during spraying to ensure proper application rates are achieved.

State and federal herbicide recording requirements, including BLM and USFS recording requirements, will be followed. Appendix B contains a list of approved herbicides that may be used, target species, best time for application, and application rates. IPC will coordinate with federal land-managing agencies annually to review any potential revisions to the agencies' lists of approved herbicides.

Final species-specific noxious weed control methodologies will be included by the Construction Contractor(s) in the Final Noxious Weed Plan. Herbicide applications will be controlled, as described in Section 7.0 – Pesticide Application, Handling, Spills, and Cleanup, to minimize the impacts on the surrounding vegetation.

5.3.2 Preconstruction Treatments

Based on the preconstruction noxious weed inventory, Idaho Power will identify areas where preconstruction noxious weed control measures will be implemented. Treatments will be conducted prior to the start of ground-disturbing activities and at the time most appropriate for the target species.

Noxious weed species on Oregon's OSWB Class A, B, and T lists; Baker, Malheur, Morrow, Umatilla, and Union county Class A and B lists; and priority invasive plant species on the Wallowa- Whitman National Forest will be treated prior to the start of ground-disturbing activities. For other noxious weed species, the decision whether to treat the weeds prior to the start of construction activities will be based on the nature and extent of the infestation, surrounding conditions (e.g., the predominance and density of infestations noxious weeds adjacent to the ROW), landowner permission, land-managing agency requests, timeliness of land-managing agency approval, and the construction schedule. Treatment options could consist of mechanical control, hand spraying of herbicides, and biological controls; the exact method of control will be approved by the land-managing agency or landowner prior to use and will be documented in the Final Noxious Weed Plan. All use of herbicides will comply with the label restrictions, as well as federal, state, and/or county regulations and landowner agreements. All areas treated will be documented using GPS technology and will be included in an annual report.

5.3.3 Treatments during Construction

The prevention measures described above in Section 5.2 include certain treatment measures that will be taken during construction to avoid, minimize, and mitigate the risk of spreading or introducing noxious weed species due to Project construction activities.

5.3.4 Post-Construction Treatments

Noxious weed control efforts will occur at least once annually for the first 5 years post-construction. When it is determined that an area of the Project has successfully controlled noxious weeds at any point during the first 5 years of control and monitoring, IPC will request concurrence from ODOE. If ODOE concurs, IPC will continue to monitor the sites as described below in Section 6.1, but will cease treatment unless determined to be necessary through subsequent monitoring. If control of noxious weeds is deemed unsuccessful after 5 years of monitoring and noxious weed control actions, IPC will coordinate with ODOE regarding appropriate steps forward. At this point, IPC may suggest additional noxious weed control techniques or strategies, or monitoring, or IPC may propose mitigation to compensate for any permanent habitat loss.

As described above, control efforts will be limited to noxious weed species on Oregon's OSWB Class A, B, and T lists; Baker, Malheur, Morrow, Umatilla, and Union county Class A and B lists; and priority invasive plant species on the Wallowa-Whitman National Forest. Using the prior years' treatment and monitoring information, post-construction noxious weed treatment will be planned by IPC and coordinated with the applicable land-managing agencies to ensure treatment will be conducted at the proper growing period and during favorable environmental conditions.

Herbicide use will be planned and coordinated with the applicable agencies and will be based on the results of the prior years' monitoring data to ensure spraying is conducted only where necessary, in areas approved for herbicide use, during the proper growing period, during favorable environmental conditions, and using only the appropriate and agency-approved chemicals to control target noxious weed species.

5.4 Reclamation Actions

As specified in Exhibit P1, Attachment P1-3, Reclamation and Revegetation Plan, reclamation activities will assist in:

- Restoring plant communities and associated wildlife habitat and range;
- Preventing substantial increases in noxious weeds in the Project area;
- Minimizing Project-related soil erosion; and
- Reducing visual impacts on sensitive areas caused by construction activities.

Measures that will be implemented during reclamation activities that will help prevent the spread and establishment of noxious weeds include applying agency-approved seed mixes Project-wide (except in agricultural areas) to the appropriate habitat type, unless directed otherwise by the land management agency and/or landowner. Additionally, the Construction Contractor(s) or vegetation specialist may recommend modified seeding application rates and timing of implementation to achieve site-specific noxious weed management objectives.

Seed mixes will be determined by soil type and site-specific conditions and will be provided to the Construction Contractor(s) by a BLM or USFS specialist, ODOE, or landowner. If areas are not immediately seeded after construction because of weather or scheduling constraints, all noxious weeds will be adequately controlled before seeding. Appropriate herbicides will be used to ensure fall seedings are not affected by residual herbicides.

6.0 MONITORING AND REPORTING

6.1 Monitoring

The objectives of the noxious weed monitoring surveys are to: 1) identify any new noxious weed populations or infestations, and 2) monitor existing infestations and affected/disturbed areas. Monitoring will be initiated during the first growing season following construction and will occur during the appropriate growing season when noxious weeds located during the preconstruction surveys are still identifiable. Growing seasons will vary from year to year, and consequently, the timing of monitoring will vary as well.

As stated above, noxious weed monitoring and control will occur at least once annually during the first 5-year period.[1] When it is determined that an area of the Project has successfully controlled noxious weeds at any point during the first 5 years of control and monitoring, IPC will request concurrence from ODOE, in consultation with the local county weed department. If ODOE concurs, IPC will conclude that it has no further obligation to treat noxious weeds in that area of the Project. If control of noxious weeds is deemed unsuccessful after 5 years of monitoring and noxious weed control, IPC will coordinate with ODOE regarding appropriate steps forward. At this point, IPC will prepare a location-specific long- term monitoring plan based on the results of the initial five-year assessment period. In addition, IPC may suggest additional noxious weed control techniques or strategies, or monitoring, or IPC may propose mitigation to compensate for any permanent habitat loss.
Noxious weed control measures recommended during monitoring will follow the preventive and control measures outlined in the Final Noxious Weed Plan.

6.2 Reporting

An annual Noxious Weed Report will be prepared by the Project's Weed_

[1] Monitoring will be completed in the spring and the fall to capture growing seasons for weed species with differing lifecycles.

Management Specialist and submitted to IPC and ODOE and made available to the appropriate land management agencies as required. Annual reporting will include geographic information systems data as part of the deliverable. The purpose of the report is to provide a status update on progress toward meeting the goals of controlling and preventing the spread and introduction of noxious weed species within the ROW due to Project activities.

Areas where the spread of a noxious weed infestation are noted, particularly in previously unaffected locations, will be evaluated to help determine if these areas require remedial action and treatment. The Construction Contractor(s) will note these areas in the annual report and will document any additional noxious weed control treatments implemented or recommended.

6.3 Ongoing Monitoring and Control

IPC will be responsible for monitoring and control of noxious weed infestations as set forth in the terms and conditions of the ODOE Site Certificate, BLM ROW grant, and USFS special-use authorization. The BLM, USFS, ODOE, and counties may contact IPC to report on the presence of noxious weed populations of concern within the ROW.

IPC's operations personnel will be trained in the identification of the predominant noxious weed populations within the Project ROW, and IPC will control the weeds on a case-by-case basis in consultation with the land management agency and/or landowner, as appropriate. If determined necessary, a report on actions taken will be provided to the BLM and USFS on a predetermined schedule.

7.0 HERBICIDE APPLICATION, HANDLING, SPILLS, AND CLEANUP

7.1 Herbicide Application and Handling

The current list of BLM and USFS approved herbicides is provided in Appendix A. Before application, the list of herbicides to be used will be approved by the BLM, USFS, and other land management agencies as appropriate. Additionally, all required permits from the local authorities (e.g., Oregon County Weed Superintendents or weed districts, BLM, BOR, and/or USFS) will be obtained. Permits may contain additional terms and conditions that go beyond the scope of this Plan. Application of herbicides will follow the measures listed in Section 4.3 – Control Measures.

7.2 Herbicide Spills and Cleanup

All reasonable precautions will be taken to avoid herbicide spills. Construction spills, including herbicide and pesticide spills, will be promptly cleaned up, and contaminated materials will be transported to a disposal site that meets local, state, and federal requirements. If a spill occurs whose cleanup is beyond the capability of on-site equipment and personnel, an Emergency Response Contractor available to further contain and clean up the spill will be identified. Potential contractors will be identified prior to the start of construction activities.

For spills in standing water, including herbicide and pesticide spills, absorbent materials will be used as appropriate by the contractor to recover and contain released materials on the surface of the water. If the standing water is considered a water of the state, it will be reported immediately to the appropriate agency. Materials such as fuels, other petroleum products, chemicals, and hazardous materials including wastes will be located in upland areas away from streams or wells and away from storm drains or other drainages.

Hazardous material, including herbicides and pesticides, will not be drained onto the ground or

into streams or drainage areas. Totally enclosed containment will be provided for all Project-generated trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, concrete curing fluid, and other potentially hazardous materials, will be removed as necessary to a disposal facility authorized to accept such materials.

As identified in Exhibit G, Materials Analysis, concentrated liquid herbicides will be stored in the hazardous materials portion of multi-use areas during construction. During construction, hazardous materials will be delivered to the Project as needed, unless regular use requires storage at the multi-use areas. During operations, small amounts (less than 20 gallons per year) will be used to control vegetation. No herbicide will be stored on-site during the operations phase. Herbicides will be brought to the site as needed. No hazardous materials of any type will be stored on-site during the operations phase.

Spill preventive and containment measures or practices will be incorporated as described in Exhibit G, Materials Analysis, and Attachment G-4, Draft Spill Prevention, Control, and Countermeasures (SPCC) Plan.

During operations, small amounts will be used to control vegetation. No herbicide will be stored on-site during the operations phase. Herbicides will be brought to the site as needed. Additional information regarding the handling of hazardous materials, including herbicides and pesticides, may be found in the Draft SPCC Plan (Exhibit G, Attachment G-4).

7.3 Worker Safety and Spill Reporting

All pesticide contractors will obtain and have readily available copies of the appropriate safety data sheets for the herbicides used. All herbicide spills will be reported in accordance with applicable laws and requirements as discussed in Exhibit G, Materials Analysis, and Attachment G-4, Draft SPCC Plan. Persons should attempt to clean up or control a spill, including herbicide and pesticide spills, only if they have received proper training and possess the appropriate protective clothing and clean-up materials. Untrained individuals should notify the appropriate response personnel. In addition to these general measures, persons responding to spills will consult the SPCC Plan and the safety data sheets (SDSs) or U.S. Department of Transportation Emergency Response Guidebook (to be maintained by the Construction Contractor[s] on-site during all construction activities), which outlines physical response guides for hazardous materials spills. The Construction Contractor(s) will verify and update emergency phone numbers before and during construction. The Construction Contractor(s) (or other person in charge) will notify the applicable land management agency and ODOE of all spills or potential spills, including herbicide and pesticide spills, within the Project area.

8.0 PLAN UPDATES

The Construction Contractor(s) will be responsible for development of the Final Noxious Weed Plan, which will include documentation of existing infestations adjacent to the survey area, documenting results of the preconstruction noxious weed inventories, mapping areas subject to preconstruction noxious weed treatment, and providing a detailed control methodology for each noxious weed species. The Construction Contractor(s) will also be responsible for reporting noxious weed species identified during preconstruction surveys to the applicable land-managing agencies, and submitting PUPs prior to weed treatment on BLM or USFS lands.

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APPENDIX A
AGENCY-APPROVED HERBICIDES

BLM-APPROVED HERBICIDES

(Source: BLM 2016a)

- 2,4-D
- Aminopyralid
- Chlorsulfuron
- Clopyralid
- Dicamba
- Diflufenzopyr + Dicamba
- Diuron
- Fluridone
- Fluroxypyr
- Glyphosate
- Hexazinone
- Imazapic
- Imazapyr
- Metsulfuron methyl
- Picloram
- Rimsulfuron
- Sulfometuron methyl
- Triclopyr

USFS WALLOWA-WHITMAN NATIONAL FOREST APPROVED HERBICIDES

(Source: USFS 2017)

- Aminopyralid
- Chlorsulfuron
- Clopyralid
- Glyphosate
- Imazapic
- Imazapyr
- Metsulfuron methyl
- Picloram
- Sethoxydim
- Sulfometuron methyl
- Triclopyr

APPENDIX B
Noxious Weed Treatment Methods and Timing
(November 2021)

Scientific Name (Synonym Name)	Common Name	Method and Timing of Control[1]
Rubus armeniacus	Armenian (Himalayan) blackberry	**Glyphosate** - Accord may be applied to green canes after leaves have dropped. Rodeo is best applied when leaves are present. Burning or mowing 40 to 60 days after spraying with glyphosate increases effective control. Rate: 5 pints/ac. **Metsulfuron-Methyl -** Apply to actively growing vegetation before fall coloration. Rate: 0.6 to 1.8 oz ai/a **Aminopyralid + 2,4-D + triclopyr** - Treat when plants are actively growing. Rate: 2.1 pints + 2 quarts in 100 gallons of water.
Hyoscyamus niger	Black henbane	**Metsulfuron**- Apply to actively growing vegetation before fall coloration. Rate: 0.3 to 0.45 oz ai/a **Picloram** - Apply in spring when actively growing before full bloom, or in late summer. Rate: 0.25 to 0.5 lb ae/a
Solanum rostratum	Buffalobur	**Diflufenzopyr + dicamba** - Apply to actively growng plants. Rate: 0.175 to 0.35 lb ae/a.
Cirsium vulgare, Cirsium arvense, Carduus nutans, Silybum marianum, Onopordum acanthium	bull thistle, Canada thistle, milk thistle, musk thistle, Scotch thistle	**2,4-D** - Apply in fall to control rosettes or spring to control before flower stalk elongates. Rate: 1.5 to 2 lb ae/a **Aminopyralid** - Apply in spring or early summer to rosettes or bolting plants or in fall to seedlings and rosettes. Rate: 0.75 to 1.25 oz ae/a **Chlorsulfuron** - Apply to young, actively growing weeds. Rate: 0.75 oz ai/a
Ceratocephala testiculata (Ranunculus testiculatus)	Bur buttercup	**2,4-D** - Apply to actively growing plants. Rate: 1.5 to 2 lb ae/a
Buddleja davidii (B. variabilis)	Butterfly bush	**Glyphosate** - Apply to stump after bush is cut down. **Triclopyr** - Apply to stump after bush is cut down.

Alhagi maurorum (A. pseudalhagi)	Camelthorn	**Imazapyr** - Apply to actively growing vegetation. Rate: 0.5 to 1lb ae/a
		Metsulfuron - Apply to actively growing vegetation. Rate: 0.6 to 1.8 oz ai/a
		Piclorum - Apply when plants are fully leaved and actively growing. Rate: 0.5 to 1 lb ae/a.
Galium aparine	Catchweed bedstraw	**Fluroxypyr** - Apply to actively growing plants. Rate: follow instructions on label.
Secale cereal, Bromus tectorum, Taeniatherum caput- medusae	Cereal rye, cheatgrass, medusahead rye	Consult with County Weed Supervisor - no known effective herbicide. **Glyphosate** can be applied post-emergence but does not provide residual weed control.
Cichorium intybus, Chondrilla juncea	Chicory, Rush skeletonweed	**Aminopyralid** - Apply in spring or early summer to rosettes or bolting plants or in fall to seedlings and rosettes. Rate: 0.75 to 1.25 oz ae/a
		Piclorum - Apply to rosette stage in fall or spring. Rate: 0.5 to 1 lb ae/a.
		Imazapyr - Apply as follow up spot treatment for plants that escaped broadcast spray. Rate: 1% solution.
Anchusa officinalis	Common bugloss	**Chlorsulfuron** - Apply to young, actively growing weeds. Rate: 0.75 oz ai/a
		Metsulfuron - Apply to actively growing vegetation. Rate: 0.6 to 1.8 oz ai/a
Verbascum thapsus	Common mullein	**Glyphosate** - Apply to actively growing vegetation. Rate: 2.25 lb ae/ac
		Chlorsulfuron - Apply to young, actively growing weeds. Rate: 0.75 to 1.95 oz ai/a
		Metsulfuron - Apply postemergence to bolting stage. Rate: 0.6 to 1.2 oz ai/ac
Phragmites australis	Common reed	**Imazapyr + glyphosate** - Apply to actively growing vegetation. Rate: use label. The most effective control of Phragmites is mowing and burning.
Tanacetum vulgare, Hypericum perforatum	Common tansy, St. Johnswort; Klamathweed,	**Chlorsulfuron** - Apply to actively growing vegetation in spring. Rate: 0.75 to 2.25 oz ai/a
		Metsulfuron - Apply to actively growing vegetation. Rate: 0.6 oz ai/a

Crupina vulgaris	Common crupina	**Chlorsufuron** - Apply to seedlings in spring. Rate: 0.75 to 0.195 oz ai/a
		Clopyralid - Apply as a split application to foliage in spring and fall. Rate: 2 oz ae/a
Rorippa sylvestris, Cardaria chalepensis (Lepidium chalepensis), Cardaria draba (Lepidium draba)	Creeping yellow cress, hoary cress, lens-podded cress	**2,4-D** - Apply early in cress growth; control is minor after bud stage. Rate: 1 lb ae/a as a selective treatment or 2 to 3 lb ae/a in non-cropland.
		Imazapic - Apply after blossoms open (full bloom) until plants dessicate. Fall rosettes also may be treated. Rate: 0.125 to 0.188 lb/a
		Metsulfuron - Apply at prebloom to bloom growth stage or to rosettes in fall. Rate: 0.6 oz ai/a.
Linaria dalmatica, Linaria vulgaris	Dalmation toadflax, yellow toadflax	**Imazapic** - Apply in fall when top 25% of plant is necrotic, usually after a hard frost. Rate: 0.188 lb ai/a.
		Dicamba - Apply in early spring before toadflax reaches bloom stage. Rate: 4 to 6 lb ae/a
Centaurea diffusa, Centaurea nigrescens (C. debeauxii; C. jacea x nigra; C. pratensis), Centaurea stoebe subsp. micranthos (C. maculosa), Centaurea virgata (C. triumfetti)	Diffuse knapweed, Meadow knapweed, Short-fringe knapweed, Spotted knapweed, Squarrose knapweed	**2,4-D** - Apply at early stage of flower stem elongation (late April to early May). Rate: 1 to 2 lb ae/a
		Aminopyralid - Apply in spring or early summer to rosettes or bolting plants or in fall to seedlings and rosettes. Rate: 1 to 1.75 oz ae/a
		Glyphosate - Apply to actively growing vegetation. Rate: 3 lb ae/ac
Cuscuta spp.	Dodder	**Glyphosate** - Apply as spot treatment to actively growing plants. Rate: 0.0625 to 0.075 lb ae/a
Isatis tinctoria	Dyer's woad	**Chlorsufuron** - Apply before or just after seedlings emerge in spring. Rate: 0.75 oz ai/a
		Imazapic - Apply to rosetts or after blossoms open (full bloom) until plants dessicate. Rate: 0.125 to 0.188 lb ai/a
		2,4-D - Apply in spring or fall to rosettes, or in early summer when plant is in bud. Rate: 1.9 to 2.85 lb ae/a

Hedera helix	English ivy	**Triclopyr or Glyphosate** - Apply to recently cut stems (preferably within 5 minutes of cutting). Rate: 33% solution in water.
Myriophyllum spicatum	Eurasian watermilfoil	Herbicides not recommended for this species. See mechanical or biological control methods.
Convolvulus arvensis, Sorghum halepense, Elymus repens (Agropyron repens)	Field bindweed, Johnsongrass, Quackgrass	**Glyphosate** - Apply to full-grown weeds. Use highest rate on field bindweed. Rate: 2.25 to 3.75 lb ae/a. For non-sodded quackgrass, use 0.75 to 1.5 lb ae/a. For sodded quackgrass, use 1.5 to 2.25 lb ae/a
Butomus umbellatus	Flowering rush	**2,4-D** - Apply in April or May after rush has made good spring growth. Foliage must be wet. Rate: 1.5 lb ae 2,4-D, 50 gallons water, and 2 gallons nonionic surfactant for spot treaments.
Dipsacus fullonum	Fuller's teasel	**2,4-D** - Apply to rosette stage in fall or spring. Rate: 1 lb ae/a
		Chlorsufuron - Apply to actively growing teasel in rosette stage. Rate: 0.75 oz ai/a
Alliaria petiolata	Garlic mustard	**Glyphosate** - Apply in spring prior to flowering or in late fall. Rate: 2.0% solution of 3 lb ae/gal product with 1.0% by volume nonionic surfactant
		Imazapyr - Apply when plants are actively growing. Rate: 1% solution of 2 lbs ae/gal product for spot application.
Polygonum sachalinensis (Fallopia sachalinense), Polygonum cuspidatum (Fallopia japonica)	Giant knotweed, Japanese knotweed	**Dicamba** - Apply in late August to new regrowth after cutting plant back in June. Rate: 0.25 lb ae dicamba mixed with 1 gal water/400 sq ft
		Glyphosate - Spot treat when weeds are actively growing and most are at bud to early flowering growth stage. Rate: 0.06 lb ae with 1 gal water
		Glyphosate (RoundUp Pro Concentrate) - Inject with hand-held device into hollow stem of actively growing plants between second and third internodes. Rate: Inject 5 ml/stem
Halogeton glomeratus	Halogeton	**2,4-D** - Apply in early spring when plants are actively growing before bloom stage. Rate: 1 to 2 lb ae/a
		Imazapic - Apply preemergence or postemergence. Rate: 0.063 to 0.188 lb/a

Conyza canadensis	Horseweed; mares tail	**Aminopyralid** - Apply to actively growing plants. Rate: 1 to 1.5 oz ae/a
		Clopyralid - Apply to actively growing plants up to the five-leaf stage. Rate:0.125 to 0.188 oz ae/a
Cynoglossum officinale	Houndstongue	**Picloram** - Apply anytime plants are actively growing. Rate: 0.5 lb ae/a
		Metsulfuron - Apply to actively growing plants. Rate: 0.6 oz ai/a
		2,4-D - Apply in early spring when plants are actively growing before bloom stage. Rate: 2 lb ae/a
Amorpha fruticosa	Indigo bush	Treatment data is still preliminary however the following have shown promising results (and are on the BLM approved list)- aminopyralid, clopyralid, glyphosate, imazapyr, and triclopyr + 2,4-D applied as cut stem treatments.
Datura stramonium	Jimsonweed	Treatment data is still preliminary in the PNW however the following have been reported to control this plant (and are on the BLM approved list) - glyphosate, picloram, clopyralid.
Aegilops cylindrica	Jointed goatgrass	**Glyphosate** – Apply to actively growing plants emerged before bolt stage (i.e., stage of growth where growth is focused on seed development versus leaf development). Rate: 0.38 to 0.75 lb ae/a1
		Imazapic – Apply pre-emergence in fall. Due to the residual effect of this herbicide, it will not be used in areas to be revegetated. Rate: 0.063 to 0.188 lb/a1
		Sulfometuron – Apply in fall or in late winter before jointed goatgrass is 3 inches tall. Rate: 1 to 1.5 oz ai/a (1.33 to 2 oz/a)1
Hieracium piloselloides (Pilosella piloselloides), Hieracium caespitosum (H. pratense; Pilosella caespitosum), Hieracium aurantiacum (Pilosella aurantiacum),	King-devil hawkweed/Tall hawkweed, Meadow hawkweed, Orange hawkweed	**2,4-D** - Apply to growing hawkweed before buds form. Rate: 1.43 to 1.9 lb ae/a
		Aminopyralid - Apply to actively growing plants in the bolting stage of growth. Rate: 1 to 1.5 oz ae/a

		Clopyralid - Apply after most basal leaves emerge but before buds form. Rate: 0.25 to 3.75 lb ae/a
Bassia scoparia (Kochia scoparia)	Kochia; burning bush	**Chlorsulfuron** - Apply preemergence, or postemergence from seedling to bolting stage of growth. Rate: 0.75 oz ai/a
		Dicamba - Apply in spring when seedlings are actively growing. Rate: 0.25 to 1 lb ae/a
		Fluroxypyr - Apply in spring from seedling to bolting stage of growth. Rate: 2.1 to 7.7 oz ae/a
Euphorbia esula, Euphorbia myrsinites	Leafy spurge, Myrtle spurge	**2,4-D** - Apply pre- and postemergence, highly recommend seeding grasses to outcompete spurge. Rate: 1 lb ae/a to prevent seed formation and 6 lb ae/a helps control leafy spurge infestations.
Cannabis sativa	Marijuana	**Glyphosate** - Apply to actively growing plants. Rate: 0.0625 to 0.075 lb ae/a
Salvia aethiopis	Mediterranean sage	**Clopyralid** - Apply to actively growing plants. Rate: 1 to 2 lb ae/a
Verbascum blattaria	Moth mullein/Common mullein	**Aminopyralid** - Apply postemergence from the rosette to young bolting stage. Rate: 1.75 oz ae/a
		Floroxypyr - Apply postemergence from the rosette to young bolting stage. Rate: 7.7 oz ae/a
		Glyphosate - Apply postemergence from seedling to late bolting stage. Rate: 2.25 lb ae/a
Lathyrus latifolius, Lepidium latifolium, Sonchus arvensis	Perennial peavine, Perennial pepperweed, Perennial sowthistle	**2,4-D** - Apply at the bud stage of growth. Good grass cover helps control these perennials. Rate: 4 lb ae/a
		Chlorsulfuron - Apply in spring or fall up through bloom stage. Rate: 0.75 oz ai/a
		Imazapic - Apply after blossoms open (full bloom) until plants dessicate. Fall rosettes also may be treated. Rate: 0.125 to 0.188 lb/a
Conium maculatum	Poison hemlock	**2,4-D** - Apply in seedling to rosette stage of growth. Rate: 1.5 lb ae/a
		Glyphosate - Apply to actively growing plants before they bolt. Rate: 0.75 lb ae/a
Tribulus terrestris	Puncturevine	**2,4-D** - Apply every 3 weeks during growing season or when new seedlings appear. Rate: 1 to 2 lb ae in 10 to 20 gallons water for spot treatment.

		Chlorsulfuron - Apply late fall or late winter preemergence to growth. Needs moisture to activate. Rate: 1 oz ai/a
		Imazapic - Apply early postemergence when plants are cracking. Rate: 0.125 to 0.188 lb ai/a
Lythrum salicaria	Purple loosestrife	**Glyphosate** - Apply to actively growing plants at full to late flowering stage. Seedlings may be effectively treated early in the season after a fall application to mature plants. Rate: 1% solution with handheld equipment
		Imazapyr - Apply to actively growing loosestrife after midbloom until killing frost. Rate: 0.25 to 0.5 lb ae/a
Centaurea calcitrapa, Centaurea solstitialis	Purple starthistle, yellow starthistle	**Aminopyralid** - Apply to plants at the rosette through bolting stages. Rate: 0.75 to 1.25 oz ae/a
		Chlorsulfuron - Apply to young, actively growing weeds. Rate: 1.125 oz ai/a
		Clopyralid - Apply after most rosettes have formed but before bud formation. Rate: 0.09 to 0.375 lb ae/a
Ambrosia artemisiifolia	Ragweed	**Clopyralid + 2,4-D amine** - Apply to actively growing weeds after most basal leaves emerge but before bud stage. Rate 1 to 5 quarts/a
Phalaris arundinacea	Reed canarygrass; ribbongrass	**Glyphosate** - Apply to actively growing plants at early heading or in fall from mid-September to after first light frost. Rate: 1.2 to 2.25 lb ae/a
		Imazapyr - Apply in boot stage through fall, when plant is actively growing. Rate: 0.5 to 1 lb ae/a
Salsola tragus (S. iberica; S. kali)	Russian thistle	**2,4-D** - Apply to rapidly growing plants. Rate 0.95 to 1.9 lb ae/a
		Chlorsulfuron - Apply preemergence or early postemergence. Rate: 0.75 to 1.5 oz ai/a
Tamarix ramosissima	Saltcedar	**Imazapyr + glyphosate** - Apply in late summer to early fall when plants are taking up nutrients - plants should be healthy, not stressed. Rate: 1.5 quarts + 1.5 quarts of ae/a
		Imazapyr - Apply in late summer to early fall when plants are taking up nutrients. Rate: 2 quarts ae/a
Cytisus scoparius	Scotch broom	**Glyphosate** - Apply to actively growing plants in spring. Rate: 1.5 to 3 lb ae/a

		Triclopyr + 2,4-D - Apply any times plants are actively growing. Rate: 1.5 lb ae/a
Solanum elaeagnifolium	Silverleaf nightshade	**Glyphosate** - Apply to actively growing plants that have reached the late bud to flower stage of growth. Rate: 2.25 lb ae/a
		Imazapyr - Reported to control this plant but data is lacking in the PNW. Rate: 1 lb ae/a
Orobanche minor	Small broomrape	No approved herbicides for this species on the BLM list. Chemical control is through fumigation of soil.
Centromadia pungens subsp. pungens (Hemizonia pungens)	Spikeweed; common tarweed	**2,4-D** - Apply postemergence, when plants are in rosette stage in winter or early spring (before late April). Application during cool weather allows for the use of ester formulations of 2,4-D which may have better absorbtion in glandular leaves. Rate: 1.4 lb ae/a
		Chlorsulfuron - Apply preemergence of postemergence to plants in rosette stage. Rate: 0.75 to 1.95 oz ae/a
Xanthium spinosum	Spiny cocklebur	**Clopyralid** - Apply to seedlings in spring when plants are actively growing. Rate: 1.5 to 3.75 oz ae/a
		Dicamba - Apply to seedlings in spring when plants are actively growing. Rate: 0.25 to 0.75 lb ae/a
		Imazapyr - Apply preemergence or postemergence to actively growing cockleburs. Rate: 0.75 to 1 lb ae/a
Potentilla recta	Sulfur cinquefoil	**Aminopyralid** - Apply to actively growing plants in the bolting stage of growth. Rate: 1 to 1.75 oz ae/a
		Glyphosate - Apply in the pre-bud stage of growth. Rate: 1.1 to 2.25 lb ae/a
		Metsulfuron - Apply in spring during rosette stage of growth. Rate: 0.6 to 1.2 oz ai/a
Sphaerophysa salsula	Swainsonpea; Alkali swainsonpea	**2,4-D** - Apply in early bloom stage of growth. Rate: 2 lb ae/a
Melilotus officinalis	Sweet clover	**Imazapyr** - Apply preemergence or postemergence to actively growing clove. Rate: 0.75 to 1 lb ae/a
		Metsulfuron - Apply in spring during early stages of growth. Rate: 0.6 to 1.2 oz ai/a
		2,4-D - Apply to actively growing plants. Rate: 1.5 to 2 lb ae/a

Senecio jacobaea	Tansy ragwort	**2,4-D** - Apply in spring before flowers appear, the earlier the application the better the control. Rate: 2 qts/a
		Aminopyralid - Apply to actively growing plants in the rosette stage. Rate: 1 to 1.25 oz ae/a
		Metsulfuron - Apply to actively growing plants. Rate: 0.45 to 0.6 oz ai/a
Ailanthus altissima	Tree of heaven	**Triclopyr** - Cut stems horizontally at or near ground level, then immediately apply herbicide solution to cover the outer 20% of the stump face. Rate: 25% solution in water.
		Metsulfuron - Treatments are best when leaves are fully expanded. Rate: 1.2 oz ai/a
Hibiscus trionum	Venice mallow	Treatment data is still preliminary however the following have shown promising results (and are on the BLM approved list)- 2,4-D, chlorsulfuron, dicamba, glyphosate and picloram. Follow label instructions.
Ventenata dubia	Ventenata; North Africa grass	**Imazapic** - Apply in the fall after grass has emerged. Rate: 5 oz/a
		Sulfosulfuron - Apply in the fall after grass has emerged (1 inch rain and soil temperature above 45 degrees). Rate: 0.75 oz/a
		Rimsulfuron - Apply before or soon after seedlings emerge. Rate: 2 to 4 oz/a
Cicuta douglasii	Water hemlock	**Glyphosate** - Apply to actively growing plants. Rate: 2% solution.
		Imazapyr - Apply to actively growing plants. Rate: 0.75 to 1 lb ae/a
Equisetum arvense	Western horsetail	**Chlorsulfuron** - Apply pre- or postemergence. Rate: 1 to 1.5 oz ai/a
Panicum miliaceum	Wild proso millet	There are no herbicides available for this plant that are also on the BLM approved list.
Iris pseudacorus	Yellow flag iris	**2,4-D** - Apply postemergence at early bloom stage. **This herbicide can only be applied to terrestrial populations.** Rate: 5 la ae in 100 gallons water

		Glyphosate - Apply postemergence to foliage when plants are growing rapidly, but before flowering in late spring or early summer. Can also apply in fall. Rate: 4% solution for spot treatment
		Imazapyr - Apply postemergence to plants at prebloom stage or to late season plants in fall. Rate: 1 to 3% for spot spray
Cyperus esculentus	Yellow nutsedge	**Glyphosate** - Apply when nutsedge is actively growing in midseason but before new tubers begin to form. Usually by June 15 to July 1. Rate: 2.25 ae/a as broadcast spray or 1% solution using hand-held equipment.
		Imazapic - Apply postemergence when plants have bolted. Rate: 0.125 to 0.188 lb ai/a

Sources: DiTomaso et al. 2013; Prather et al. 2019.
[1] a = acre; ae = acid equivalent; ai = active ingredient; lb= pound; oz = ounces

Attachment P1-6

Draft Fish and Wildlife Habitat Mitigation Plan

ATTACHMENT P1-6
FISH AND WILDLIFE HABITAT MITIGATION PLAN

Fish and Wildlife Habitat Mitigation Plan

Boardman to Hemingway Transmission Line Project

1221 West Idaho Street
Boise, Idaho 83702

September 2018

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ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
EFSC or Council	Energy Facility Siting Council
HMP	Habitat Mitigation Plan
ILF	in-lieu fee
IPC	Idaho Power Company
MZ	Management Zone
OAR	Oregon Administrative Rules
ODOE	Oregon Department of Energy
ODFW	Oregon Department of Fish and Wildlife
Project	Boardman to Hemingway Transmission Line Project
WAGS	Washington ground squirrel

1.0 INTRODUCTION

To obtain an Oregon Energy Facility Siting Council (EFSC or Council) site certificate for the Boardman to Hemingway Transmission Line Project (Project), Idaho Power Company (IPC) must show that the design, construction, and operation of the Project, taking into account mitigation, is consistent with the Oregon Department of Fish and Wildlife's (ODFW) Habitat Mitigation Policy at Oregon Administrative Rule (OAR) 635-415-0025 (see OAR 345-022-0060, EFSC's Fish and Wildlife Habitat Standard). This Fish and Wildlife Habitat Mitigation Plan (HMP) sets forth the mitigation measures IPC will implement to achieve the goals and standards of ODFW's Habitat Mitigation Policy with respect to fish and wildlife species other than the greater sage-grouse (*Centrocercus urophasianus)*, which is addressed in the Greater Sage-Grouse Habitat Mitigation Plan (Exhibit P2, Attachment P2-3).

As background, IPC considered avoidance of sensitive resources a priority throughout the siting process, as explained in the Project's Siting Study (Exhibit B, Attachment B-1), 2012 Siting Study Supplement (Exhibit B, Attachment B-2), and 2015 Supplemental Siting Study (Exhibit B, Attachment B-3). In particular, IPC's initial siting process avoided sensitive resource areas to the extent practical, including Bureau of Land Management (BLM) designated areas of critical environmental concern, BLM-designated wilderness study areas, waterbodies (including wetlands, wild and scenic rivers, streams that support special status species), areas with sensitive wildlife resources (e.g., sage-grouse leks, Washington ground squirrel colonies, raptor nests), U.S. Department of Agriculture Forest Service designated visual resource retention and preservation lands and inventoried roadless areas, city and town boundaries, and irrigated agriculture. Furthermore, the Project is designed to follow existing developments and utility corridors, such as existing roads and transmission lines, to the extent practical and without violating the Western Electricity Coordinating Council's reliability criteria, in order to consolidate impacts on areas that have already been disturbed as opposed to impacting undisturbed areas. IPC will also implement measures during construction and maintenance that are intended to minimize impacts on the environment, and specifically fish and wildlife habitat. Regardless of the efforts to site the Project to avoid high value fish and wildlife habitat and the implementation of measures to minimize impacts on fish and wildlife habitat, unavoidable impacts from the Project will occur.

This Fish and Wildlife HMP presents the direct and indirect impacts to fish and wildlife habitats, provides an approach for quantifying the impact debits resulting from the Project and the mitigation credits created through the proposed mitigation projects, and sets forth a schedule for implementing the necessary mitigation projects. Consistent with the ODFW Habitat Mitigation Policy, mitigation measures will be implemented and completed either prior to or concurrent with the Project.

If, after review and potential approval by EFSC of the Fish and Wildlife HMP, should the approved mitigation projects no longer be available, or if IPC decides to select another mitigation project not previously considered by EFSC, or if the reviewed mitigation projects do not provide sufficient mitigation credit and additional mitigation is necessary, IPC will amend the Fish and Wildlife HMP and submit the same to Oregon Department of Energy (ODOE) for its approval.

2.0 APPLICABLE RULES AND AGENCY GUIDANCE

2.1 General Standards for Siting Facilities

The Fish and Wildlife Habitat Standard at OAR 345-022-0060 states:

> *For the Council to issue a site certificate, it must find that the design, construction, and operation of the facility, taking into account mitigation, are consistent with the fish and wildlife habitat mitigation goals and standards of OAR 635-415-0025 in effect as of September 1, 2000.*

2.2 Implementation of ODFW Habitat Mitigation Recommendations

OAR 635-415-00252 provides the following:

> *(1) "Habitat Category 1" is irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population or unique assemblage.*
>
> > *(a) The mitigation goal for Category 1 habitat is no loss of either habitat quantity or quality.*
> >
> > *(b) The Department shall act to protect Category 1 habitats described in this subsection by recommending or requiring:*
> >
> > > *(A) Avoidance of impacts through alternatives to the proposed development action; or*
> > >
> > > *(B) No authorization of the proposed development action if impacts cannot be avoided.*
>
> *(2) "Habitat Category 2" is essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis depending on the individual species, population or unique assemblage.*
>
> > *(a) The mitigation goal if impacts are unavoidable, is no net loss of either habitat quantity or quality and to provide a net benefit of habitat quantity or quality.*
> >
> > *(b) The Department shall act to achieve the mitigation goal for Category 2 habitat by recommending or requiring:*
> >
> > > *(A) Avoidance of impacts through alternatives to the proposed development action; or*
> > >
> > > *(B) Mitigation of impacts, if unavoidable, through reliable in-kind, in-proximity habitat mitigation to achieve no net loss of either pre-development habitat quantity or quality. In addition, a net benefit of habitat quantity or quality must be provided. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action.*
> >
> > *(c) If neither 635-415-0025(2)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.*

(3) "Habitat Category 3" is essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.

(a) The mitigation goal is no net loss of either habitat quantity or quality.

(b) The Department shall act to achieve the mitigation goal for Category 3 habitat by recommending or requiring:

(A) Avoidance of impacts through alternatives to the proposed development action; or

(B) Mitigation of impacts, if unavoidable, through reliable in-kind, in-proximity habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action.

c) If neither 635-415-0025(3)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.

(4) "Habitat Category 4" is important habitat for fish and wildlife species.

(a) The mitigation goal is no net loss in either existing habitat quantity or quality.

(b) The Department shall act to achieve the mitigation goal for Category 4 habitat by recommending or requiring:

(A) Avoidance of impacts through alternatives to the proposed development action; or

(B) Mitigation of impacts, if unavoidable, through reliable in-kind or out-of-kind, in-proximity or off-proximity habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality. Progress towards achieving the mitigation goals and standards shall be reported on a schedule agreed to in the mitigation plan performance measures. The fish and wildlife mitigation measures shall be implemented and completed either prior to or concurrent with the development action.

(c) If neither 635-415-0025(4)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.

(5) "Habitat Category 5" is habitat for fish and wildlife having high potential to become either essential or important habitat.

(a) The mitigation goal, if impacts are unavoidable, is to provide a net benefit in habitat quantity or quality.

(b) The Department shall act to achieve the mitigation goal for Category 5 habitat by recommending or requiring:

(A) Avoidance of impacts through alternatives to the proposed development action; or

(B) Mitigation of impacts, if unavoidable, through actions that contribute to essential or important habitat.

(c) If neither 635-415-0025(5)(b)(A) or (B) can be achieved, the Department shall recommend against or shall not authorize the proposed development action.

(6) "Habitat Category 6" is habitat that has low potential to become essential or important habitat for fish and wildlife.

(a) The mitigation goal is to minimize impacts.

(b) The Department shall act to achieve the mitigation goal for Category 6 habitat by recommending or requiring actions that minimize direct habitat loss and avoid impacts to off-site habitat.

(7) For proposed developments subject to this rule with impacts to greater sage-grouse habitat in Oregon, mitigation shall be addressed as described in OAR 635-140-0000 through 635-140-0025, except that any energy facility that has submitted a preliminary application for site certificate pursuant to ORS 469.300 et seq. on or before the effective date of this rule is exempt from fulfilling the avoidance test contained in 635-140-0025, Policy 2, subsections (a), (b), (c) and (d)(A). Other mitigation provisions contained in 635-140-0025, Policy 2, subsections (d)(B) and (e), and Policies 3 and 4 remain applicable.

2.3 ODFW Mitigation Framework for Indirect Road Impacts to Rocky Mountain Elk Habitat

In April 2015, ODFW provided IPC with guidance on mitigation for impacts to Rocky Mountain elk (*Cervus canadensis nelsoni*). The guidance document is entitled *Mitigation Framework for Indirect Road Impacts to Rocky Mountain Elk Habitat* (Elk Mitigation Framework) (ODFW 2015). The Elk Mitigation Framework provides a methodology for quantifying the area of indirect impacts from energy facility roads and provides guidance for how ODFW will consider indirect impacts to elk habitat under their Habitat Mitigation Policy. Indirect impacts are calculated in Exhibit P3 and are presented in summary in this Fish and Wildlife HMP.

3.0 ANALYSIS

3.1 Avoidance

ODFW's Habitat Mitigation Policy sets forth a mitigation goal for each of Habitat Category 1 through 6, and provides recommendations or requirements ODFW shall take to achieve the mitigation goals. Depending on the habitat category, ODFW's recommendations or requirements provide that the project proponent must avoid impacts to the habitat or at least consider avoidance of the habitat.

3.1.1 Habitat Category 1

For Habitat Category 1, ODFW's recommendations or requirements provide that impacts to the habitat must be avoided through alternatives to the proposed development action or the project should not be authorized (see OAR 635-415-00252(1)(b)). Here, the Project Site Boundary includes Category 1 habitat associated with raptor nests. Although trees or structures with raptor nests are managed as Category 1 habitat, they are not included in the habitat categorization analysis for acres of Category 1 habitat because of their relatively small size on the landscape. To ensure that Category 1 raptor nests and raptor breeding activities are not

disturbed by Project activities, the seasonal and spatial restrictions identified in Exhibit P1, Attachment P1-10 and listed in Exhibit P1, Section 3.5.3.1 will be applied.

There is potential for Category 1 Washington ground squirrel (*Urocitellus washingtoni*, WAGS) habitat to be identified within the Site Boundary during future surveys. IPC has modified the Project location to avoid Category 1 WAGS habitat in the past and will perform WAGS surveys in the future within previously unsurveyed areas to identify Category 1 WAGS habitat for avoidance. IPC is proposing site certificate conditions that will ensure that surveys for raptor nests and WAGS are conducted within an appropriate timeframe prior to construction, that seasonal restrictions are applied to raptor nests to avoid impacts to Category 1 habitat, and that all construction activities avoid Category 1 WAGS habitat. WAGS surveys will be used to complete final design, facility layout, and micrositing of facility components and IPC will not construct any facility components within areas of Category 1 habitat and will avoid temporary disturbance of Category 1 habitat. Refer to Fish and Wildlife Condition 18, Fish and Wildlife Condition 19, and Threatened and Endangered Species Condition 1 in Exhibit P1 and Exhibit Q, Section 4.0. Accordingly, the Project will avoid impacts to Category 1 habitat consistent with ODFW's Habitat Mitigation Policy, and no compensatory mitigation is required or proposed.

3.1.2 Habitat Categories 2 through 6

ODFW's recommendations or requirements for meeting the mitigation goals for Habitat Categories 2 through 6 provide that the project proponent must consider avoiding impacts to the relevant habitats. However, unlike with Habitat Category 1, strict avoidance is not a requirement in Habitat Categories 2 through 6. Rather, unavoidable impacts to Habitat Categories 2 through 5 may be excused by showing the impacts will be mitigated for, and unavoidable impacts to Habitat Category 6 need only be minimized (see OAR 635-415-00252(2)(b)(B), (3)(b)(B), (4)(b)(B), (5)(b)(B), and (6)(b)). Here, as discussed in Exhibit P1, Section 3.5.6, IPC considered avoidance of sensitive resources related to fish and wildlife habitat during initial routing of the Project. IPC is proposing measures to be implemented during construction and operation that will avoid and minimize impacts to fish and wildlife habitats (see Exhibit P1, Section 3.5.6).

3.2 Minimization

3.2.1 Habitat Categories 2 through 5

ODFW's Habitat Mitigation Policy does not specify that unavoidable impacts to Habitat Categories 2 through 5 must be minimized, in addition to being mitigated. Regardless, the minimization measures that IPC is proposing (Exhibit P1, Section 3.5.6) will be implemented Project-wide and across all habitat categories. Therefore, the measures will minimize impacts to Habitat Categories 2 through 5 even though the Habitat Mitigation Policy does not expressly provide for the same.

3.2.2 Habitat Category 6

ODFW's Habitat Mitigation Policy provides for minimizing impacts to Habitat Category 6 and does not require compensatory mitigation for such impacts (see OAR 635-415-00252(6)(b)). Implementation of the Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3) will minimize impacts to Habitat Category 6 consistent with ODFW's Habitat Mitigation Policy, and no compensatory mitigation is required or proposed.

3.3 Compensatory Mitigation

For unavoidable impacts to Habitat Categories 2 through 5, compensatory mitigation will be required. The following discussion presents the potential impacts to Habitat Categories 2 through 5 and proposed mitigation projects that could be used to offset the Project impacts.

3.3.1 Quantifying Project Impacts

IPC determined the number of fish and wildlife habitat acres impacted by the Project as follows:

- ***Direct impacts to habitat***: IPC identified habitat types within the Site Boundary consistent with the Habitat Mitigation Policy (see Exhibit P1 and Attachment P1-1). IPC then identified the direct impacts of the Project to each habitat type by calculating the number of acres of each habitat type within the construction and operation footprints. Direct impacts are defined as the impacts that will have an adverse effect upon species habitat or individuals, and that will occur at the same, or in close proximity to, time and place. Direct impacts may be permanent or temporary. Permanent impacts will exist for the entire life of the Project. Temporary impacts are those impacts that will last for a time less than the life of the Project. Here, permanent direct impacts may occur in the form of vegetation clearing at the transmission line, communication stations, and access roads; and direct mortality. Temporary direct impacts may occur in the form of vegetation clearing at construction areas used during construction or retirement. For a more-detailed description of the types of activities considered under direct impacts, see Exhibit P1, Section 3.5.3. The analysis of direct impacts to the habitat types is discussed in more detail below in Section 3.3.1.1, and the resulting impact acres are set forth below in Table 1.
- ***Indirect impacts to elk summer and winter range***: Indirect impacts are defined as the impacts that will have an adverse effect upon fish and wildlife habitat or individuals, and that will occur later in time or in a different place than the Project activities. Indirect impacts may be permanent or temporary. Permanent impacts will exist for the entire life of the Project. Temporary impacts are those impacts that will last for a time less than the life of the Project. In this instance, permanent indirect impacts may occur in the form of habitat fragmentation at the transmission line and access roads. Temporary indirect impacts may occur in the form of noise, traffic, dust, and other nuisances resulting from construction activities at the access roads; and potential invasive species introduction during construction. For a more-detailed description of the types of activities considered under indirect impacts, see Exhibit P1, Section 3.5.4. Consistent with ODFW guidance, IPC did not quantify indirect impacts to fish and wildlife habitat, except with respect to elk and sage-grouse. Exhibit P2 discusses sage-grouse impacts and mitigation. IPC quantified the indirect impacts of the Project to elk summer and winter range based on the methodology and principles set forth in the Elk Mitigation Framework. Indirect impacts are calculated in Exhibit P3 and presented in summary in this Fish and Wildlife HMP.
- ***Impacts to greater sage-grouse***: IPC addresses impacts to sage-grouse in Exhibit P2 and Attachment P2-3.

3.3.1.1 Impacts to Habitat

The location of the Project presented in this application is based on a preliminary design developed in September of 2016. Direct and indirect impacts, both temporary and permanent, to fish and wildlife habitat have been estimated using the preliminary design. IPC will update the estimated impacts contained within this Fish and Wildlife HMP based upon the final design of the Project which will occur after issuance of a site certificate and prior to construction. In the third year of operation, IPC will submit a report to ODOE presenting the final compensatory

mitigation calculations based on the as-constructed footprint of the Project and showing mitigation is commensurate with those final numbers. The report will come in the third year of operation and not sooner, because the elk mitigation calculations are dependent on the post-construction traffic study that will take place during Year 2 of operation.

Direct Impacts to Habitat

Exhibit P1, Section 3.5.2.4 quantifies the direct impacts of the Proposed Route and alternatives by habitat category, habitat type, and impact type (temporary or permanent). Table 1 quantifies the direct impacts of the Proposed Route and alternatives by habitat category, general vegetation type, and impact type. The general vegetation types are groupings of similar habitat types (see Exhibit P1, Attachment P1-1).

Table 1. Estimated Acreage of Temporary and Permanent Direct Impacts by General Vegetation Type

Habitat Category and General Vegetation Type	Proposed Route		West of Bombing Range Road Alternative 1		West of Bombing Range Road Alternative 2		Morgan Lake Alternative		Double Mountain Alternative	
	Temp[1]	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm
Category 2										
Agriculture / Developed[2]	95.0	10.6								
Bare Ground	2.0	0.3	–	–	–	–	–	–	2.0	0.5
Forest / Woodland	6.8	536.1	–	–	–	–	68.1	12.5	–	–
Open Water / Wetlands	1.0	0.5	–	–	–	–	0.0	0.0	0.0	0.0
Riparian Vegetation	0.6	0.4	–	–	–	–	0.0	0.0	–	–
Shrub / Grassland	1,990.9	334.2	6.3	0.4	6.3	0.4	137.9	19.3	21.9	1.2
Subtotal	*2,123.1*	*882.7*	*6.3*	*0.4*	*6.3*	*0.4*	*206.1*	*31.9*	*23.9*	*1.6*
Category 3										
Agriculture / Developed	10.1	0.8	–	–	–	–	–	–	–	–
Bare Ground	0.3	0.1	–	–	–	–	–	–	0.1	0.0
Forest / Woodland	16.0	458.0	–	–	–	–	31.4	5.8	–	–
Open Water / Wetlands	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Riparian Vegetation	5.5	0.1	–	–	–	–	–	–	–	–
Shrub / Grassland	312.4	29.9	0.0	0.0	0.8	0.8	–	–	36.5	3.5
Subtotal	*344.6*	*489.1*	*0.0*	*0.0*	*0.8*	*0.8*	*31.4*	*5.8*	*36.6*	*3.5*
Category 4										
Open Water / Wetlands	0.0	0.0	–	–	–	–	–	–	–	–
Shrub / Grassland	165.3	26.1	4.9	0.7	6.2	1.2	–	–	15.8	2.5
Subtotal	*165.3*	*26.1*	*4.9*	*0.7*	*6.2*	*1.2*	–	–	*15.8*	*2.5*

Habitat Category and General Vegetation Type	Proposed Route		West of Bombing Range Road Alternative 1		West of Bombing Range Road Alternative 2		Morgan Lake Alternative		Double Mountain Alternative	
	Temp[1]	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm
Category 5										
Forest / Woodland	–	–	–	–	–	–	0.0	0.0	–	–
Shrub / Grassland	329.3	43.3	13.4	2.5	5.7	1.7	–	–	57.3	16.3
Subtotal	*329.3*	*43.3*	*13.4*	*2.5*	*5.7*	*1.7*	–	–	*57.3*	*16.3*
Category 6										
Agriculture / Developed	310.5	259.8	2.3	1.6	1.9	1.5	0.3	15.5	0.1	4.8
Subtotal	*310.5*	*259.8*	*2.3*	*1.6*	*1.9*	*1.5*	*0.3*	*15.5*	*0.1*	*4.8*
TOTAL	**3,272.9**	**1,701.0**	**26.9**	**5.3**	**20.9**	**5.7**	**237.8**	**53.3**	**133.7**	**28.8**

[1] Temporary impacts will be reclaimed as described in Exhibit P1, Attachment P1-3, Reclamation and Revegetation Plan.
[2] The Category 2 Agriculture / Developed general vegetation type includes areas that appear to be in CRP within elk or mule deer winter range.
0.0 = less than 0.05 acre; – = 0.

In categorizing fish and wildlife habitat pursuant to the ODFW Habitat Mitigation Policy, ODFW directed IPC to overlay the following species-specific habitats on the Site Boundary: WAGS habitat, elk winter and summer range, mule deer (*Odocoileus hemionus*) winter and summer range, and California bighorn sheep (*Ovis canadensis californiana)* herd range (see Exhibit P1, Attachment P1-1, Appendix A). The preceding quantification of direct impacts includes, in part, impacts to those species-specific habitats. However, in many instances, those species-specific habitats overlap with each other—for example, a particular acre may be considered both elk winter range and mule deer winter range. For purposes of quantifying total acres of direct impacts, IPC counted each acre within the construction and operation footprint only once, even though certain acres may include more than one of the relevant species-specific habitats. Even so, Table 2 shows the acres of direct impacts that occur within each species-specific habitat.

Table 2. Estimated Acreage of Direct Impacts within Wildlife Habitat Layers

Wildlife Habitat Layer	Habitat Category	Acres of Impact				
		Proposed Route	West of Bombing Range Road Alt. 1	West of Bombing Range Road Alt. 2	Morgan Lake Alternative	Double Mountain Alternative
WAGS Habitat	2	22.4	6.7	6.7	–	–
Elk Winter Range	2	416.3	–	–	89.6	–
Elk Summer Range	3	132.1	–	–	61.3	–
Mule Deer Winter Range	2	2,951.8	–	–	235.2	25.6
Mule Deer Summer Range	3	894.6	–	–	100.3	–
California Bighorn Sheep Herd Range	2	15.8	–	–	–	–

Indirect Impacts to Habitat

Indirect impacts to fish and wildlife habitat will occur during construction and operation of the Project as described in Exhibits P1 and P3. The nature and extent of indirect impacts varies depending on the species and habitat being affected. There is no guidance on quantifying indirect impacts to fish and wildlife species or their habitat, other than for elk (see Exhibit P3) and sage-grouse (see Exhibit P2). Further, ODFW has advised IPC that ODFW does not require compensatory mitigation for indirect impacts to habitat beyond such impacts to elk habitat and sage-grouse habitat. Therefore, compensatory mitigation for indirect impacts is required only for elk habitat and sage-grouse habitat to meet the goals and objectives of ODFW's Habitat Mitigation Policy. IPC is only proposing compensatory mitigation for indirect impacts to elk habitat within this HMP. Compensatory mitigation for indirect impacts to sage-grouse is presented in Exhibit P2, Attachment P2-3.

3.3.1.2 Impacts to Elk Summer and Winter Range

Direct Impacts to Elk Summer and Winter Range

Direct impacts to elk summer and winter range are included in the direct impacts set forth above in Section 3.3.1.1, Table 2.

Indirect Impacts to Elk Summer and Winter Range

The description and quantification of indirect impacts to elk are detailed in Exhibit P3, Section 3.5.4. For the Proposed Route, indirect impacts to summer range total 5.6 acres and indirect impacts to winter range total 428.0 acres. For the Morgan Lake Alternative, indirect impacts to summer range total 152.7 acres and indirect impacts to winter range total 175.8 acres.

3.3.1.3 Direct and Indirect Impact Summary

Approximately 5,052 acres of Category 2 through Category 6 habitat will be directly affected during construction of the Proposed Route and approximately 434 acres of elk habitat will be indirectly affected due to anticipated traffic increases from new and improved roads associated with the Proposed Route. These disturbances will occur over 270.8 miles of transmission line, crossing five counties in Oregon. The Project crosses four Level III ecoregions: the Columbia Plateau, the Blue Mountains, the Snake River Plain, and the Northern Basin and Range (EPA 2011).

Summarizing impacts within an ecoregional framework will assist in describing potential mitigation (Section 4.2) and accounting for mitigation debits and credits (Section 4.3). For purposes of this Fish and Wildlife HMP, the boundaries of the four ecoregions crossed by the Project are modified slightly and referred to as mitigation zones (MZ) (Figure 1). Mitigation Zone 1 (MZ1) corresponds to the Columbia Plateau ecoregion. MZ2 corresponds to the Blue Mountain ecoregion, without its Continental Zone Foothills Level IV ecoregion. MZ3 combines the Snake River Plain, Northern Basin and Range, and the Continental Zone Foothills of the Blue Mountains ecoregion into a single zone. This was done to group the mitigation debits and credits from the shrub/grassland vegetation type within the Baker, Keating, and Durkee valleys with those in the Northern Basin and Range and Snake River Plain.

Impacts are summarized for the Proposed Route only. The two West of Bombing Range Road alternatives are in MZ1, the Morgan Lake Alternative is in MZ2, and the Double Mountain Alternative is in MZ3. Since each of the alternatives is wholly contained within an MZ, Table 1 and Table 2 above can be referenced for direct impacts. Section 3.3.1.2 quantifies the indirect impacts on elk habitat associated with the Morgan Lake alternative contained within MZ2.

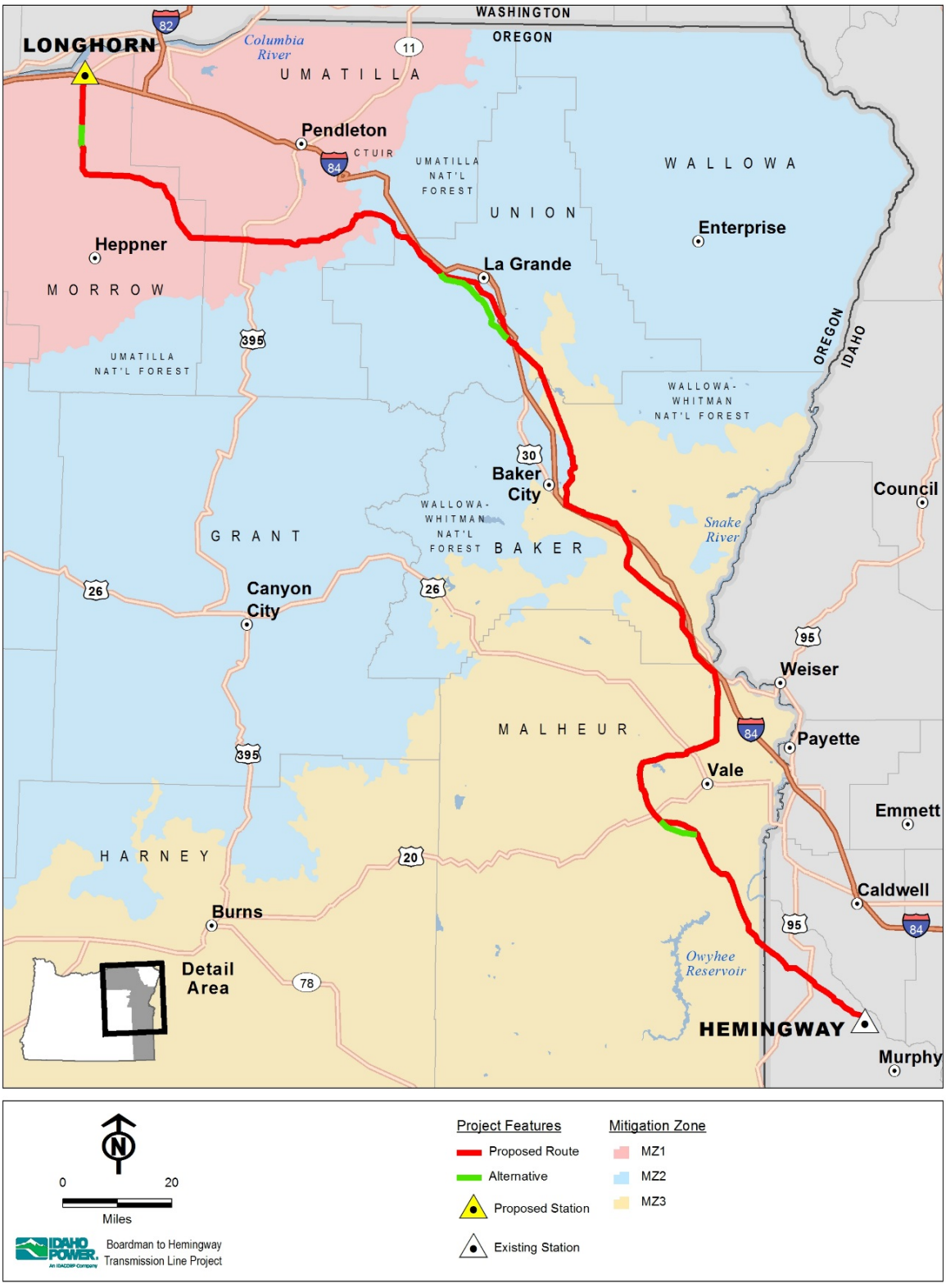

Figure 1. Mitigation Zones

MZ1 Impacts

MZ1 encompasses the northern portion of the Proposed Route from the Longhorn Station, through the Naval Weapons System Training Facility Boardman, east from Morrow County into Umatilla County, across highway 395 and into the foothills of the Blue Mountains south and east of Pilot Rock, Oregon. Approximately 1,173 acres of direct impacts and 0 acres of indirect impacts are anticipated within MZ1, with a majority of impacts occurring within agriculture/ developed and shrub/grassland general vegetation types (Table 3). Impacts on the shrub/grassland general vegetation type occur mostly within the introduced upland vegetation and native grassland habitat types, with fewer impacts occurring in shrubland habitat types. The impact acreage in MZ1 originates from the proposed construction of 60 miles of existing roads requiring substantial modification, 66.9 miles of new roads, 336 tower structures to support 77.6 miles of transmission line, and 13 multi-use areas.

Table 3. Direct and Indirect Impacts from the Proposed Route on General Vegetation Types by ODFW Habitat Categories in MZ1

General Vegetation Type	ODFW Habitat Categories (acres)					Total	***General Veg. Type Subtotal Temporary***	***General Veg. Type Subtotal Permanent***
	2	**3**	**4**	**5**	**6**			
Direct Impacts								
Agriculture/ Developed	105.6	10.9	–	–	290.9	**407.4**	***300.8***	***106.7***
Forest/ Woodland	7.6	–	–	–	–	**7.6**	**–**	***7.6***
Open Water/ Wetlands	0.5	0.0	–	–	–	**0.5**	***0.3***	***0.2***
Riparian Vegetation	0.5	0.1	–	–	–	**0.6**	***0.4***	***0.2***
Shrub/ Grassland	609.0	14.6	19.2	113.8	-	**756.5**	***643.5***	***113.0***
Indirect Impacts								
Impact Area[1]	–	–	–	–	–	**–**	**–**	**–**
Totals								
Total	**724.0**	**25.6**	**19.2**	**113.8**	**290.9**	**1,173.4**	***945.7***	***227.7***
Category Subtotal Temporary	***614.1***	***21.5***	***15.8***	***98.8***	***195.6***	***945.7***	–	–
Category Subtotal Permanent	***109.9***	***4.1***	***3.5***	***15.0***	***95.2***	***227.7***	–	–

[1]The vegetation composition of the indirect impact area in elk summer and winter range has not been attributed at this time. Currently, no indirect impacts to elk summer or winter range have been identified within MZ1.
Note: 0.0 = less than 0.05 acre; – = 0

Within MZ1, impacts overlap with habitat for WAGS, elk, and mule deer. Table 4 identifies the acreage of each wildlife habitat layer within MZ1 that will be affected by the Proposed Route. MZ1 contains all of the Project's impacts on WAGS habitat.

Table 4. Direct and Indirect Impacts from the Proposed Route on Wildlife Habitat in MZ1

Wildlife Habitat Layer[1]	Habitat Category	Impact Type			*Total*
		Temp	Perm	Indirect	
WAGS	2	19.7	2.7	–	***22.4***
Elk winter range	2	54.6	8.5	–	***63.2***
Elk summer range	3	20.4	2.8	–	***23.2***
Mule deer winter range	2	593.8	106.4	–	***700.2***
Mule deer summer range	3	–	–	–	**–**

[1] Habitat layers overlap each other; therefore, acres of impact between habitat layers should not be added together.
Note: – = 0

MZ2 Impacts

MZ2 encompasses the central portion of the Proposed Route from the foothills of the Blue Mountains east of Pilot Rock, Oregon, from Umatilla County across the Blue Mountains into Union County past La Grande, Oregon, to where the Project crosses Interstate 84 near Ladd Canyon and Craig Mountain in the Clover Creek Valley area. Approximately 1,453 acres of direct impacts and 6.3 acres of indirect impacts are anticipated within MZ2, with a majority of impacts occurring within forest/woodland and shrub/grassland general vegetation types (Table 5). Impacts on the forest/woodland general vegetation type occur mostly within the Douglas-fir / mixed grand fir habitat type, as well as ponderosa pine habitat type. A 250-foot-wide corridor around the centerline is assumed to be a permanent disturbance to the forest/woodland general vegetation type within MZ2 because of the vegetation management that will occur under the line. To keep vegetation clear of the conductors, a 250-foot-wide area will be treated and maintained such that a forest/woodland vegetation type cannot reestablish. This is reflected by the greater amount of permanent impacts than temporary impacts to forest/woodland in MZ2. Impacts on shrub/grassland general vegetation type occur mostly within the native grassland and shrub-steppe habitat types. The impact acreage in MZ2 originates from the proposed construction of 42 miles of existing roads requiring substantial modification, 20.4 miles of new roads, 217 tower structures to support 49.6 miles of transmission line, and 9 multi-use areas.

Table 5. Direct and Indirect Impacts from the Proposed Route on General Vegetation Types by ODFW Habitat Categories in MZ2

General Vegetation Type	ODFW Habitat Categories (acres)						Total	*General Veg Type Subtotal Temporary*	*General Veg Type Subtotal Permanent*
	1	2	3	4	5	6			
Direct Impacts									
Agriculture/ Developed	–	–	–	–	–	100.7	**100.7**	***59.2***	***41.4***
Bare Ground	–	–	–	–	–	–	**–**	**–**	**–**
Forest/ Woodland	–	388.5	474.0	–	–	–	**862.5**	***22.2***	***840.4***
Shrub/ Grassland	–	187.8	163.5	15.4	12.6	–	**379.4**	***345.7***	***33.7***
Open Water/ Wetlands	–	26.1	0.2	0.0	–	–	**26.3**	***25.9***	***0.4***
Riparian	–	0.0	5.4	–	–	–	**5.4**	***5.4***	***0.1***

General Vegetation Type	ODFW Habitat Categories (acres)						Total	*General Veg Type Subtotal Temporary*	*General Veg Type Subtotal Permanent*
	1	2	3	4	5	6			
Vegetation									
Indirect Impacts									
Impact Area[1]	–	**–**	6.3	**–**	**–**	**–**	***6.3***	**–**	***6.3***
Totals									
Total	–	**602.4**	**649.4**	**15.4**	**12.6**	**179.2**	**1,380.6**	***458.3***	***922.3***
Category Subtotal Temporary	–	***198.5***	***176.4***	***12.5***	***11.6***	***137.7***	***458.3***	**–**	**–**
Category Subtotal Permanent	–	***403.9***	***473.0***	***2.9***	***1.1***	***41.4***	***922.3***	**–**	**–**

[1]The vegetation composition of the indirect impact area in elk summer and winter range has not been attributed at this time.
Note: 0.0 = less than 0.05 acre; – = 0.

Within MZ2, impacts overlap with habitat for elk and mule deer. Table 6 identifies the acreage of each wildlife habitat layer within MZ2 that will be affected by the Proposed Route. Table 6 includes the indirect impacts within elk winter range and elk summer range. Elk and deer seasonal ranges cover a vast majority of the impacts from the Proposed Route that occur within MZ2, speaking to the importance of this zone to big game species.

Table 6. Direct and Indirect Impacts from the Proposed Route on Wildlife Habitat in MZ2

Wildlife Habitat Layer[1]	Habitat Category	Impact Type			*Total*
		Temp	Perm	Indirect	
Elk winter range	2	83.2	137.9	–	***221.1***
Elk summer range	3	23.0	86.2	6.3	***115.6***
Mule deer winter range	2	169.8	403.2	–	***573.0***
Mule deer summer range	3	180.0	503.4	–	***683.4***

[1] Habitat layers overlap each other; therefore, acres of impact between habitat layers should not be added together.
Note: – = 0

MZ3 Impacts

MZ3 encompasses the southern portion of the Proposed Route, from south of Ladd Canyon and Craig Mountain in the Clover Creek Valley area, across the Union/Baker county line, east of the Baker Valley across the Burnt River Canyon towards Huntington, Oregon and the remainder of the Project area in Malheur County. MZ3 is the largest mitigation zone and is where most of the Project's direct impacts occur. Approximately 2,642 acres of direct impacts and 432.7 acres of indirect impacts are anticipated within MZ3, with a vast majority of impacts occurring within the shrub/grassland general vegetation type (Table 7). Impacts on the shrub/grassland general vegetation type occur mostly within the shrub-steppe with big sage and introduced upland vegetation habitat types, with fewer impacts in native grassland and other shrub habitat types. The impact acreage in MZ3 originates from the proposed construction of 121.2 miles of existing roads requiring substantial modification, 118.9 miles of new roads, 635 tower structures to support 145.4 miles of transmission line, and 22 multi-use areas.

Table 7. Direct and Indirect Impacts from the Proposed Route on General Vegetation Types by ODFW Habitat Categories in MZ3

General Vegetation Type	ODFW Habitat Categories (acres)						Total	General Veg Type Subtotal Temporary	General Veg Type Subtotal Permanent
	1	2	3	4	5	6			
Direct Impacts									
Agriculture/ Developed	–	–	–	–	–	178.8	**178.8**	***55.7***	***123.2***
Bare Ground	–	2.3	0.5	–	–	–	**2.7**	***2.3***	***0.4***
Forest/ Woodland	–	146.8	–	–	–	–	**146.8**	***0.6***	***146.2***
Shrub/ Grassland	–	1,528.3	164.3	156.8	246.1	–	**2,095.6**	***1,808.7***	***286.9***
Open Water/ Wetlands	–	1.6	0.3	0.0	–	–	**1.9**	***1.3***	***0.6***
Riparian Vegetation	–	0.5	0.0	–	–	–	**0.5**	***0.3***	***0.2***
Indirect Impacts									
Impact Area[1]	–	427.3	–	–	–	–	**427.3**	**–**	***427.3***
Totals									
Total	–	**2,106.7**	**165.0**	**156.8**	**246.1**	**178.8**	**2,853.5**	***1,868.9***	***984.6***
Category Subtotal Temporary	**–**	***1,310.5***	***146.7***	***137.1***	***219.0***	***55.7***	***1,868.9***	–	–
Category Subtotal Permanent	**–**	***796.2***	***18.3***	***19.7***	***27.2***	***123.2***	***984.6***	–	–

[1] The vegetation composition of the indirect impact area in elk summer and winter range has not been attributed at this time.
Note: 0.0 = less than 0.05 acre; – = 0

Within MZ3, impacts overlap with habitat for elk, mule deer, and California bighorn sheep. Table 8 identifies the acreage of impacts to each wildlife habitat layer within MZ3 that will be affected by the Proposed Route. Table 8 includes the indirect impacts within elk winter range and elk summer range. The East Beulah Management Unit is managed by ODFW as an elk de-emphasis area and occurs within MZ3. Project impacts' habitat categories are not modified by overlap with elk winter and summer range within the de-emphasis area.

Table 8. Direct and Indirect Impacts from the Proposed Route on Wildlife Habitat in MZ3

Wildlife Habitat Layer[1]	Habitat Category	Impact Type			*Total*
		Temp	Perm	Indirect	
Elk winter range	2	100.8	32.3	427.3	***566***
Elk summer range	3	–	–	–	**–**
Mule deer winter range	2	1,309.9	368.7	–	***1,678.7***
Mule deer summer range	3	108.7	102.5	–	***211.2***
California Bighorn Sheep Herd Range	2	1.6	14.2	–	***15.8***

[1] Habitat layers overlap each other; therefore, acres of impact between habitat layers should not be added together.
Note: – = 0

3.3.2 Calculating Debits

Permanent impacts will be mitigated through the restoration, establishment, enhancement, and/or preservation of similar habitat. Table 9 outlines the approach to calculating the mitigation debit accrued from permanent impacts.

Table 9. Accounting for Mitigation Debit for Permanent Direct Impacts

Habitat	Impact Acres	Mitigation Debit	Mitigation Explanation
Category 2	1	>1	The mitigation goal for Category 2 habitat is "no net loss" and "net benefit." Accordingly, mitigation for permanent impacts on Category 2 habitat needs to demonstrate a net benefit in quality or quantity. Mitigation debits are accrued at a greater amount of acreage than what is impacted by the Project.
Category 3 & Category 4	1	1	The mitigation goal for Category 3 & 4 habitat is "no net loss" in quantity or quality. Mitigation debits are accrued at an equal amount of acreage to what is impacted by the Project.
Category 5	1	<1	The mitigation goal for Category 5 habitat is a "net benefit in habitat quantity or quality." Mitigation debits are accrued at a lesser amount (but greater than zero) of acreage than what is impacted by the Project; however, mitigation actions performed to offset the Category 5 debits will be improving the quality of Category 2, 3, or 4 habitats and result in a net benefit to quality.
Category 6	1	0	The mitigation goal for impacts on Category 6 habitat is minimization; no compensatory mitigation proposed. A majority of impacts on Category 6 habitat occurs within agricultural areas. IPC has prepared an Agricultural Impacts Mitigation Plan (Exhibit K, Attachment K-1) to address these impacts.

Temporary impacts will be restored during reclamation. IPC plans for reclamation to be successful. IPC will mitigate beyond reclamation for temporary impacts on Category 2 habitat to meet the net benefit requirement. IPC is also proposing to mitigate beyond reclamation for the temporal loss of Category 2, 3, and 4 habitat functionality that occurs from temporary impacts during recovery of habitat. Table 10 outlines the approach to calculating the mitigation debit accrued from temporary impacts.

Table 10. Accounting for Mitigation Debit for Temporary Direct Impacts

Habitat	Impact Acres	Mitigation Debit	Mitigation Explanation
Category 2	1	>1	The mitigation goal for Category 2 habitat is "no net loss" and "net benefit." Accordingly, mitigation for temporary impacts on Category 2 habitat needs to demonstrate a net benefit in quality or quantity. Mitigation debits are accrued at a greater amount of acreage than what is impacted by the Project. All areas of temporary disturbance will be revegetated at the site of impact. Mitigation debits are accrued to meet the "net benefit" requirement and to account for the temporal loss of habitat function during reclamation.
Category 3 & Category 4	1	<1	The mitigation goal for Category 3 & 4 habitat is "no net loss" in quantity or quality. Mitigation debits are accrued at a lesser amount (but greater than 0) of acreage than what is impacted by the Project. All areas of temporary disturbance will be revegetated at the site of impact. Mitigation debits are accrued to account for the temporal loss of habitat function during reclamation.
Category 5	1	0	The mitigation goal for Category 5 habitat is a "net benefit in habitat quantity or quality." IPC assumes that reclamation activities will result in a higher functioning habitat and therefore be a "net benefit" in habitat quality for all temporary impacts on Category 5 habitat; therefore, no mitigation debits are accrued.
Category 6	1	0	The mitigation goal for Category 6 habitat is minimization; no mitigation debits are accrued. A majority of impacts on Category 6 habitat occurs within agricultural areas. IPC has prepared an Agricultural Impacts Mitigation Plan (Exhibit K, Attachment K-1) to address these impacts.

Indirect impacts on elk winter range, a Category 2 habitat, and elk summer range, a Category 3 habitat, will be mitigated similar to permanent impacts. Table 11 outlines the approach to calculating the mitigation debit accrued from indirect impacts. The elk and deer habitat layers contain significant overlap, so the mitigation debits accrued for each should not be considered additive. Section 3.3.4.3 includes a discussion on how the wildlife habitat layer overlap may be addressed in the accounting process.

Table 11. Accounting for Mitigation Debit for Indirect Impacts

Habitat	Impact Acres	Mitigation Debit	Mitigation Explanation
Elk winter range Category 2	1	>1	The mitigation goal for Category 2 habitat is "no net loss" and "net benefit." Accordingly, mitigation for impacts on Category 2 habitat needs to demonstrate a net benefit in quality or quantity. Mitigation debits are accrued at a greater amount of acreage than what is impacted by the Project.
Elk summer range Category 3	1	1	The mitigation goal for Category 3 habitat is "no net loss" in quantity or quality. Mitigation debits are accrued at an equal amount of acreage to that impacted by the Project.

3.3.3 Purchasing Credits

IPC proposes offsetting fish and wildlife habitat impacts by either purchasing credits or conducting its own compensatory mitigation projects. With respect to purchasing credits, IPC proposes that it may do so through one or both of the following mechanisms:

- **Mitigation Banking**. Purchasing mitigation credits from mitigation banks to address Project impacts where available; no mitigation banks are currently available within the mitigation service area. In the event that a habitat mitigation bank becomes available within the mitigation service area, IPC would seek to accomplish all or part of its mitigation for the Project by participation in the bank.
- **In-Lieu Fee (ILF)**. Fees paid to an approved ILF sponsor which are then used to develop an on the ground mitigation project within a certain time period. IPC is not aware of any ILF sponsors within the Project's mitigation service area. In the event that an ILF sponsor becomes available within the mitigation service area, IPC would seek to accomplish all or part of its mitigation for the Project by participation through an ILF sponsor.

3.3.4 Creating Credits through Mitigation Projects

If IPC creates credits through a mitigation project or projects rather than purchase all of the required credits, IPC will secure the necessary mitigation sites prior to commencing construction on the Project. In this section, IPC describes the mitigation site selection process, the mitigation credit score assessment approach, the standards for each mitigation project, and the documentation and verification processes for the mitigation projects. In Appendix A, IPC provides a desktop analysis of certain potential mitigation sites that currently are on the market, demonstrating there are mitigation site opportunities sufficient to meet the needs of the Project.

3.3.4.1 Mitigation Project Standards

Mitigation Zones and Service Area

Because the Project crosses multiple habitat types and habitat categories, mitigation will need to occur at multiple locations. The mitigation zones and the mitigation service area[1] were developed to support mitigation planning. As an example, for impacts to the shrub/grasslands general vegetation type within MZ3, IPC will make every effort to identify mitigation within the portion of the service area that is within MZ3 that provides uplift to the shrub/grasslands general vegetation type. Following this approach will simplify the presentation of and accounting for potential mitigation. It may not be possible or necessary to mitigate for all impacts within a MZ with mitigation actions within that same MZ and it may not be possible or necessary to locate all mitigation actions within the mitigation service area (for instance, mitigation for impacts to Category 4 and Category 5 habitat can be located off-proximity).

Bare Ground General Vegetation Habitat

IPC will not seek out specific mitigation opportunities for the bare ground general vegetation type. The bare ground general vegetation type is made up of features that are typically found within the shrub/grassland and forest/woodland general vegetation types; such as rock outcrops, scree slopes, cliffs or canyons, and bare soil. Proposed mitigation of shrub/grassland

[1] The mitigation service area consists of the subbasins (i.e., hydrologic unit boundary 8) in Oregon that are crossed by the Project. See discussion in Section 4.1.1 for a list of subbasins crossed.

and forest/woodland general vegetation types will contain features that are part of the bare ground general vegetation type. Mitigation actions that provide ecological uplift to shrub/grassland and forest/woodland general vegetation types will provide a benefit to those species that utilize bare ground. Bare ground is found within most of the potential mitigation that IPC has identified to date (Appendix A).

Agriculture/Developed Habitat

To address mitigation for areas identified as agriculture/developed, IPC has prepared an Agricultural Impacts Mitigation Plan (Exhibit K, Attachment K-1). Impacts on agricultural habitats presented in this Fish and Wildlife HMP did not consider the methods used to assess impacts on agricultural land in Exhibit K.

Agency Input

IPC has requested input from the following federal, state, and local agencies regarding potential mitigation actions and areas within the mitigation service area. The agencies and organizations that have been or will be contacted include:

- BLM Vale, Oregon Field Office
- BLM Idaho State Office
- Wallowa-Whitman National Forest
- ODFW, La Grande Field Office,
- Idaho Department of Fish and Game
- Natural Resources Conservation Service
- Grande Ronde Model Watershed
- Various Rural Fire Protection Districts that occur along the Project
- Various land trusts
- Private individuals

IPC has worked closely with ODFW to identify potential mitigation for consideration in this Plan. IPC will continue to work with all the listed agencies and organizations as mitigation continues to be developed.

Conservation Actions

Credits may be generated by a combination of the following types of conservation actions:

- **Enhancement**: Measures that increase the quantity and/or quality of fish and wildlife habitat and are aimed at transitioning an area of habitat from a less than desirable state to something more desirable. Appropriate enhancement measures may vary among sites, depending on the initial and desired states of a site.
- **Avoided loss**: Measures that prevent undesirable state changes in areas that are at a demonstrated risk of degradation from threats such as development, wildfire, and invasive species. Depending on the current and anticipated future threats at a given site, appropriate avoided loss activities may include legal protection, fire prevention, and management of invasive species. Avoided loss is not being proposed as a stand-alone mitigation action; it will be considered alongside enhancement actions.

Specific conservation actions will be developed upon identification of a mitigation site and formal valuation of site conditions and possible habitat improvement measures. Table 12 below includes a preliminary list of potential conservation actions that IPC might apply to its mitigation projects.

Further, IPC will continue to seek out mitigation opportunities that would fund private, state, or federal programs and/or projects that would not necessarily involve a land acquisition component. IPC will work with the stakeholders to identify any unfunded or underfunded projects that could benefit from additional funding sources, as well as determining how much mitigation credit each of these projects will represent to the Project. These types of mitigation must remain functional and legally protected through the duration of impacts being mitigated and cannot include programs that have sufficient funding now or are likely to have sufficient funding in the future.

Table 12. Other Potential Mitigation Actions

Mitigation Action	Habitat Benefit	General Vegetation Type[1]	MZ	Size (acres)
Road Closure or Decommissioning	Reduces chronic sediment delivery to riparian areas, reduces potential of human caused fire and invasive species introduction	All	Unknown	Unknown
Stream Habitat Enhancement	Improve water quality, and fish and riparian wildlife habitat	Open Water/Wetlands	Unknown	Unknown
Culvert Removal / Replacement	Improve water quality and aquatic species passage	Open Water/Wetlands	Unknown	Unknown
Upland Habitat Enhancement	Multiple benefits	Shrub/Grassland Forest/Woodland	Unknown	Unknown
Juniper Removal	Improve/restore native grassland and shrub-steppe habitats, improve sage-grouse habitat	Shrub/Grassland	Unknown	Unknown
Fence Removal / Marking	Reduce wildlife collisions	Shrub/Grassland	Unknown	Unknown
Boardman Conservation Area	Preservation and enhancement of native grasslands, WAGS habitat	Shrub/Grassland	MZ1	22,642

3.3.4.2 Mitigation Project Documentation

Mitigation Management Plan

For each habitat mitigation site (mitigation site), IPC will produce a site-specific Mitigation Management Plan that identifies the extent, type, and description of all proposed conservation actions, including the following:

- **Introduction and background** – mitigation site name, date acquired, time period covered by the management plan, plan preparer, mitigation site manager and technical staff, mitigation site size, location, access, and adjacent land use. Also describe the purpose of the mitigation site and how it relates, if at all, with other mitigation properties or existing agency management areas.

- **Mitigation Durability** – description of the management, legal protection, and financial assurances that ensure the mitigation will be in place and effective for the intended duration. The mitigation duration should be commensurate with the duration of the impact, which can range from 3 to 5 years through the Project life.[2]
- **Baseline Ecological Setting** – vegetation mapping via field visit or some combination of remote classification and field verification, wildlife species that are likely to be present, mapped soil types, and a description of hydrologic features and current water rights and usage. Invasive species and noxious weed locations should also be identified and discussed.
- **Proposed Mitigation Goals and Actions** – description of the desired future condition for each habitat type. Describe the mitigation actions and operation and maintenance activities being proposed to achieve the desired future condition (juniper removal, seeding, noxious weed treatment, land management change).
- **Effectiveness** - proposed mitigation actions should be effective or reasonably likely to deliver expected conservation benefits. Mitigation actions should follow reliable methods. Reliable mitigation methods, meaning "a mitigation method that has been tested in areas with site factors similar to the area proposed for mitigation and that has been found (e.g., through field trials, demonstration projects or scientific studies) to produce the habitat effects required to meet the mitigation goal for that action." OAR 635-415-0005(29). The mitigation methods should be clearly stated or included by reference.
- **Monitoring and Performance Measures** – description of monitoring procedures (including baseline data collection), timeframes, and success criteria. Monitoring plans will incorporate standard monitoring procedures, timeframes, and success criteria. The purpose of the monitoring plans will depend on the mitigation action, but in general they will address long-term project monitoring, corrective actions, and maintenance responsibilities, if apple, including performance objectives, methods for measuring effectiveness/success, reporting requirements, funding source, and responsible parties. IPC will implement monitoring efforts as soon as is reasonable depending on the mitigation action being implemented. Monitoring efforts will occur at appropriate intervals for each individual mitigation action for the life of the Project. Below are some examples of generalized monitoring schedules and success criteria. Inclusion of these examples does not commit IPC to following them during implementation of mitigation.
    - **Monitoring:** Monitoring will occur annually until success criteria are met. Annual reports will be supplied to agencies for review. If the mitigation is not trending towards the defined success criteria within the first 3-5 years, adaptive management strategies will be implemented. Long-term monitoring and reporting will occur at 5 to 10 year intervals after success criteria are met.
    - **Performance Measures:** performance measures are typically very specific to the mitigation site where actions are being applied and the desired outcomes determined in consultation with a permitting agency. However, the following is a non-specific list of examples.
        - Native grass establishment with greater than 25 percent total canopy cover with 60 percent of the plant cover from planted species within 4 years.

[2] Under OAR 635-415-0005(27), "Project life" means "the period of time during which a development action is subject to regulation by local, state or federal agencies." For the B2H Project, that period will be continuously until the facility site is restored and the site certificate is terminated in accordance with OAR 345-027-0110.

  - Increase in density or cover of desirable native species.
  - Increase in desirable perennial plants over five years.
  - Elimination of noxious weeds or other undesirable plant species or reduced to a level that does not interfere with mitigation goals.
  - 20 to 40 percent of planted sagebrush seedlings survey after the third growing season following planting.
  - Site is trending toward its ecological site description over five years.
  - Juniper is removed form a site and long-term treatment maintains the absence of juniper trees.
  - Natural recruitment of sagebrush is occurring.
  - Successful establishment of important shrub species for big game winter range.
  - Demonstrate effectiveness in excluding livestock from and allowing big game access to the mitigation site.
  - Demonstrate effectiveness of new water source in providing water.
  - Demonstrate effectiveness in reducing erosion.
  - The conditions on the rest of the mitigation site do not pose a threat to maintaining the habitat quality where mitigation actions have improved habitat.
  - Fencing has been properly constructed and continues to be effective.
  - Traffic volume is reduced through access control device or road decommissioning.
- **Management Restriction and Prohibitions** – if the mitigation site is a conservation easement, describe landowner reserved rights and when, where, how much, and how those rights are managed. Define each prohibited use and explain any exceptions. Describe any findings from the Phase I environmental site assessment that may affect management.
- **Other Management Actions** – water usage and water rights management, infrastructure management, proposed access control, describe existing access rights or easements, and protection of historical resources.
- **Adaptive Management** – describe potential issues that could delay or eliminate the mitigation site from achieving mitigation goals and provide a framework process to address the issues.
- **Reporting** – list all reporting requirements for baseline, mitigation monitoring, and general management reports.
- **Appendices** – include all pertinent supporting information (mining permits, water rights certificates, access easements, previous baseline studies, etc.)

Legal Protections and Financial Assurances

Mitigation projects must be durable—that is, the period of time that mitigation is effective must be commensurate with the duration of the impacts being offset. Demonstrating project durability requires that legal protections be put in place to ensure the mitigation project benefits are not disturbed for the life of the credits. Legal protection may be demonstrated through term or permanent conservation easements or through other tools ensuring the protections will last for the duration of the impacts.

Financial assurances must be in place to ensure appropriate management will occur throughout the life of the credits. Funding for site management may occur through various mechanisms, provided they ensure management will persist throughout the life of the mitigation project.

Each Mitigation Management Plan will either include or reference all of the documentation of legal protections and financial assurances.

3.3.4.3 Calculating Credits

IPC will accrue one credit for one acre of habitat acquired or put into easement. For instance, if a 100-acre mitigation site is acquired, IPC would receive 100 credits once certain success criteria are met for the mitigation site. The type and area of ecological uplift actions necessary to meet success criteria and secure mitigation credits will be determined on a site-specific basis. However, IPC assumes that mitigation actions may occur on a portion, but not the entirety, of the mitigation site. That is, IPC does not need to conduct mitigation actions on all 100 acres of the mitigation site to receive 100 credits.

IPC will account for the location (MZ), general vegetation type, wildlife habitat layer, and habitat category when evaluating mitigation sites against the mitigation debit balance. IPC may need to account at the habitat type level instead of the general vegetation type level, such as to ensure adequate credits are developed in habitat types with a big sagebrush component to account for mitigation debits accrued within big sagebrush habitat types. The habitat type and category attributed to acres within each mitigation site will follow the same methodology performed to attribute Project impacts (Exhibit P1, Attachment P1-1).

The mitigation sites included in Appendix A have had a desktop assessment performed that identified habitat types and habitat categories within the mitigation site. Most of the mitigation sites in Appendix A were selected by IPC with input from ODFW because of their overlap with the wildlife habitat layers used to attribute habitat categories to Project impacts. Therefore, a vast majority of the available mitigation credits within the mitigation sites occurs within Category 2 and Category 3 habitats.

Stacking

In calculating credits accrued by a mitigation site, IPC will provide for “stacking” of habitat credit requirements (FWS 2014). Credit stacking occurs where more than one resource or credit type occurs on spatially overlapping areas. Here, IPC must offset Project impacts to habitat types (Table 1), WAGS habitat, elk winter and summer range, mule deer winter and summer range, California bighorn sheep herd range (Table 2), and sage-grouse (Exhibit P2 and Attachment P2-3). To the extent a mitigation site includes an area comprising more than one of those habitats, IPC will receive credit towards each of the habitats. For example, a single credit may satisfy compensatory mitigation needs on an impact site where elk winter range and mule deer winter range overlap. IPC may propose mitigation that enhances one acre of habitat that is within elk winter range and mule deer winter range that would count as 1 credit against the total debits for both elk winter range and mule deer winter range as well as the total debits for Category 2 habitat. Within the geographical information system used to maintain the project impacts and resulting habitat categorization of those impacts, IPC is able to identify how much wildlife habitat overlap occurs on each acre impacted and the types of habitat overlapping.

3.3.4.4 Verification

Monitoring conducted at reclamation sites related to temporarily disturbed areas, and the associated annual reports to the applicable agencies, are discussed in IPC’s Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3). The following discussion addresses monitoring related to mitigation sites. Mitigation site monitoring is also part of the Mitigation Management Plan discussed in Section 3.3.4.2.

Performance Measures

The criteria used to measure success will depend on the extent of impacts and the final mitigation strategy (e.g., success criteria could be different if mitigation is conducted through payments to a conservation bank as opposed to permittee-responsible mitigation sites). The criteria used to measure mitigation success will be site-specific, will depend on the goals and objectives of the mitigation site, and will need to be developed for each individual mitigation site prior to the onset of mitigation efforts.

Reporting

IPC will document the progress of mitigation efforts to applicable federal and state-management agencies in a progress report that will be provided following the periodic monitoring surveys. These reports will also contain recommendations from IPC regarding any additional remedial actions that may be necessary. It is expected that the applicable federal and state management agencies will provide comments and counter suggestions, or approval of IPC's suggestions if remedial efforts are required (i.e., corrective measures if revegetation or mitigation efforts were not successful). Separate monitoring reports may be prepared for each individual mitigation site. Reports will contain information regarding the mitigation actions taken during the reporting period, the success of these actions (based on predefined success criteria established for that mitigation site), and a description of the methods used to monitor the mitigation site.

4.0 DRAFT MITIGATION SITE ASSESSMENTS

Prior to commencement of construction, IPC will secure mitigation sites with sufficient credits to offset the impacts of the Project. In order to show there are mitigation site opportunities sufficient to meet the needs of the Project and to demonstrate how IPC's debiting and crediting approach will be implemented, in the following discussion and in the HMP appendices, IPC discusses potential mitigation sites and provides a desktop-level assessment of the credits available at each site.

4.1 Desktop Habitat Mitigation Site Assessment

There are a number of factors that influence the suitability of potential mitigation. In order to assess the potential mitigation opportunities consistently, IPC (in cooperation with ODOE) developed a desktop habitat mitigation site assessment (desktop assessment) form that was used to assess more than 40 potential mitigation properties. Properties that passed the desktop assessment were then reviewed by IPC and ODOE to determine which properties provided the greatest opportunity for IPC to meet its mitigation needs for the Project. IPC has included in this HMP the properties that provide the greatest opportunity, with their respective desktop assessment forms in Appendix A.

The desktop assessment has two parts, as described below.

4.1.1 Desktop Assessment – Part 1

The first part of the desktop assessment is to complete the desktop assessment worksheet that describes the location and ecological setting of the property. During this step, a determination is made as to whether a property passes or fails the desktop assessment. If the property passes, because it is located in an appropriate ecological setting, the second part of the desktop assessment is completed.

Location – When reviewing the location of a property, preference is given to a location that:

- Is within the mitigation service area (Figure 2). The mitigation service area consists of the subbasins (i.e., hydrologic unit boundary 8) in Oregon that are crossed by the Project. Implementing mitigation projects within this area will ensure that ecological uplift will result in a beneficial effect to species and habitat impacted by the Project. The mitigation service area includes the following subbasins: Umatilla; Middle Columbia-Lake Wallula Subbasin (restricted to Oregon); Upper Grande Ronde; Burnt; Powder; Bully; Willow; Lower Malheur; Lower Owyhee; and Brownlee Reservoir (the area south of where the Burnt River enters the reservoir). Mitigation actions and areas outside of the mitigation service area will still be considered if agreement is reached with permitting agencies that the mitigation would benefit species/habitats affected by the Project.
- Involves large parcels of land, or parcels whose size corresponds to specific mitigation needs.
- Is adjacent to existing wildlife management areas or parcels sought after by a state or federal land management agency to achieve wildlife habitat goals.
- Is not located close to land uses that will obviate long-term success of the mitigation. A qualitative discussion is presented regarding adjacent land use and infrastructure occurrence.

Ecological Setting – When reviewing the ecological setting of a property, preference is given to settings where:

- Baseline habitat quality and conditions are similar in kind to habitat structures and functions that will be displaced by the Project.[3]
- Regional Gap Analysis Project (USGS 2011) data were used to identify the habitat types that occur within the mitigation site and correspond to habitat disturbed by the Project.
- Potential mitigation sites within designated wildlife habitat ranges disturbed by the Project were prioritized. These included those for WAGS, sage-grouse, elk, and deer.
- Implementation of mitigation on the property is likely to create a “net benefit” as defined in OAR 635-415-0005(21).
- Soil types – The Soil Survey Geographic database (NRCS 2011) contains soil maps that provide insight into the potential vegetation that may be considered during restoration efforts.
- Hydrologic features – The National Hydrography Dataset (USGS 2010) and the Oregon Wetlands Cover (Oregon Natural Heritage Information Center & The Wetlands Conservancy 2009) data were reviewed to identify potential wetland and water resources within each potential mitigation site.

[3] "In-kind Habitat Mitigation" means habitat mitigation measures that recreate similar habitat structure and function to that existing prior to the development action (OAR 635-415-0005(12)).

Figure 2. Mitigation Service Area and Mitigation Zones

Pass/Fail – Parameters associated with a property's failure to pass the desktop assessment include:

- 40 percent or more of the property is within the agriculture/developed general vegetation type.
- Infrastructure on the property significantly increased the market value of the property above other properties with similar habitat and similar potential mitigation credit value.
- Property contains a high-voltage transmission line(s).
- Property is too far removed from the mitigation service area.
- Property is made up of disjunct parcels that could not be effectively managed.

4.1.2 Desktop Assessment – Part 2

The second part of the desktop assessment discusses how the property would function as a mitigation site, lists the mitigation actions that may be implemented on the mitigation site, and provides a financial outline.

Mitigation Function – A general description of the Project impacts that the mitigation site would mitigate for:

- Identifies the general vegetation type or specific habitat types the site would offer mitigation for;
- Identifies the wildlife habitat layers that overlay with the mitigation site (e.g., elk winter range); and
- Identifies the ODFW habitat categories that the mitigation site contains.

Mitigation Actions – Lists potential mitigation actions that may be performed within the mitigation site to provide an ecological uplift to the habitat. These potential mitigation actions were often discussed during field visits to the mitigation site. If no field visits occurred, applicable mitigation actions were listed based on known land use and land cover. In general, IPC considered mitigation actions that would improve habitat quality, such as:

- Preserve essential habitats through acquisition and easements;
- Provide general improvement of habitat condition through revegetation efforts;
- Perform treatments to prevent, reduce, or eradicate invasive plants and noxious weeds;
- Implement access control to the mitigation area;
- Implement grazing management techniques that could improve habitat;
- Conduct Phase 1 and Phase 2 juniper removal;
- Remove or mark (e.g., fence marking to avoid collision) anthropogenic structures;
- Conduct fire rehabilitation with native vegetation; and
- Reduce risk of catastrophic fire with creation of a fire readiness plan and use of fire breaks.

Financial Outline – The cost of acquisition of the property and yearly operation and maintenance costs were estimated for each mitigation site. In some instances, the cost of acquisition is unavailable.

4.1.3 Further Development of Desktop Assessments

One desktop assessment has been further developed as an example of how mitigation sites will be brought forward for consideration and ultimately inclusion in a final Fish and Wildlife HMP. IPC sees this format as the next step in the mitigation process from identifying opportunities to proposing mitigation sites that account for the balance of mitigation debits accrued per Section 4.3. The Wolf Creek mitigation site expanded assessment (Appendix B) has been further developed to include mitigation actions that IPC is proposing to gain full mitigation credit for the site (one credit for each acre within the property's boundary). Ongoing coordination with ODOE will identify other mitigation sites, either from those currently included in Appendix A or new opportunities brought to IPC's attention, to move forward in a similar fashion as part of a formal mitigation proposal to be included in the final Fish and Wildlife HMP.

4.2 Habitat Mitigation Sites

Through the desktop assessment and field reviews, IPC has brought forward 14 mitigation sites, which demonstrate that adequate mitigation opportunities exist to address all of the Project's impacts on wildlife habitat. The 14 mitigation sites included in this Fish and Wildlife HMP collectively exceed the quantity of mitigation that will ultimately be needed for the Project by approximately ten- to twenty-fold. IPC will continue to coordinate with ODOE in preparation of a final Fish and Wildlife HMP that will be sufficient to compensate for the Project's impacts on wildlife habitats and achieve the mitigation goals set forth in ODFW's Habitat Mitigation Policy. IPC will begin funding mitigation once a site certificate is issued by EFSC and prior to construction of the Project.[4]

Mitigation sites are presented by their location relevant to the MZs described under Section 3.3.1.3. Presentation of mitigation sites by the MZ will show which Project impacts are being mitigated for at each mitigation site.

4.2.1 MZ1 Mitigation Sites

Within MZ1, IPC has identified four mitigation sites. These include Government Mountain, Olex, Ione, and Eightmile (Appendix A). The Olex and Ione mitigation sites are both potential conservation easements while the Government Mountain and Eightmile mitigation sites are currently for sale and would be fee simple title acquisitions. Government Mountain is also partially within MZ2. For purposes of this HMP, the mitigation site will be considered under MZ1.

All four mitigation sites within MZ1 are outside of the mitigation service area (Figure 3). The focus of mitigation efforts within MZ1 have been to address Project impacts on WAGS habitat. The availability of mitigation sites that contain WAGS habitat is lacking within the mitigation service area in MZ1; therefore, IPC went outside of the mitigation service area to identify mitigation sites. Both the Olex mitigation site and Ione mitigation site were recommended to IPC by ODFW as potential WAGS mitigation.

[4] For all mitigation, IPC will provide ODOE with proof of funding prior to construction. For actions involving land acquisition, IPC will acquire the legal right to create, maintain, and protect habitat mitigation areas for the life of the facility by means of an outright purchase, conservation easement, or similar conveyance or contract.

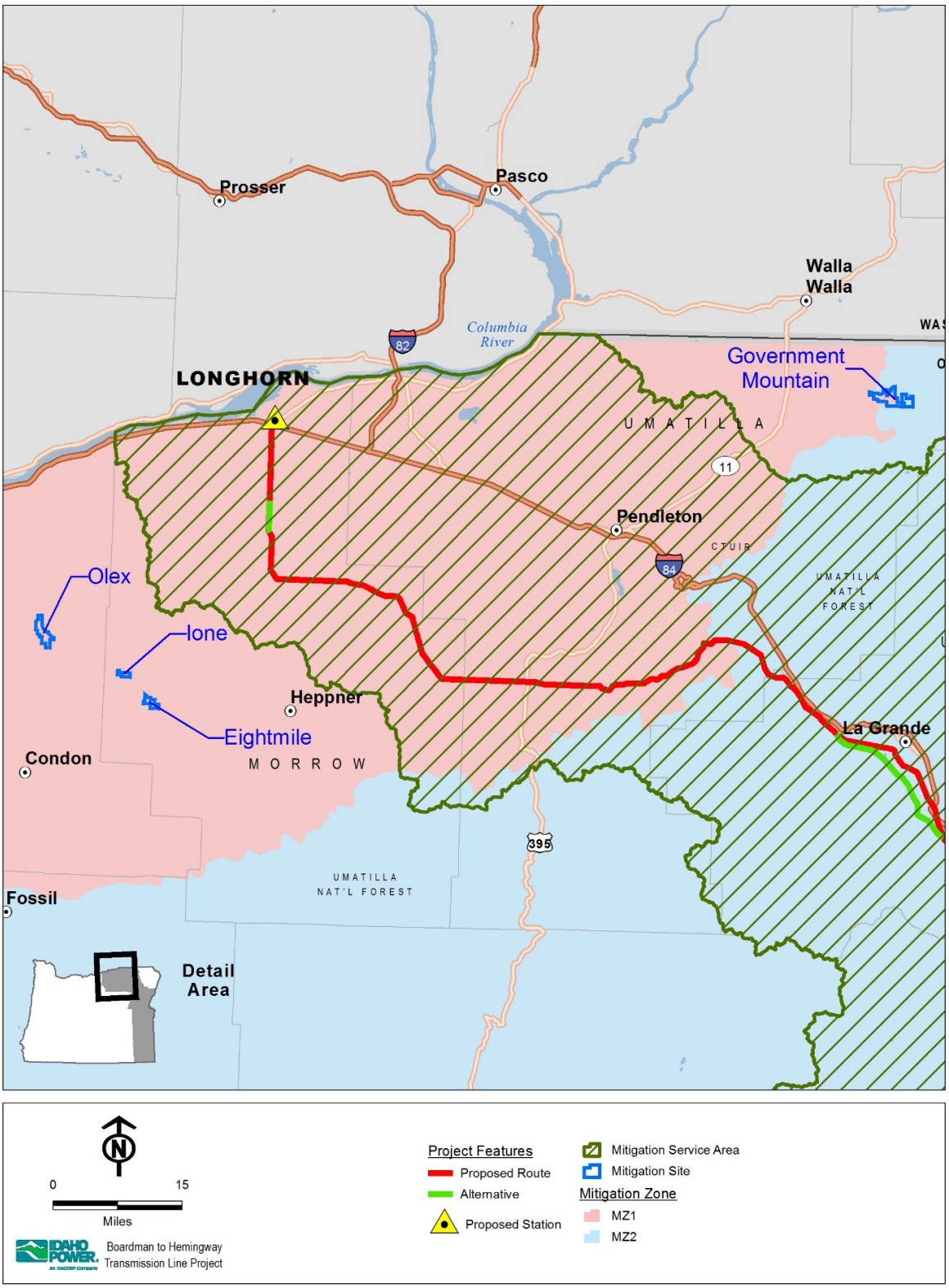

Figure 3. Mitigation Sites within MZ1

Table 13 shows that the mitigation sites identified by IPC within MZ1 provide abundant opportunity to mitigate for Project impacts based on general vegetation types and habitat categories. When considering wildlife habitat layers, the mitigation sites identified within MZ1 provide abundant opportunity to mitigate for Project impacts on WAGS habitat, mule deer winter range, elk winter range, mule deer summary range, and elk summer range (Table 14).

Table 13. Acres of General Vegetation Types by Habitat Category for Mitigation Sites in MZ1

Mitigation Site	General Vegetation Type	ODFW Habitat Categories (acres)						Total
		1	2	3	4	5	6	
Government Mountain	Forest/Woodland	–	1,243.0	399.7	–	–	–	**1,642.7**
	Shrub/Grassland	–	1,572.0	13.8	–	–	–	**1,585.8**
	Agriculture/Developed	–	–	–	–	–	82.7	**82.7**
	Open Water/Wetlands	–	141.2	–	–	–	–	**141.2**
Olex[1]	Agriculture/Developed	–	–	–	–	–	68.2	**68.2**
	Shrub/Grassland	418.6	1,583.2	–	–	–	–	**2,001.8**
Ione	Agriculture/Developed	–	–	–	–	–	–	**–**
	Shrub/Grassland	–	108.0	–	–	–	–	**108.0**
Eightmile	Agriculture/Developed	–	429.9	–	–	–	36.7	**466.6**
	Shrub/Grassland	–	369.5	–	–	–	–	**369.5**
MZ1 Mitigation Site Total		**418.6**	**5,446.8**	**413.5**	**–**	-	**187.6**	**6,466.5**

[1] IPC is aware that significant portions of the Olex site are not available for mitigation but the exact amount is not currently known.
Note: – = 0

Table 14. Acres of Wildlife Habitat within Mitigation Sites of MZ1

Wildlife Habitat Layer[1]	Mitigation Site				
	Gov. Mtn.	Olex[2]	Ione	Eightmile	MZ1 Mitigation Site Total
WAGS	–	1,406.4[3]	–	–	**1,406.4[3]**
Elk winter range	3,038.3	–	–	–	**3.038.3**
Elk summer range	2,774.3	–	–	–	**2,774.3**
Mule deer winter range	1,626.4	2,070.0	–	836.1	**2,906.1**
Mule deer summer range	1,822.2	–	–	–	**1,822.2**

[1] WAGS = Category 1 and Category 2; elk winter range = Category 2; elk summer range = Category 3; mule deer winter range = Category 2; mule deer summer range = Category 3.
[2] IPC is aware that significant portions of the Olex site are not available for mitigation but the exact amount is not known at this time.
[3] This includes 418.6 acres of Category 1 habitat and 987.8 acres of Category 2 habitat for WAGS. However, not all this habitat is available for mitigation; the exact amount is not currently known.
Note: – = 0

4.2.2 MZ2 Mitigation Sites

Within MZ2, IPC has identified five mitigation sites (Figure 4). These include High Valley, Glass Hill, County Line, Wolf Creek, and Antelope Mountain (Appendix A). All of these mitigation sites would be fee simple title acquisitions. Only the Antelope Mountain mitigation site is currently for sale, the remaining properties' owners have been contacted and have shown some interest in selling all or a portion of their property. In addition to the five mitigation sites, IPC is developing the wetland mitigation property within MZ2. The Government Mountain mitigation site is partially within MZ2, but a majority is within MZ1 and therefore addressed above.

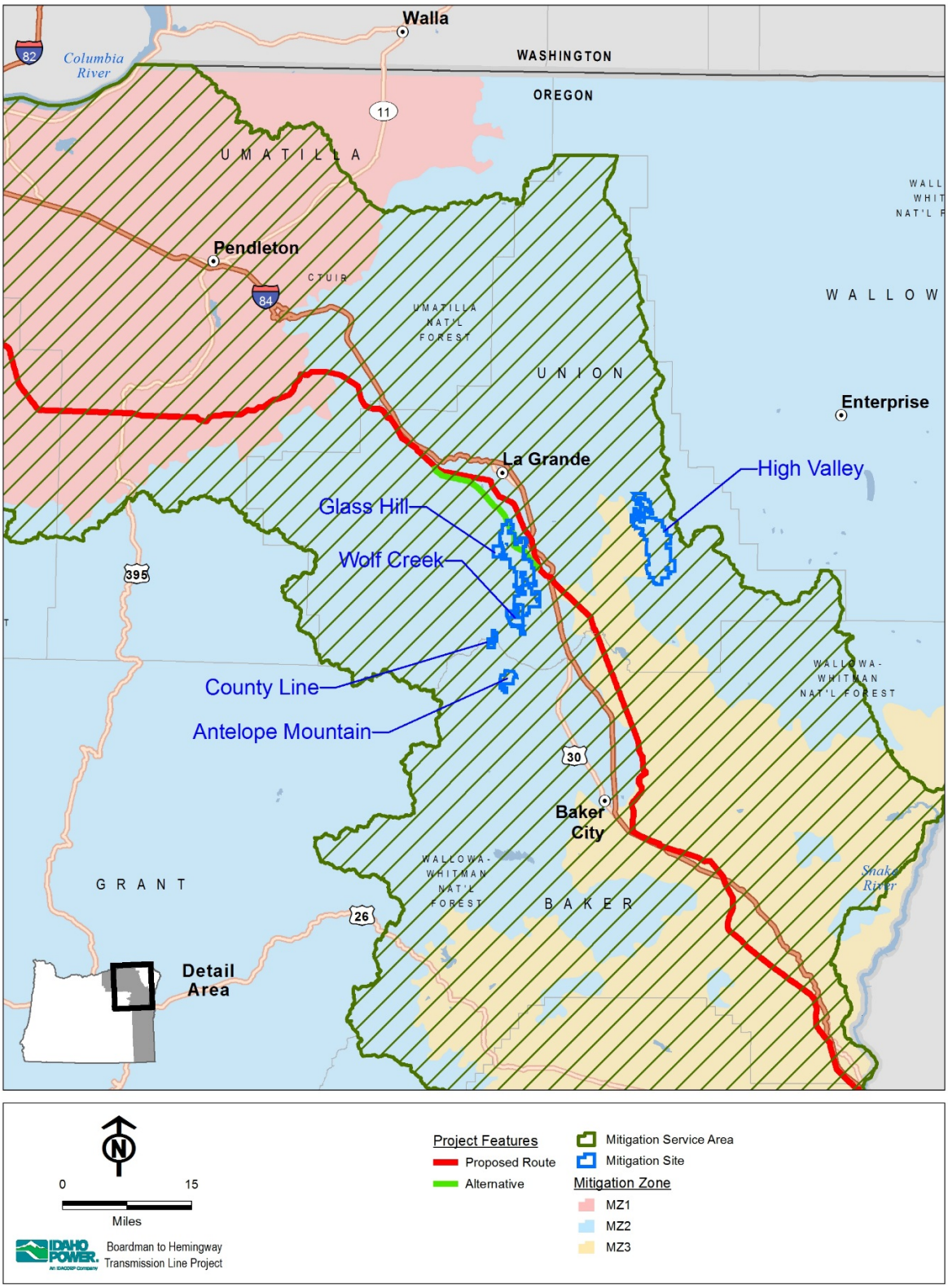

Figure 4. Mitigation Sites within MZ2

The focus of mitigation efforts within MZ2 have been to address Project impacts on the forest/woodland general vegetation type and impacts on elk and mule deer winter and summer range.

Table 15 shows that the mitigation sites identified by IPC within MZ2 provide abundant opportunity to mitigate for Project impacts based on general vegetation types and habitat categories. When considering wildlife habitat layers, the mitigation sites identified within MZ2 provide abundant opportunity to mitigate for impacts on mule deer winter range, elk winter range, mule deer summer range, and elk summer range (Table 16).

Table 15. Acres of General Vegetation Types by Habitat Category for Mitigation Sites in MZ2

Mitigation Site	General Vegetation Type	ODFW Habitat Categories (acres)						Total
		1	2	3	4	5	6	
Antelope Mountain	Forest/Woodland	–	1,239.8	–	–	–	–	**1,239.8**
	Shrub/Grassland	–	325.4	–	–	–	–	**325.4**
	Open Water/Wetlands	–	37.3	–	–	–	–	**37.3**
Wolf Creek	Forest/Woodland	–	1,361.4	–	–	–	–	**1,361.4**
	Shrub/Grassland	–	344.2	–	–	–	–	**344.2**
	Open Water/Wetlands	–	66.9	–	–	–	–	**66.9**
County Line	Forest/Woodland	–	707	–	–	–	–	**707**
	Shrub/Grassland	–	40	–	–	–	–	**40**
	Open Water/Wetlands	–	24.9	–	–	–	–	**24.9**
Glass Hill	Forest/Woodland	–	8,458	3,734	–	–	–	**4,002**
	Shrub/Grassland	–	1,306	96	–	–	–	**1,402**
	Open Water/Wetlands	–	211	80	–	–	–	**291**
High Valley	Forest/Woodland	–	6,934	7,083	–	–	–	**14,017**
	Shrub/Grassland	–	212	126	–	–	–	**338**
	Open Water/Wetlands	–	268	196	–	–	–	**464**
	Agriculture/Developed	–	–	–	–	–	**12**	**12**
MZ2 Mitigation Site Total		**–**	**21,536**	**11,315**	–	–	**12**	**32,863**

Note: – = 0

Table 16. Acres of Wildlife Habitat within Mitigation Sites of MZ2

Wildlife Habitat Layer[1]	Mitigation Site					
	Antelope Mtn.	Wolf Creek	County Line	Glass Hill	High Valley	MZ2 Mitigation Site Total
Elk winter range	1,602.5	1,772.5	771.9	9,975.0	7,426.0	**21,547.9**
Elk summer range	1,079.5	1,263.4	771.9	13,215.0	11,850.0	**28,179.8**
Mule deer winter range	1,602.5	2,070.0	771.9	5,498.0	745.0	**10,687.4**
Mule deer summer range	–	1,772.5	771.9	13,823.0	14,516.0	**30,883.4**

[1] Elk Winter Range = Category 2; Elk Summer Range = Category 3; Mule Deer Winter Range = Category 2; Mule Deer Summer Range = Category 3.
Note: – = 0

4.2.3 MZ3 Mitigation Sites

Within MZ3, IPC has identified five mitigation sites (Figure 5). These include Trail Creek, Glasgow, Upper Timber, Pole Creek, and Alder Creek (Appendix A). The mitigation sites within MZ3 would all be fee simple title acquisitions.

The focus of mitigation efforts within MZ3 have been to address Project impacts on the shrub/grassland general vegetation type and specifically the shrub-steppe with big sagebrush habitat type and impacts on sagebrush obligate species and big game species.

Table 17 shows that the mitigation sites identified by IPC within MZ3 provide abundant opportunity to mitigate for Project impacts based on general vegetation types and habitat categories. When considering wildlife habitat layers, the mitigation sites identified within MZ3 provide abundant opportunity to mitigate for impacts on mule deer winter range, elk winter range, mule deer summer range, and elk summer range (Table 18).

Table 17. Acres of General Vegetation Types by Habitat Category for Mitigation Sites in MZ3

Mitigation Site	General Vegetation Type	ODFW Habitat Categories (acres)						Total
		1	2	3	4	5	6	
Pole Creek	Forest/Woodland	–	1,527.9	–	–	–	–	
	Shrub/Grassland	–	1,652.1	–	–	–	–	
	Open Water/Wetlands	–	47.4	–	–	–	–	
Alder Creek	Forest/Woodland	–	18.6	–	–	–	–	
	Shrub/Grassland	–	2,704.3	–	–	–	–	
	Open Water/Wetlands	–	18.9	–	–	–	–	
Glasgow	Forest/Woodland	–	30.7	–	–	–	–	
	Shrub/Grassland	–	1,404.2	–	–	–	–	
	Open Water/Wetlands	–	1.8	–	–	–	–	
Trail Creek	Forest/Woodland	–	20.9	–	–	–	–	
	Shrub/Grassland	–	600.9	–	–	–	–	
	Open Water/Wetlands	–	0.7	–	–	–	–	
Upper Timber	Forest/Woodland	–	4.5	–	–	–	–	
	Shrub/Grassland	–	1,556.4	–	–	–	–	
	Open Water/Wetlands	–	8.9	–	–	–	–	
	Agriculture/Developed	–	7.1	–	–	–	–	
MZ3 Mitigation Site Total		**–**	**9,605.3**		–	**–**	–	**9,605.3**

Note: – = 0

Table 18. Acres of Wildlife Habitat within Mitigation Sites of MZ3

Wildlife Habitat Layer[1]	Mitigation Site					
	Pole Creek	Alder Creek	Glasgow	Trail Creek	Upper Timber	MZ3 Mitigation Site Total
Elk winter range	–	2,947.0	611.8	624.5	153.8	**4,337.1**
Elk summer range	2,287.7	–	622.7	624.5	888.6	**4,423.5**
Mule deer winter range	3,227.4	773.8	1,436.7	–	1,576.9	**7,014.8**
Mule deer summer range	3,178.5	–	–	624.5	–	**3,803.0**

[1] Elk winter range = Category 2; Elk summer range = Category 3; Mule deer winter range = Category 2; Mule deer summer range = Category 3.
Note: – = 0

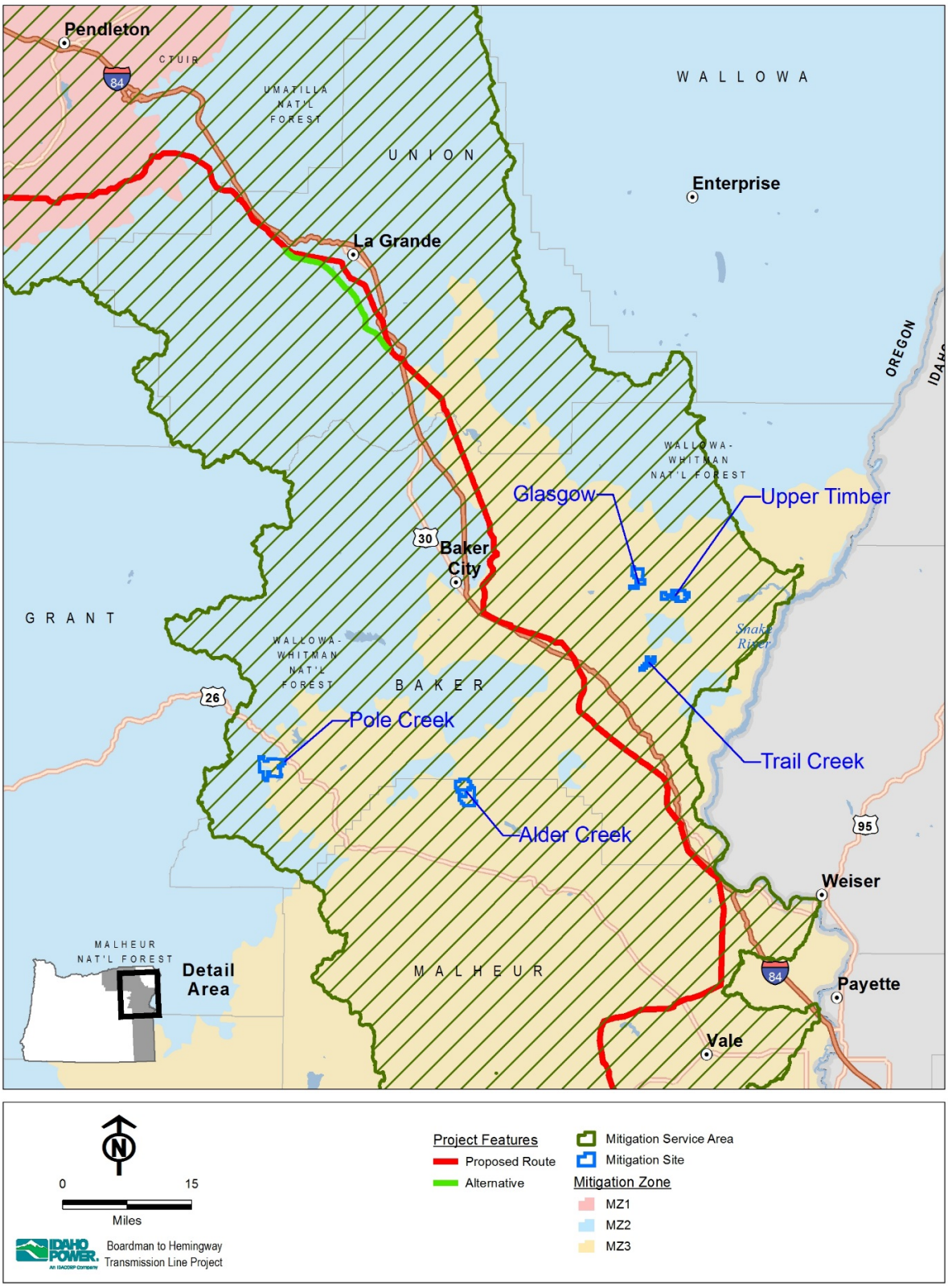

Figure 5. Mitigation Sites within MZ3

4.3 Debit and Credit Accounting for Draft Assessment

4.3.1 MZ1 Accounting

IPC has identified a mitigation debit of approximately 732 to 765 acres that will be accrued for impacts from the Proposed Route within MZ1. Mitigation sites identified within MZ1 account for approximately 6,279 available credits. Table 19 displays the debits and available credits by ODFW habitat category.

Table 19. Mitigation Accounting by Habitat Category in MZ1

ODFW Habitat Category	Impact	Acres	Mitigation Debit	Debit Subtotal by Habitat Category	Subtotal of Available Credits within MZ1 Mitigation Sites from Table 13
1	Temp	–	–	–	418.6
	Perm	–	–		
2	Temp	614.1	>614.1	>724	5,446.8
	Perm	109.9	>109.9		
3	Temp	21.5	<21.5	4.1 to 25.6	413.5
	Perm	4.1	4.1		
4	Temp	15.8	<15.8	>3.5 to 19.2	–
	Perm	3.5	3.5		
5	Temp	98.8	–	<15.0	–
	Perm	15.0	<15.0		
6	Temp	410.2	–	–	187.6
	Perm	60.0	–		
			Total	**>731.6 to 764.6**	**6,278.9**

Note: – = 0

Impacts from the Proposed Route within MZ1 will also accrue species-specific mitigation debits. Table 20 identifies the debits and available credits by wildlife habitat layer. These debits are not in addition to those identified in Table 19. For instance, of the 724 acres of Category 2 debits identified, 22.4 acres originate from impacts to Category 2 WAGS habitat.

Table 20. Mitigation Accounting by Wildlife Habitat Layer in MZ1

Wildlife Habitat Layer	Impact	Acres	Mitigation Debit	Debit Subtotal by Wildlife Habitat[1]	Subtotal of Available Credits within MZ1 Mitigation Sites from Table 14
WAGS	Temp	19.7	>19.7	>22.4	1,406.4[2]
	Perm	2.7	>2.7		
Elk winter range	Temp	54.6	>54.6	>63.2	3,038.3
	Perm	8.5	>8.5		
Elk summer range	Temp	20.4	<20.4	>2.8 to 23.2	2,774.3
	Perm	2.8	2.8		
Mule deer winter range	Temp	593.8	>593.8	>700.2	2,906.1
	Perm	106.4	>106.4		
Mule deer summer range	Temp	–	–	–	1,822.2
	Perm	–	–		

[1] These subtotals should not be added together as the resulting total would be double-counting acres where wildlife habitat layers overlap. Overlap is abundant between seasonal ranges of both elk and mule deer.
[2] IPC is aware that not all this habitat is available for mitigation. The exact amount is currently unknown.
Note: – = 0

IPC will look at the general vegetation type (sometimes habitat type), habitat category, and wildlife habitat layer together when performing the mitigation accounting for MZ1. This accounting will be performed during final selection of habitat mitigation sites and after issuance of the site certificate and prior to construction.

4.3.2 MZ2 Accounting

IPC has identified a mitigation debit of 1,078 to 1,268 acres that will be accrued for impacts from the Proposed Route within MZ2. Mitigation sites identified within MZ2 account for approximately 32,863 available credits. Table 21 identifies the debits and available credits by ODFW habitat category.

Table 21. Mitigation Accounting by Habitat Category in MZ2

ODFW Habitat Category	Impact	Acres	Mitigation Debit	Debit Subtotal by Habitat Category	Subtotal of Available Credits within MZ2 Mitigation Sites from Table 15
2	Temp	198.5	>198.5	>602.4	21,536
	Perm	403.9[1]	>403.9		
3	Temp	176.4	<176.4	>473.0 to 649.4	11,315
	Perm	473.0	473.0		
4	Temp	12.5	<12.5	2.9 to 15.4	–
	Perm	2.9	2.9		
5	Temp	11.6	–	<1.1	–
	Perm	1.1	<1.1		
6	Temp	59.2	–	–	12.0
	Perm	41.4	–		
			Total	**>1,078.3 to 1,268.3**	**32,863**

[1] Includes 0 acres of indirect impacts on elk winter range within MZ2 (Table 6).
[2] Includes 6.3 acres of indirect impacts on elk summer range within MZ2
Note: – = 0

Table 22 identifies the debits and available credits by wildlife habitat layer within MZ2. These debits are not in addition to those identified in Table 21. For instance, of the 602 acres of Category 2 debits identified in Table 21, approximately 573 acres originate from impacts to Category 2 mule deer winter range habitat (Table 22).

Table 22. Mitigation Accounting by Wildlife Habitat Layer in MZ2

Wildlife Habitat Layer	Impact	Acres	Mitigation Debit	Debit Subtotal by Wildlife Habitat[1]	Subtotal of Available Credits within MZ2 Mitigation Sites from Table 16
Elk winter range	Temp	83.2	>219.1	>221.1	21,547.9
	Perm	137.9[2]	>500.4		
Elk summer range	Temp	23.0	<23.0	>92.5 to 115.6	28,179.8
	Perm	92.5[3]	92.5		
Mule deer winter range	Temp	169.8	>169.8	>573.0	10,687.4
	Perm	403.1	>403.2		
Mule deer summer range	Temp	180	<180.0	>503.4 to 683.4	30,883.4
	Perm	503.4	503.4		

[1] These subtotals will not correspond to the mitigation debits calculated by habitat category in Table 21. For instance, some elk summer range Category 3 habitat overlaps with elk winter range Category 2 habitat, these areas default to Category 2. For this reason, these subtotals should not be added together.
[2] Includes 0 acres of indirect impacts on elk winter range within MZ2 (Table 6).
[3] Includes 6.3 acres of indirect impacts on elk summer range within MZ2 (Table 6).
Note: – = 0

IPC will look at the general vegetation type (sometimes habitat type), habitat category, and wildlife habitat layer together when performing the mitigation accounting for MZ2. This accounting will be performed during final selection of habitat mitigation sites and after issuance of the site certificate and prior to construction.

4.3.3 MZ3 Accounting

IPC has identified a mitigation debit of approximately 2,145 to 2,456 acres that will be accrued for impacts from the Proposed Route within MZ3. Mitigation sites identified within MZ3 account for approximately 9,605 available credits. Table 23 identifies the debits and available credits by ODFW habitat category.

Table 23. Mitigation Accounting by Habitat Category in MZ3

ODFW Habitat Category	Impact	Acres	Mitigation Debit	Debit Subtotal by Habitat Category	Subtotal of Available Credits within MZ3 Mitigation Sites from Table 17
2	Temp	1,310.5	>1,310.5	>2,106.7	9,605.3
	Perm	796.2[1]	>796.2		
3	Temp	146.7	<146.7	>18.3 to <165.0	–
	Perm	18.3	18.3		
4	Temp	137.1	<137.1	>19.7 to 156.8	–
	Perm	19.7	19.7		
5	Temp	219.0	–	<27.2	–
	Perm	27.2	<27.2		
6	Temp	55.7	–	–	-
	Perm	123.4	–		
			Total	**>2,144.7 to 2,455.7**	**9,605.3**

[1] Includes 427.3 acres of indirect impacts on elk winter range within MZ3 (Table 8).
Note: – = 0

Table 24 identifies the mitigation debits and available credits by wildlife habitat layer within MZ3. These debits are not in addition to those identified in Table 23. For instance, of the more than 2,106 acres of Category 2 debits identified in Table 23, approximately 1,678 acres originate from impacts to Category 2 mule deer winter range habitat.

Table 24. Mitigation Accounting by Wildlife Habitat Layer in MZ3

Wildlife Habitat Layer	Impact	Acres	Mitigation Debit	Debit Subtotal by Wildlife Habitat[1]	Subtotal of Available Credits within MZ3 Mitigation Sites from Table 18
Elk winter range	Temp	100.8	>100.8	>566	4,337.1
	Perm	459.6[2]	>459.6		
Mule deer winter range	Temp	1,309.9	>1,309.9	>1,678.6	10,408.5
	Perm	368.7	>368.7		
Mule deer summer range	Temp	108.7	<106.9	101.7 to <208.6	7,196.7
	Perm	102.5	101.7		
California Bighorn Sheep Herd Range	Temp	1.6	>1.6	>15.8	–
	Perm	14.2	>14.2		

[1] These subtotals will not correspond to the mitigation debits calculated by habitat category in Table 23 due to overlap among wildlife habitat layers. For this reason, these subtotals should not be added together.
[2] Includes 427.3 acres of indirect impacts to elk winter range within MZ3 (Table 8).

5.0 MITIGATION SCHEDULE

Coordination continues between IPC and the applicable land and wildlife management agencies regarding mitigation projects and options. IPC has identified preliminary scheduling milestones for mitigation that track with the EFSC process (Table 25).

Table 25. Mitigation Schedule

Date Range	EFSC Stage	Mitigation Planning
Present to July 2017	Submittal of 2017 Amended Preliminary Application for Site Certificate (ASC)	Respond to ODOE comments on the HMP included in the amended preliminary ASC.
July 2017 to July 2019	Final Order and Site Certificate	Develop and finalize mitigation sites and associated Mitigation Management Plans. Land acquisition will begin following issuance of the Site Certificate and prior to construction.
July 2019 to start of construction, 2022 or later	Monitoring Project compliance with conditions of approval as described in the Final Order.	All mitigation land acquisitions will be completed. Baseline data acquisition will occur at mitigation sites according to the Mitigation Management Plan. Initial mitigation actions will begin if timing is appropriate. Finalize HMP and submit to ODOE for its approval.

Date Range	EFSC Stage	Mitigation Planning
Start of construction in 2022 or later	Monitoring Project compliance with conditions of approval as described in the Final Order.	Initial mitigation actions (e.g., juniper removal, native seeding) will be completed or continued, and mitigation monitoring will track success.
In Service to Project decommissioning	Monitoring Project compliance with conditions of approval as described in the Final Order.	Any adaptive management techniques will be implemented if mitigation success criteria are not being met. Long-term monitoring and reporting will be performed as needed.

6.0 REFERENCES

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APPENDIX A
HABITAT MITIGATION SITES

Habitat Mitigation Areas with Mitigation Zone 1

- Government Mountain
- Ione
- Olex
- Eightmile

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Government Mountain (**Figure 1**)
Landowner:
Parcel Size in Acres: 3,453
Date of Assessment: 9/15/2014
Parcel Elevation (ft): 2,400 – 4,400
Within Mitigation Service Area?: No

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Umatilla County, 20 miles southeast of Walla Walla, WA. Near the OR/WA border.
T5N R38E Sections 17, 18, 19, 20
T5N R37E Sections 13, 14, 15, 22, 23, 24

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Parcel	Wildlife Habitat[3]
Category 1		**0**	**0**	
Category 2		**2,976.8**	**85.7**	-
Mixed Grand Fir/Douglas Fir	Forest/Woodland	670.4	19.3	RMEWR, RMESR, MDSR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	334.8	9.6	RMEWR, MDWR, RMESR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	87.5	2.5	RMEWR, MDWR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	13.5	0.4	RMEWR, MDSR
Native Grasslands	Shrub/Grass	428.9	12.3	RMEWR, RMESR, MDSR
Native Grasslands	Shrub/Grass	411.0	11.8	RMEWR, MDWR, RMESR
Native Grasslands	Shrub/Grass	244.8	7.0	RMEWR, MDWR
Native Grasslands	Shrub/Grass	38.9	1.1	RMEWR, MDSR
Subalpine/Montane Forest	Forest/Woodland	25.3	0.7	RMEWR, RMESR, MDSR
Subalpine/Montane Forest	Forest/Woodland	18.8	0.5	RMEWR, MDWR, RMESR
Subalpine/Montane Forest	Forest/Woodland	10.3	0.3	RMEWR, MDWR
Shrub-Steppe with Big Sage	Shrub/Grass	38.9	1.1	RMEWR, RMESR, MDSR
Shrub-Steppe with Big Sage	Shrub/Grass	72.0	2.1	RMEWR, MDWR, RMESR
Shrub-Steppe with Big Sage	Shrub/Grass	75.4	2.2	RMEWR, MDWR
Shrub-Steppe with Big Sage	Shrub/Grass	20.6	0.6	RMEWR, MDSR
Introduced Upland Vegetation	Shrub/Grass	33.3	1.0	RMEWR, RMESR, MDSR
Introduced Upland Vegetation	Shrub/Grass	62.1	1.8	RMEWR, MDWR, RMESR
Introduced Upland Vegetation	Shrub/Grass	41.8	1.2	RMEWR, MDWR

[1]USGS Gap Analysis Project (GAP) GIS data. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P1-1 of Exhibit P1).
[2]Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3]MDWR = Category 2 habitat for ODFW mule deer winter range; RMEWR = Category 2 habitat for ODFW Rocky Mountain elk winter range; RMESR = Category 3 habitat for Rocky Mountain Elk Foundation Rocky Mountain elk summer range; MDSR = Category 3 habitat for WAFWA mule deer summer range.
[4]Total acres of habitat type may not match actual parcel size due to resolution of the GAP raster dataset. Pixels of the raster dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Vegetation	HMP Habitat Category[2]	HMP General	Acres	% of	Wildlife Habitat[3]

Cover Classes cont. (GAP[1])	**and Type**	**Vegetation Type**		**Parcel**	
	Category 2 cont.				-
	Forested Wetland	Wetland	43.1	1.2	RMEWR, RMESR, MDSR
	Forested Wetland	Wetland	79.5	2.3	RMEWR, MDWR, RMESR
	Forested Wetland	Wetland	18.6	0.5	RMEWR, MDWR
	Shrub-Steppe without Big Sage	Shrub/Grass	49.1	1.4	RMEWR, RMESR, MDSR
	Shrub-Steppe without Big Sage	Shrub/Grass	31.2	0.9	RMEWR, MDWR, RMESR
	Shrub-Steppe without Big Sage	Shrub/Grass	24.0	0.7	RMEWR, MDWR
	Forested-Other	Forest/Woodland	30.9	0.9	RMEWR, RMESR, MDSR
	Forested-Other	Forest/Woodland	19.8	0.6	RMEWR, MDWR, RMESR
	Forested-Other	Forest/Woodland	5.4	0.2	RMEWR, MDWR
	Ponderosa Pine	Forest/Woodland	11.1	0.3	RMEWR, MDWR, RMESR
	Ponderosa Pine	Forest/Woodland	15.2	0.4	RMEWR, RMESR, MDSR
	Remaining	-	20.2	0.6	-
	Category 3		**414.1**	**11.9**	-
	Mixed Grand Fir / Douglas Fir	Forest/Woodland	181.8	5.2	RMESR, MDSR
	Subalpine/Montane Forest	Forest/Woodland	169.6	4.9	RMESR, MDSR
	Forested-Other	Forest/Woodland	44.9	1.3	RMESR, MDSR
	Native Grasslands	Shrub/Grass	10.6	0.3	RMESR, MDSR
	Shrub-Steppe without Big Sage	Shrub/Grass	2.9	0.1	RMESR, MDSR
	Ponderosa Pine	Forest/Woodland	1.8	0.1	RMESR, MDSR
	Mixed Tamarack	Forest/Woodland	1.6	0.0	RMESR, MDSR
	Shrub-Steppe with Big Sage	Shrub/Grass	0.3	0.0	RMESR, MDSR
	Introduced Upland Vegetation	Shrub/Grass	0.0	0.0	RMESR, MDSR
	Category 4		**0**	**0**	-
	Category 5		**0**	**0**	-
	Category 6		**82.7**	**2.4**	-
	Agriculture	Ag/ Developed	51.1	1.5	RMEWR, MDWR
	Agriculture	Ag/ Developed	17.2	0.5	RMEWR
	Agriculture	Ag/ Developed	0.2	0.0	RMESR, MDSR
	Developed	Ag/ Developed	12.0	0.3	RMEWR, MDWR
	Developed	Ag/ Developed	1.8	0.1	RMEWR
	Developed	Ag/ Developed	0.4	0.0	RMESR, MDSR
	Total				**-**

[1]USGS Gap Analysis Project (GAP) GIS data. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P1-1 of Exhibit P1).
[2]Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3]MDWR = Category 2 habitat for ODFW mule deer winter range; RMEWR = Category 2 habitat for ODFW Rocky Mountain elk winter range; RMESR = Category 3 habitat for Rocky Mountain Elk Foundation Rocky Mountain elk summer range; MDSR = Category 3 habitat for WAFWA mule deer summer range.
[4]Total acres of habitat type may not match actual parcel size due to resolution of the GAP raster dataset. Pixels of the raster dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Soil types	The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the following soils were identified on the property (**Figure 3**): *Buckcreek-Gwin association* (**706 acres**). Buckcreek soils consist of moderately deep, well drained soils found on uplands at elevations of 2,000 to 4,500 feet. Buckcreek soils are used for range and wildlife habitat. Native vegetation is Idaho fescue, ninebark and snowberry. Gwin soils consist of shallow, well drained soils found on mountain slopes, basalt plateaus, ridgetops, foothills, structural benches, hill shoulders, summits, backslopes, and footslopes and canyon walls at elevations of 800 to 6,210 feet in Oregon and Idaho. Gwin soils are used for grazing and as wildlife habitat. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass. *Cowsly* (**39 acres**) and *Cowsly silt loam* (**51 acres**). Cowsly soils consist of deep or very deep, moderately well drained soils found on plateaus at elevations from 2800 to 5000 feet. Cowsly soils are used primarily for timber production. Other uses are dryland small grain, pasture, wildlife habitat and water supply. Native vegetation is ponderosa pine and Douglas fir with an understory of spirea, ocean spray, snowberry, Idaho fescue, pinegrass and elksedge. *Gwin-Rock outcrop complex* (**704 acres**). Gwin soils consist of shallow, well drained soils found on mountain slopes, basalt plateaus, ridgetops, foothills, structural benches, hill shoulders, summits, backslopes, and footslopes and canyon walls at elevations of 800 to 6,210 feet in Oregon and Idaho. Gwin soils are used for grazing and as wildlife habitat. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass. *Tolo silt loam* (**400 acres**). Tolo soils consist of deep and very deep, well drained soils found on nearly level upland plateaus and steep north and east-facing mountain side slopes at elevations of 2,800 to 5,400 feet. Tolo soils are used for timber production and livestock grazing with small areas at lower elevations cleared for cultivation. Principal trees include Douglas fir, grand fir, larch, ponderosa pine, and lodgepole pine. *Umatilla-Kahler-Gwin association* (**1,546 acres**). Umatilla soils consist of very deep, well drained soils found on uplands at elevations of 2,000 to 5,000 feet. Umatilla soils are used for timber production, livestock grazing and wildlife habitat. Native vegetation is Douglas-fir, grand fir and ponderosa pine. Kahler soils consist of deep and very deep, well drained soils found on back slopes of plateaus, canyons, hills, and mountains at elevations ranging from 2,000 to 6,000 feet. Kahler soils are used for timber production, limited cropland, livestock grazing, watershed, recreation, and wildlife habitat. Many areas with slopes of less than 15 percent have been cleared and produce dryland hay and grain, or irrigated crops. The native vegetation is mainly ponderosa pine, Douglas fir, pinegrass and elk sedge. Gwin soils consist of shallow, well drained soils found on mountain slopes, basalt plateaus, ridgetops, foothills, structural benches, hill shoulders, summits, backslopes, and footslopes and canyon walls at elevations of 800 to 6,210 feet in Oregon and Idaho. Gwin soils are used for grazing and as wildlife habitat. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass. *Xerofluvents* (**0.1 acre**). A fluvent soil with a xeric moisture regime.
Hydrologic Features Present (SteamNet, NWI, NHD)	Four perennial and three intermittent streams are within the property (NHD), including the North Fork of the Walla Walla River (three miles of river frontage per the real estate listing). Other than an impoundment, all wetland areas (NWI) appear to be associated with riparian corridors of streams identified in NHD.
Adjacent land ownership, use, and condition	Most of the adjacent lands are private; however, the eastern border of the property connects to a large tract of USFS lands. Land use is likely rangeland and timber with agricultural land use in the valley approximately 5 miles to the west.

Infrastructure Density within or Near the Parcel (Qualitative Description)	Ranch includes a historic 1920 cabin, a bunkhouse, a barn, machine shop, fencing, cross fencing, and an old miner cabin (per real estate listing). Several maintained roads access the property.
Summary	The property is outside of the mitigation service area. Property is approximately 2.7 miles north of the South Fork Walla Walla River BLM ACEC, designated to protect and enhance riparian ecosystems, fisheries habitat, and scenic values and recreational use. Borders a large tract of USFS lands including areas with old growth forest and is within elk and mule deer winter range. North Fork of the Walla Walla River is bull trout and steelhead critical habitat, Little Meadow Creek and Big Meadow Creek are steelhead critical habitat. Property is within 2 different ODFW COAs, the Umatilla – Walla Walla area of the Blue Mountains ecoregion and the Walla Walla River area of the Columbia Plateau ecoregion. Conservation actions identified for both areas include maintenance and enhancement of in-channel watershed function, connection to riparian habitat, flow and hydrology; and maintenance or restoration of riparian habitat and ecological function and to ensure sufficient habitat complexity for wildlife. In addition, the Umatilla – Walla Walla COA adds initiation or continuation of wet meadow conservation and restoration; and promotion of early detection and suppression of invasive weeds.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on Category 2 elk and mule deer winter habitat within the forest/woodland general vegetation type. This mitigation site could help meet the Project need for elk and mule deer summer habitat as well. It contains important habitat features with opportunities to provide durable ecological uplift through implementation of standard mitigation actions. Opportunities to improve the watershed would benefit bull trout and steelhead critical habitat. The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to elk and mule deer (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to State of Oregon, Federal Land Management Agency, approved NPO or Land Trust
Mitigation Actions	The following are mitigation actions that may be implemented at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Livestock grazing restrictions* – historic grazing practices at this property are unknown. However, the objective would be to avoid grazing practices that would compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. • *Native revegetation/restoration* – the focus would be planting forage shrubs and implementing forest management practices that would create structural diversity and enhance desirable habitat conditions. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed. • *Fence removal/fence upgrade* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).

Success Criteria

Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to:

- Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift.
- Successful weed control through documentation of a reduction in weeds and non-native invasive plant species.
- Mitigation success will not be dependent on documentation of increased use of the mitigation site by WAGS or any other wildlife species.

Financial Outline

Estimated Budget for the Government Mountain Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition (from 4/10/2013 listing)	$3,250,000	1	-	$3,250,000
Recurring Costs (Annually)				
O&M[1]	$53.75	3,453	50	$9,279,938
Total	-			$12,529,938 ($3,628/acre)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The cost per acre identified in that study for the Elkhorn Wildlife Management Area (which this mitigation site will be modeled after) was $43 in 2004 dollars, this has been adjusted to reflect 2015 dollars.

[2] Cost per acre here includes cost of acquisition/easement and long-term O&M for 50 years.

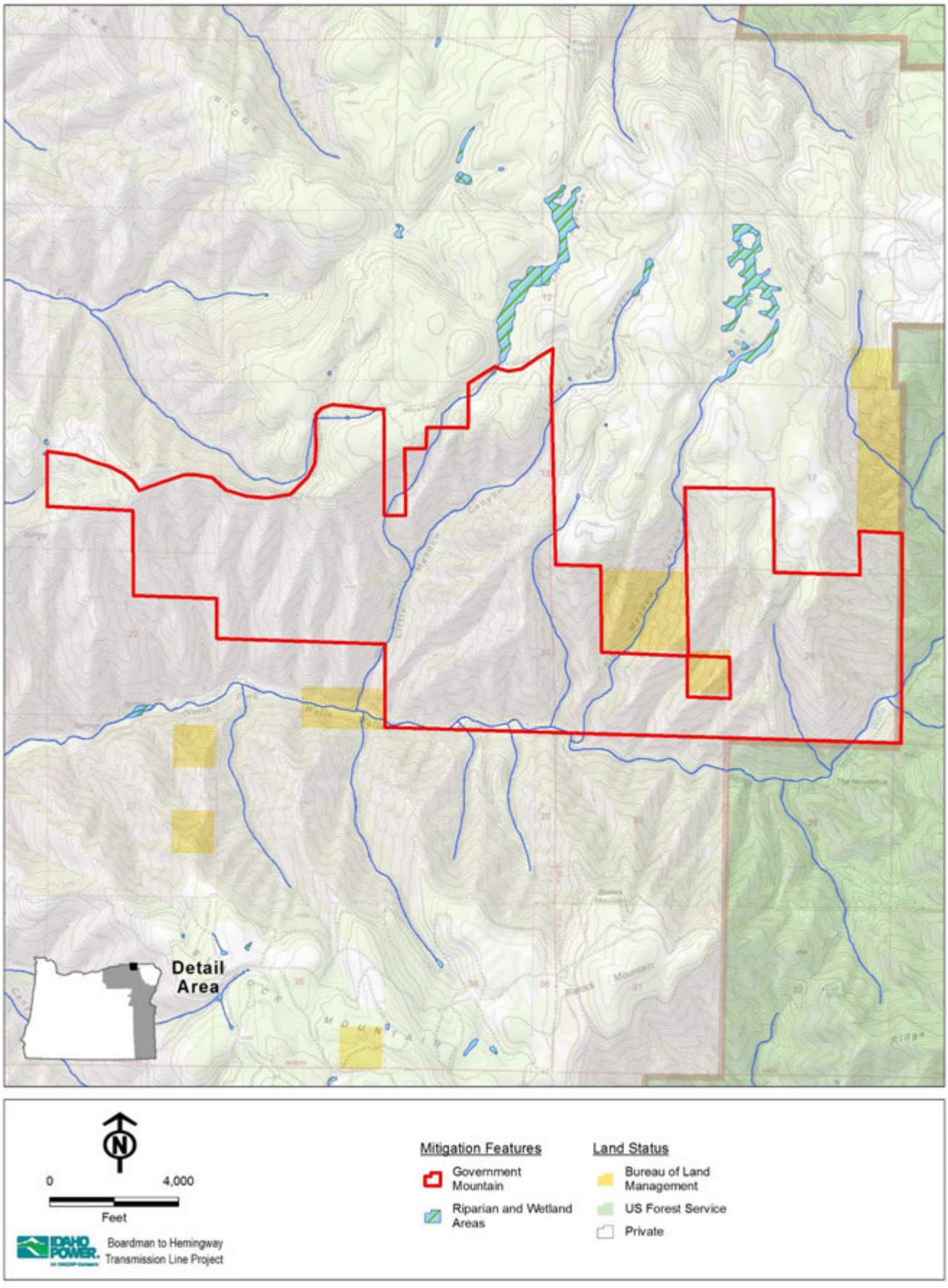

Figure 1. Government Mountain Ownership and Water

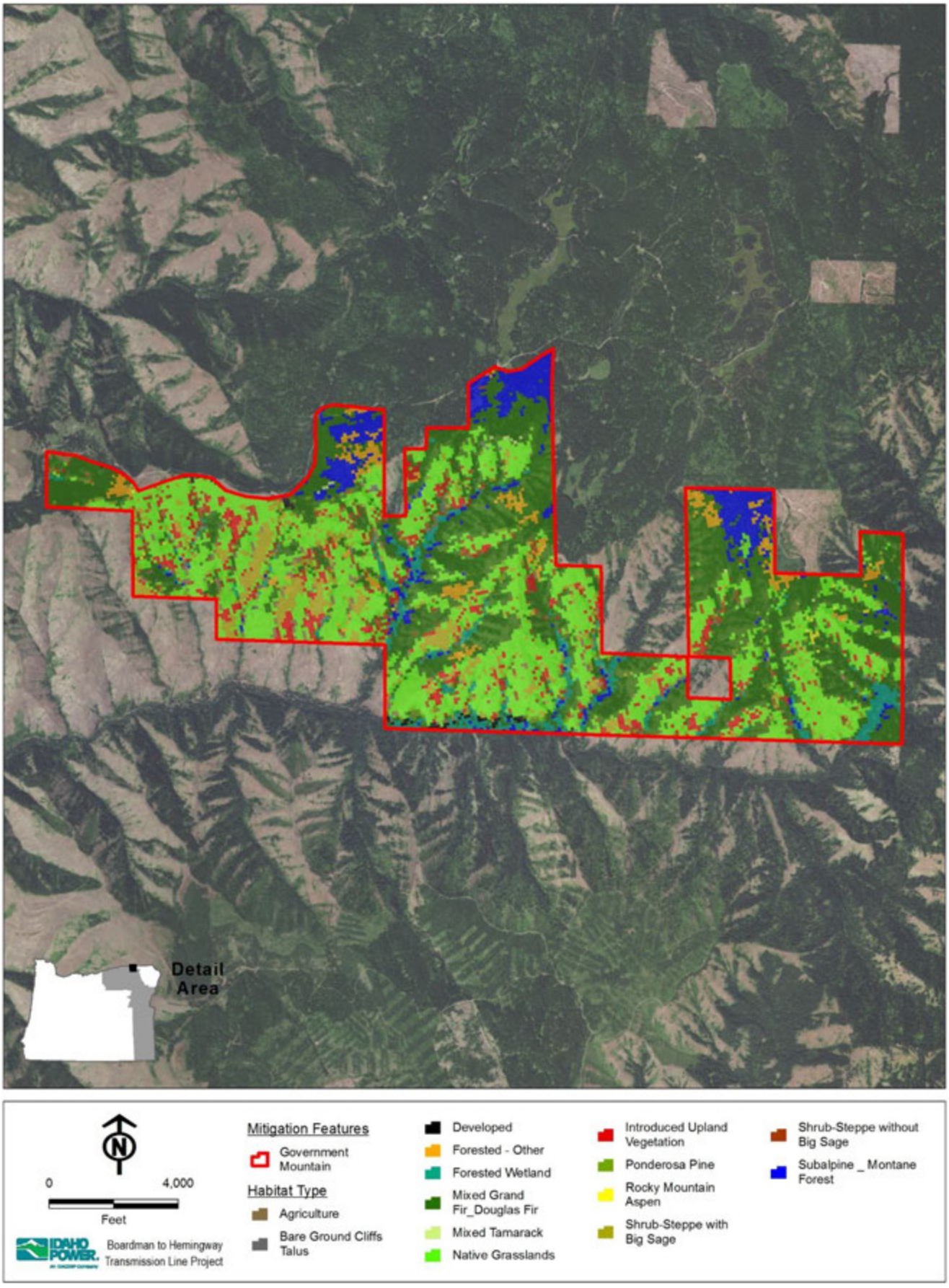

Figure 2. Government Mountain Habitat Types

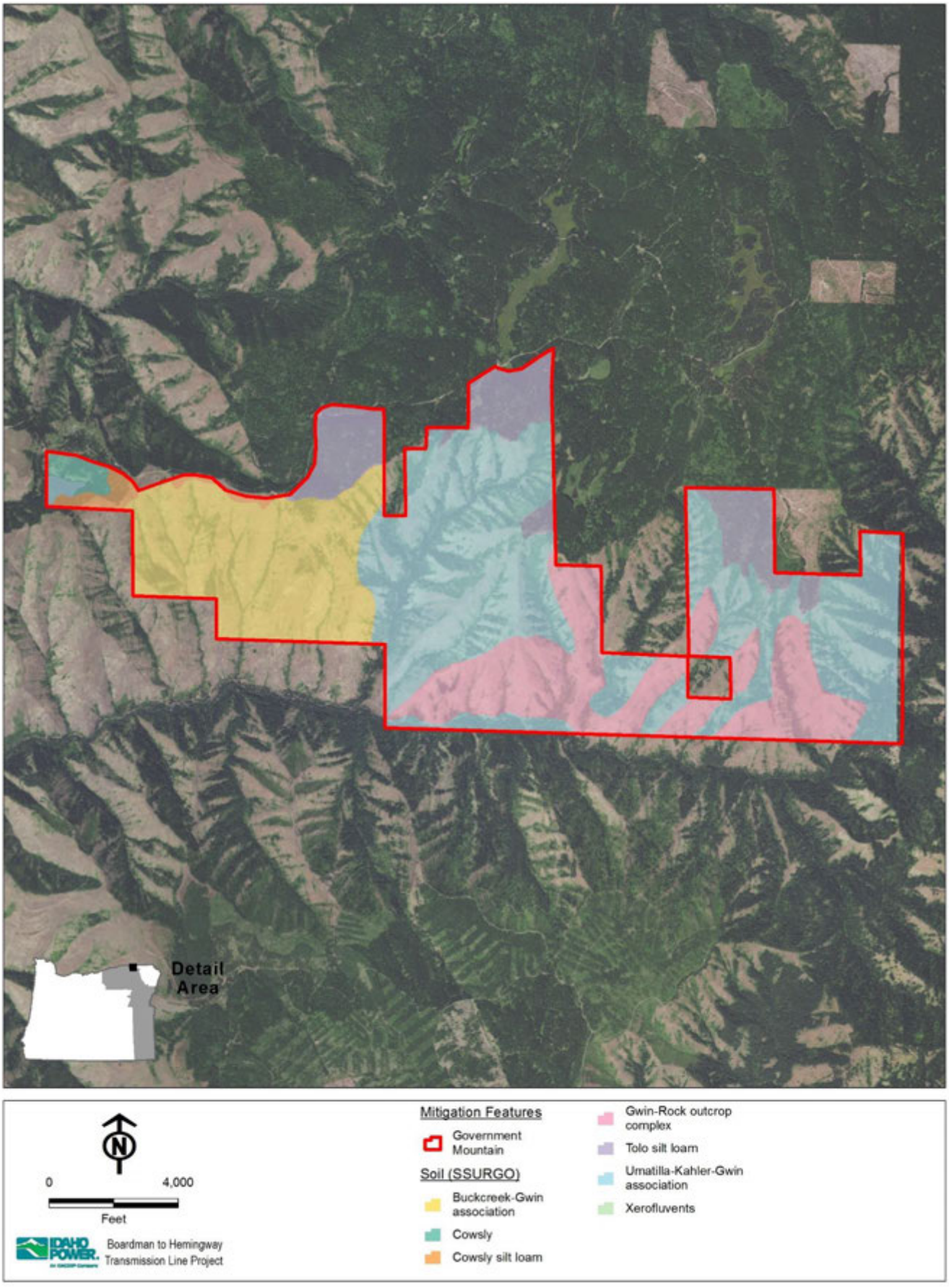

Figure 3. Government Mountain Soil Types

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Ione (**Figure 1**)
Landowner:
Parcel Size in Acres: 433 (108 acres available)
Date of Assessment: 10/15/2014
Parcel Elevation (ft): 1,500 – 1,850
Within Mitigation Service Area?: No

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Morrow County, 8 miles southwest of Ione.
T2S R23E Sections 8, 9.

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Parcel	Wildlife Habitat[3]
Category 1		**0**	**0**	
Category 2		**425.6**	**98.3**	
Shrub-Steppe with Big Sage	Shrub / Grass	423.9	97.9	
Native Grasslands	Shrub / Grass	1.3	0.3	
Shrub-Steppe without Big Sage	Shrub / Grass	0.4	0.1	
Category 3		**5.8**	**1.3**	-
Agriculture	Agriculture / Developed	5.8	1.3	
Category 4		**0**	**0**	-
Category 5		**1.3**	**0.3**	-
Introduced Upland Vegetation	Shrub / Grass	1.3	0.3	
Category 6		**0**	**0**	-
Total		**432.8**	**100**	**-**
Total Available for Easement		**108[4]**		

[1] USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P-2 of Exhibit P).
[2] Represents the highest category that the habitat type can be attributed based only on vegetation metrics. Field review of this site would likely warrant modification of categorization.
[3] No wildlife habitat layers used in the Project's habitat categorization model overlap this property.
[4] All 108 acres are identified as shrub-steppe with big sage by GAP. Site visit showed that the 108 acres was made up of native grassland and non-native grasslands with remnant sagebrush stands and shrublands without a sagebrush component.

Soil types	The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the following soils were identified on the property (**Figure 3**): *Endersby fine sandy loam* (**1 acre**). Endersby soils consist of deep, somewhat excessively drained soils found on nearly level bottomlands at elevations of 200 to 1,500 feet. Endersby soils are used primarily for forage crops. Other uses are dry and irrigated small grain, range, pasture, wildlife, and water supply. Vegetation consists of bunchgrasses and forbs. *Lickskillet-Rock outcrop complex* (**42 acres**). Lickskillet soils consist of shallow, well drained soils typically found on south-facing canyon and mountain side slopes at elevations of 200 to 4,500 feet. Lickskillet soils are dominantly used for livestock grazing. Other uses include watershed, recreation, and wildlife habitat. Vegetation is bluebunch wheatgrass, Sandberg bluegrass, Thurber needlegrass, western yarrow, and Wyoming big sagebrush. *Lickskillet very stony loam* (**353 acres**). Lickskillet soils consist of shallow, well drained soils typically found on south-facing canyon and mountain side slopes at elevations of 200 to 4,500 feet. Lickskillet soils are dominantly used for livestock grazing. Other uses include watershed, recreation, and wildlife habitat. Vegetation is bluebunch wheatgrass, Sandberg bluegrass, Thurber needlegrass, western yarrow, and Wyoming big sagebrush. *Mikkalo silt loam* (**34 acres**). Mikkalo soils consist of moderately deep, well drained soils found on canyons, hills, plateaus, and ridges at elevations of 300 to 2,800 feet. Mikkalo soils are used for production of small grains and for rangeland. The native vegetation is bluebunch wheatgrass, green rabbitbrush, big sagebrush, balsamroot and yarrow. *Ritzville silt loam* (**2 acres**). Ritzville soils consist of very deep and deep to duripan, well drained soils found on uplands including plateaus, benches, and canyon side slopes at elevations ranging between 700 to 3,000 feet. Ritzville soils are used for dryland wheat production and some livestock grazing. Native vegetation is bluebunch wheatgrass, Sandberg bluegrass, Wyoming big sagebrush, and yarrow.
Hydrologic Features Present (SteamNet, NWI, NHD)	NHD does not show any water within the property. NWI identifies a temporarily flooded streambed.
Adjacent land ownership, use, and condition	All adjacent land is privately held. A majority of adjacent land use is dry land agriculture with some open rangeland.
Infrastructure Density within or Near the Parcel (Qualitative Description)	There does not appear to be any infrastructure within this property, other than boundary fencing. Infrastructure within the adjacent private lands also appears very low; other than dirt farm roads there does not appear to be any significant infrastructure. TOPO maps show a pipeline north of the property.
Summary	The property is outside of the mitigation service area. None of the wildlife habitat layers considered for this assessment overlap the property. It provides non-agriculture and native habitat adjacent to a water source in Eightmile Canyon, so likely provides undisturbed nesting and hiding cover for numerous species.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This potential mitigation site could provide mitigation for impacts on the shrub/grass general vegetation type within the Columbia Basin. The mitigation site is outside of Washington ground squirrel modeled habitat (habitat concentration areas [WWHCWG 2012]) and only historical records of squirrel activity occur within 5 miles of the property. This mitigation site provides native habitat features within an agricultural-dominated landscape. Wildlife species, especially migratory birds, that utilize shrub-steppe and grassland habitats would benefit from implementation of mitigation actions that result in ecological uplift.
Mitigation Site Manager	The mitigation site would be established through a conservation easement held and managed by the current landowners.
Mitigation Actions	The following are mitigation actions that may be implemented at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Livestock grazing restrictions* – the current level of grazing on this property is unknown. Mitigation action could avoid grazing practices that would compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. • *Native revegetation/restoration* – the focus would be sagebrush and bunchgrasses on this mitigation site. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed. • *Fence removal/fence upgrade* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).
Success Criteria	Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to: • Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift. • Successful weed control through documentation of a reduction in weeds and non-native invasive plant species. • Mitigation success will not be dependent on documentation of increased use of the mitigation site by wildlife species.

Financial Outline

This financial outline provides estimated figures and data for informational purposes only. These estimates are meant to provide an overview of the potential and reasonable costs of preparing an easement and implementing mitigation on this mitigation site. The financial outline does not guarantee the final easement value and costs for the easement. This desktop assessment cannot be used to infer value (monetary or ecological) of other properties or easements in the region. Unless otherwise stated, cost assumptions come from NRCS EQIP Practice Payment Rate schedules.

- Weed treatment: $20 - $200 per acre
- Native Seeding:
  - Site preparation (mowing/discing) $500 per acre
  - Broadcast/Drill seed: $100 - $250 per acre
- Hydroseeding: $792 per acre

Estimated Budget for the Lone Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Easement Value	Unknown	1	-	?
Easement Transaction Costs[1]	$20,000	1		$20,000
Recurring Costs (Annually)				
O&M[2]	$30	433	50	649,500
Total	**-**			**$?** ($?/acre)[3]

[1] Easement transaction cost is on the high end of the average presented in the 2009 report by Defenders of Wildlife and Trust for Public, titled *Land Conservation Spending in Oregon in Relation to the State Wildlife Conservation Strategy*.

[2] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The average cost per acre presented in that document was $24 in 2004 dollars, this has been adjusted to reflect 2015 dollars.

[3] Cost per acre here includes cost of acquisition/easement and initial mitigation actions and long-term O&M for 50 years.

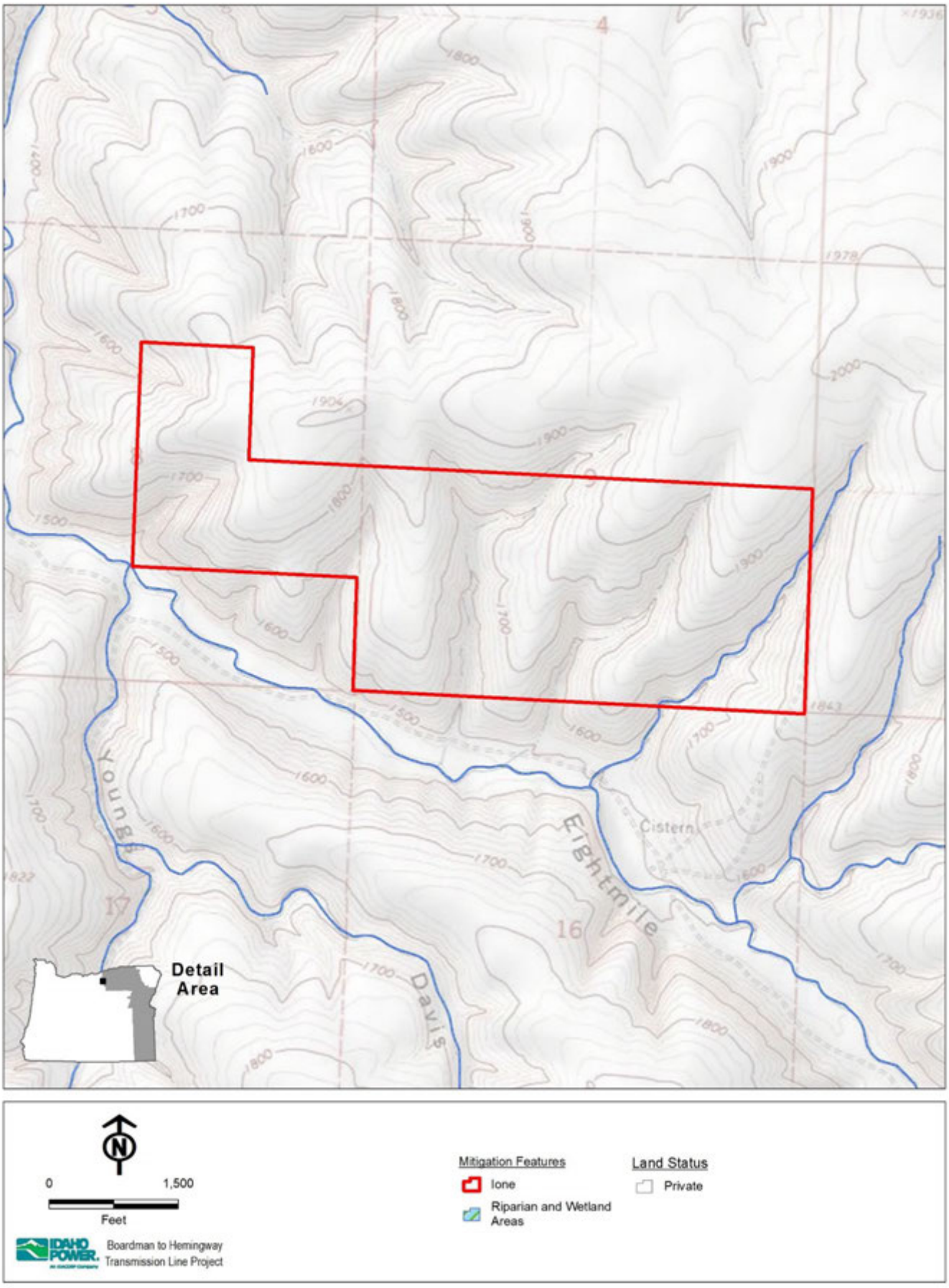

Figure 1. Ione Ownership and Water

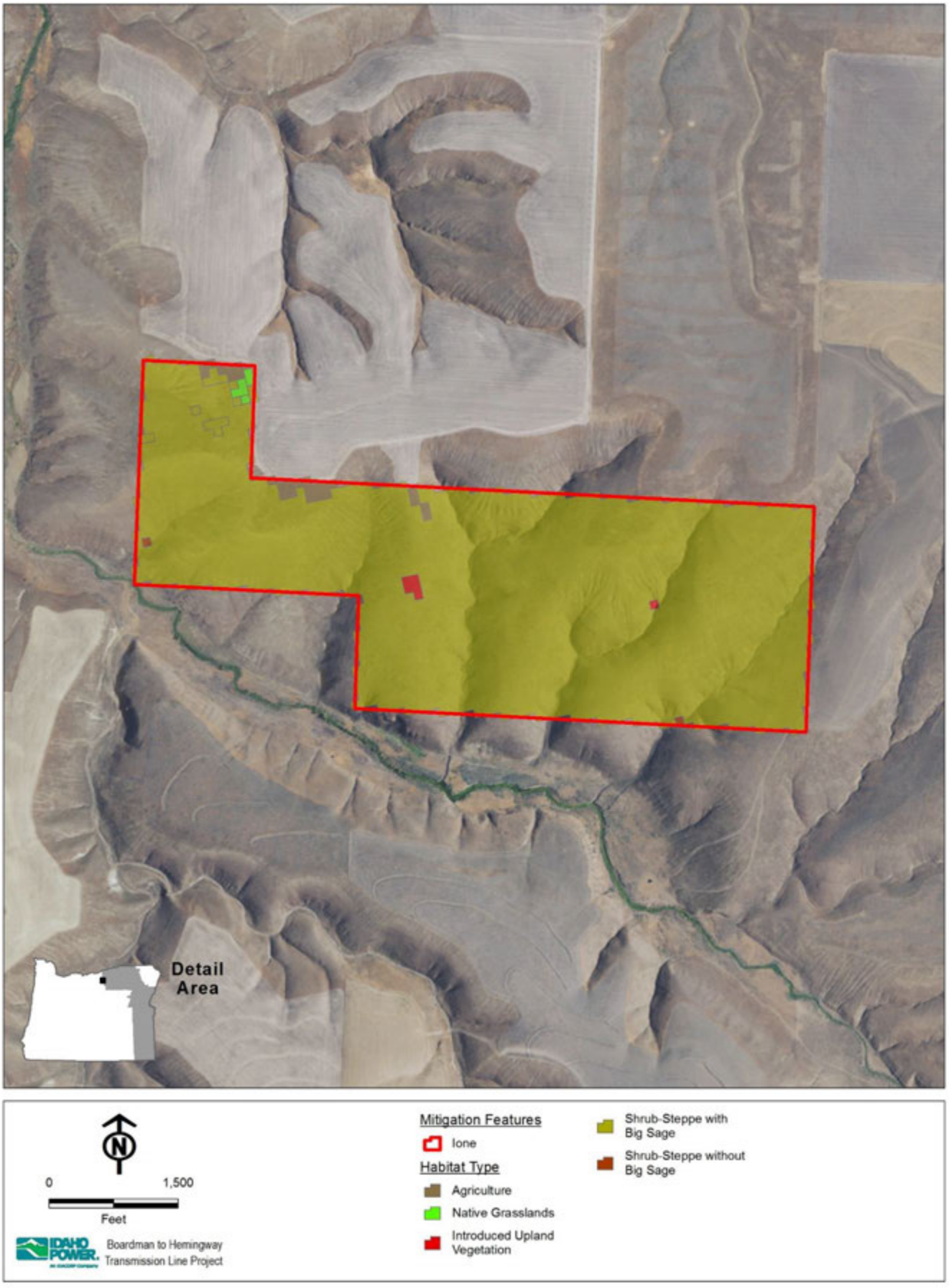

Figure 2. Ione Habitat Types

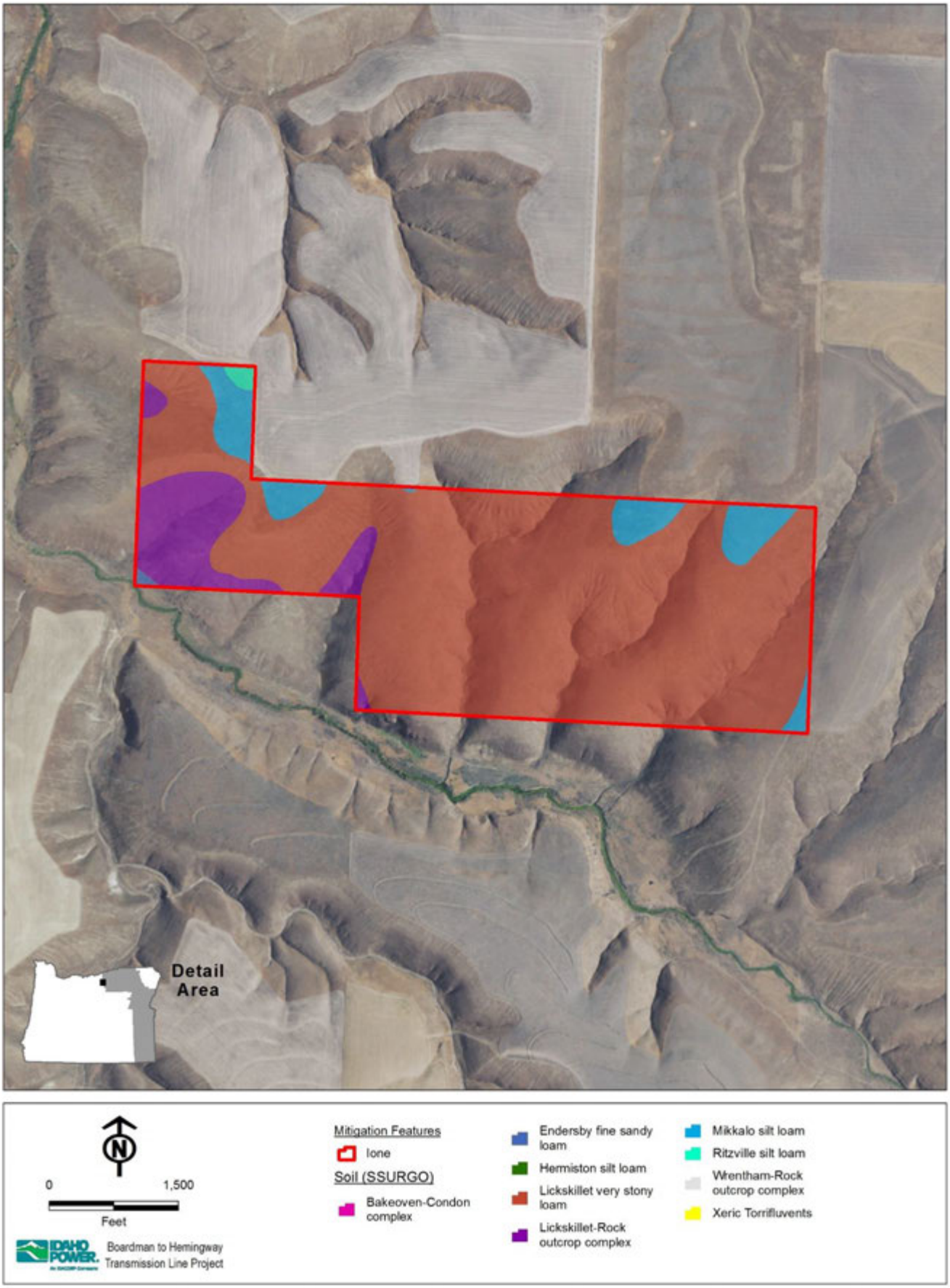

Figure 3. Ione Soil Types

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Olex (**Figure 1**)
Landowner:
Parcel Size in Acres: 2,067 (1,563 available for easement)
Date of Assessment: 9/8/2015
Parcel Elevation (ft): 1,000 – 1,800
Within Mitigation Service Area?: No

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Gilliam County, 16 miles west of Ione.
T1S R21E Sections 1, 11, 14, 15, 22, 23, 24, 25, 26

Vegetation Cover Classes (**Figure 2**)

Habitat Category[1] and Habitat Type[2]	HMP General Vegetation Type	Acres	% of Parcel	Wildlife Habitat[3]
Category 1		**418.6**	**20.2**	
Native Grassland	Shrub/Grass	346.0	16.7	WAGS1, MDWR
Perennial Grassland	Shrub/Grass	72.6	3.5	WAGS1, MDWR
Category 2		**1,583.2**	**76.5**	-
Perennial Grassland	Shrub/Grass	556.2	26.9	WAGS2, MDWR
Native Grassland	Shrub/Grass	429.5	20.7	WAGS2, MDWR
Old Field	Shrub/Grass	2.1	0.1	WAGS2, MDWR
Perennial Grassland	Shrub/Grass	198.0	9.6	MDWR
Native Grassland	Shrub/Grass	348.0	16.8	MDWR
Old Field	Shrub/Grass	49.4	2.4	MDWR
Category 3		**0**	**0**	-
Category 4		**0**	**0**	-
Category 5		**0**	**0**	-
Category 6		**68.2**	**3.3**	-
Agriculture	Agriculture/ Developed	61.1	3.3	MDWR
Developed	Agriculture/ Developed	6.3	0.3	MDWR
Cemetery	Agriculture/ Developed	0.8		MDWR
Total	**NA**	**2,069.9**	**100**	**-**

[1] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[2] The Habitat Type for this property was provided by the property owner, and does not exactly follow the Habitat Types defined for the Project and presented in the Habitat Categorization Matrix (see Exhibit P1, Attachment P1-1).
[3] WAGS1 = Category 1 habitat consisting of the active ground squirrel colony which is defined as single or cluster of holes as well as the required habitat for squirrel survival (785 feet from the edge of the extent of active holes). WAGS2 = Category 2 habitat consisting of the area of potential Washington ground squirrel use (1.5km from the edge of the WAGS1 area in similar habitat type and quality). MDWR = Category 2 habitat for ODFW mule deer winter range.
[4] Total acres of habitat type will not match actual parcel size due to resolution of the Gap Analysis Project raster dataset. Pixels of the raster dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Soil types The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the following soils were identified on the property (**Figure 3**):

	Bakeoven-Condon complex, 2 to 20 percent slopes (**4 acres**). Bakeoven soils consist of very shallow, well drained soils found on mountains, ridgetops, hillslopes, mesas, and benches at elevations of 300 to 4,800 feet. Bakeoven soils are used for livestock grazing and wildlife habitat. Native vegetation is Sandberg bluegrass and stiff sagebrush. Condon soils are moderately deep, well drained soils found in uplands at elevations of 1,100 to 4,000 feet. Typical use is grain crops. Native plants are bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, and forbs such as yarrow, phlox, and buckwheat. *Hermiston Silt Loam* (**57.5 acres**). Hermiston soils consist of deep, well drained soils found on stream bottomlands (along Rock Creek here) and low terraces. Typical use is production of dry farmed wheat or irrigated small grains, alfalfa, sugar beets, pasture and hay crops. Native vegetation was mainly giant wildrye and bluebunch wheatgrass. *Lickskillet-Rock outcop complex*, 40 to 70 percent slopes (**11 acres**) and *Lickskillet very stony loam*, 7 to 40 percent slopes (**645 acres**). The lickskillet soils consist of shallow, well drained soils typical of south-facing canyon and mountain side slopes from 200 to 4,500 feet. On this property, the rock outcrop complex makes up the south facing canyon wall along Rock Creek just north of Rock Creek Road; the very stony loam occurs along the side slopes of the drainages (Pat's Canyon and others) within the property. Typical use is livestock grazing. Native vegetation is bluebunch wheatgrass, Sandberg bluegrass, Thurber needlegrass, western yarrow, and Wyoming big sagebrush. *Mikkalo silt loam*, 2 to 70 percent slopes (**463 acres**). Mikkalo soils consist of moderately deep, well drained soils on canyons, hills, plateaus, and ridges from 300 to 2,800 feet. These soils are found within the hilltops/plateaus that dominate the property south of Rock Creek. They make up some of the potential WAGS habitat on the property. Typical use is production of small grains and rangeland. The native vegetation is bluebunch wheatgrass, green rabbitbrush, big sagebrush, balsamroot, and yarrow. *Ritzville silt loam*, 2 to 40 percent slopes (**687 acres**). Ritzville soils consist of very deep and deep to duripan, well drained soils typically found on upland plateaus and benches from 700 to 3,000 feet. They make up the majority of the hilltops/plateaus found on the property south of Rock Creek. These soils make up some of the potential WAGS habitat on the property. Typical use is dryland wheat production and livestock grazing. Native vegetation is bluebunch wheatgrass, Sandberg bluegrass, Wyoming big sagebrush, and yarrow. *Wtrentham-Rock outcrop complex*, 35 to 70 percent slopes (**190 acres**). The Wrentham soils consist of moderately deep, well drained soils found on north-facing canyon slopes from 900 to 3,600 feet elevation. They occur on the property along the north facing slopes just south of Rock Creek, including bands of rock outcrops. Typical use is range; native vegetation is Idaho fescue, bluebunch wheatgrass, Sandberg bluegrass, forbs and shrubs. *Xeric torrifluvents*, nearly level (**10 acres**). This is an alluvial fan type of soil and is found along a small portion of Rock Creek.
Hydrologic Features Present (SteamNet, NWI, NHD)	Property contains four intermittent streams per NHD. Rock Creek supports redband trout and ESA listed summer steelhead. Rock Creek supports migrating and spawning steelhead and provides rearing areas for fry and juveniles. NWI did not identify any wetland features outside those associated with riparian areas of NHD streams.

Adjacent land ownership, use, and condition	Adjacent land ownership is private; however, a small BLM parcel is just east of the property on the opposite side of Rock Creek. Majority of adjacent land use is dry land agriculture.
Infrastructure Density within or Near the Parcel (Qualitative Description)	Upper Rock Creek Rd. runs through the property and a couple of residential structures appear along the road in the northern portion of the property. Otherwise, a majority of the property is open habitat. Property is just east of State Route 19 (John Day Highway), Union Pacific RR has a line within 3 miles, and TOPO maps show a transmission line coming into a substation at OLEX.
Summary	Identified as a WAGS habitat concentration area by the Washington Wildlife Habitat Connectivity Working Group (**Figure 1**). Active WAGS colonies are present; therefore the property contains Category 1 and Category 2 WAGS habitat (**Figure 4**). The property is outside of the mitigation service area and is in a county not directly impacted by the project. However, the property was nominated by ODFW and would likely be acceptable mitigation. In addition to WAGS, the property contains Rock Creek which supports an ESA listed steelhead population and the entire property is within ODFW designated mule deer winter range.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	The property owner has stated that 1,563 acres of the property are available for mitigation through an easement. Most of the potential easement area (1,515 acres) is upland habitat identified as Native Grassland and Perennial Grassland (**Figure 2**). These upland habitats consist of planted perennial, annual, and native bunchgrass grasslands; and patches of shrub-steppe habitat consisting of basin big sagebrush and other shrub species. The remaining 48 acres has recently been planted to native grassland (Seeded/Planted Revegetation; **Figure 2**) and contains approximately 1.25 miles of riparian corridor consisting of alder and willow along Rock Creek. This mitigation site would meet the entire Project need for WAGS habitat mitigation. It contains habitat features important to the species with ample opportunities to provide ecological uplift through implementation of standard mitigation actions. This mitigation site would provide mitigation credit for Project impacts on Category 1 & 2 WAGS habitat within the shrub/grass general vegetation type of the Columbia Basin. Mitigation actions and use restrictions will be consistent with the goal of no net loss of habitat and a net benefit in the quantity and quality of Category 2 habitat. In addition to Category 2 mitigation within the Columbia Basin, this mitigation site provides additional mitigation credit towards impacts on Category 3 and Category 4 shrub/grass habitats occurring within the Columbia Basin. The mitigation actions listed below, upon effective implementation, will provide a net benefit in quantity and quality of habitat available to WAGS (among other species) within the mitigation site and result in an ecological uplift (additionality) on the mitigation site.
Mitigation Site Manager	The mitigation site would be established through a conservation easement held by a non-profit group such as a land trust and would be managed by the current landowners.
Mitigation Actions	The following are mitigation actions that may be implemented at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Modification of Livestock Grazing* – avoid grazing practices that would compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. Financial outline below assumes an initial effort to treat 75 acres. • *Native revegetation/restoration* – focus of efforts would be to promote establishment of sagebrush and bunchgrasses; opportunities exist but have not been specifically identified at this time. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed. • *Fence removal/fence upgrade* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing.
Monitoring	A specific plan for monitoring will be developed in coordination with ODFW during preparation of the conservation easement.

Success Criteria

Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to:

- Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift.
- Successful weed control through documentation of a reduction in weeds and non-native invasive plant species.
- Mitigation success will not be dependent on documentation of increased use of the mitigation site by WAGS or any other wildlife species.

Financial Outline

This financial outline provides estimated figures and data for informational purposes only. These estimates are meant to provide an overview of the potential and reasonable costs of preparing an easement and implementing mitigation on this mitigation site. The financial outline does not guarantee the final easement value and costs for the easement. This desktop assessment cannot be used to infer value (monetary or ecological) of other properties or easements in the region. Unless otherwise stated, cost assumptions come from NRCS EQIP Practice Payment Rate schedules.

- Weed treatment: $20 - $200 per acre
- Native Seeding:
  - Site preparation (mowing/discing) $500 per acre
  - Broadcast/Drill seed: $100 - $250 per acre
- Hydroseeding: $792 per acre
- Wetland/Spring/Riparian Improvement
  - Complex Restoration: $2,400 per acre
  - Riparian Herbacous Cover
    - Broadcast Seeding: $687 per acre
    - Pollinator Cover: $1,303 per acre
    - Plug Planting: $13,730 per acre
    - Combo Seeding and Plug Planting: $6,947 per acre
  - Riparian Forest Buffer
    - Hand Plant, bare root: $768 per acre
    - Cuttings, small to medium: $867 per acre
    - Seeding: $106 per acre

Estimated Budget for the Olex Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Easement Value	Unknown	1		Unknown
Easement Transaction Costs[1]	$20,000	1	-	$20,000
Weed Treatment	$200	75	-	$15,000
Native Seeding	$750	300	-	$225,000
Recurring Costs (Annually)				
O&M[3]	$30	1,563	50	$2,344,500
Total	**-**			**$?** ($?/acre)[4]

[1] Easement transaction cost is on the high end of the average presented in the 2009 report by Defenders of Wildlife and Trust for Public, titled *Land Conservation Spending in Oregon in Relation to the State Wildlife Conservation Strategy*.

[2] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The average cost per acre presented in that document was $24 in 2004 dollars, this has been adjusted to reflect 2015 dollars.

[3] Cost per acre here includes cost of acquisition/easement and initial mitigation actions and long-term O&M for 50 years.

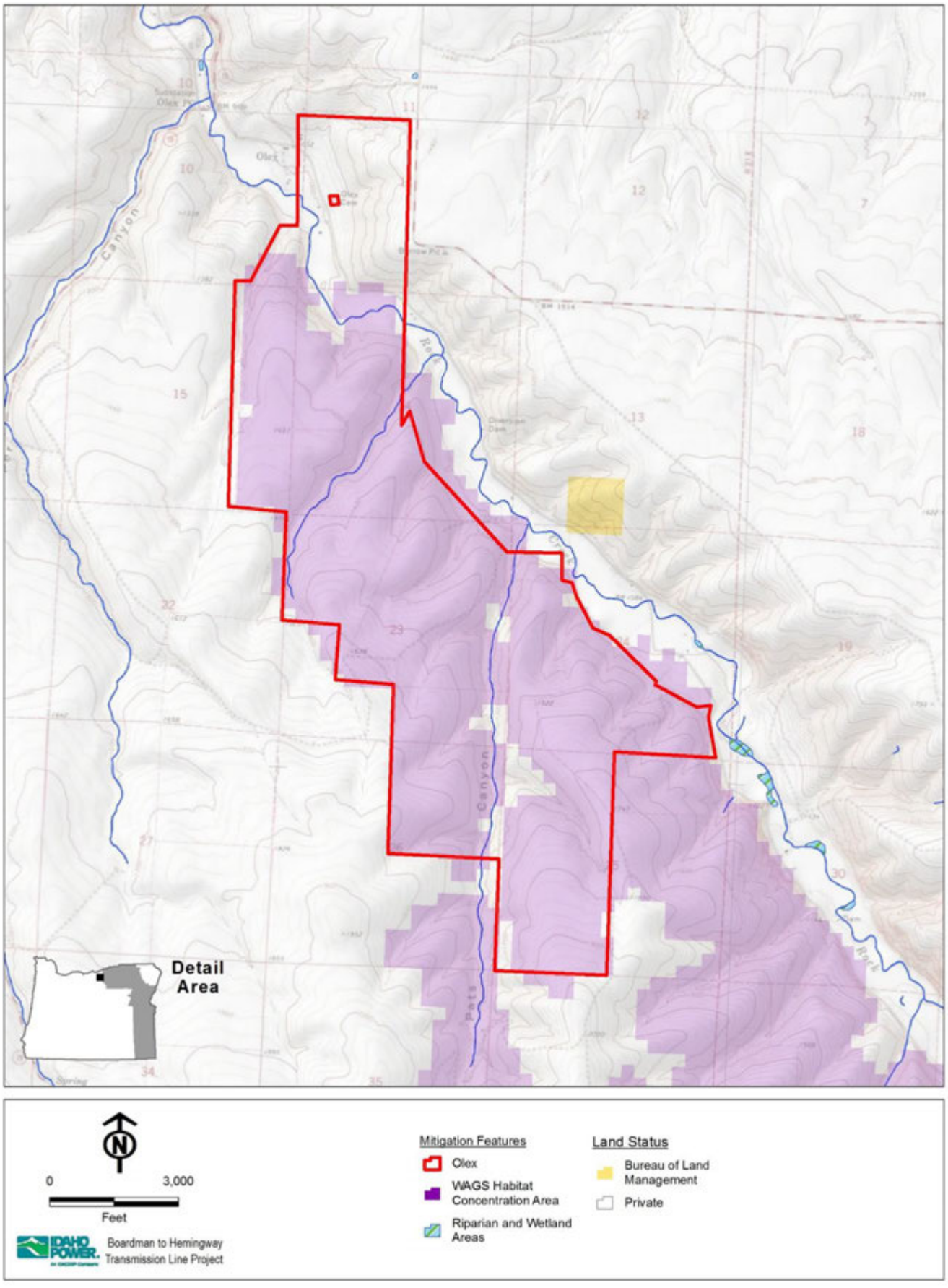

Figure 1. Olex WAGS Habitat Concentration Area, Ownership, and Water

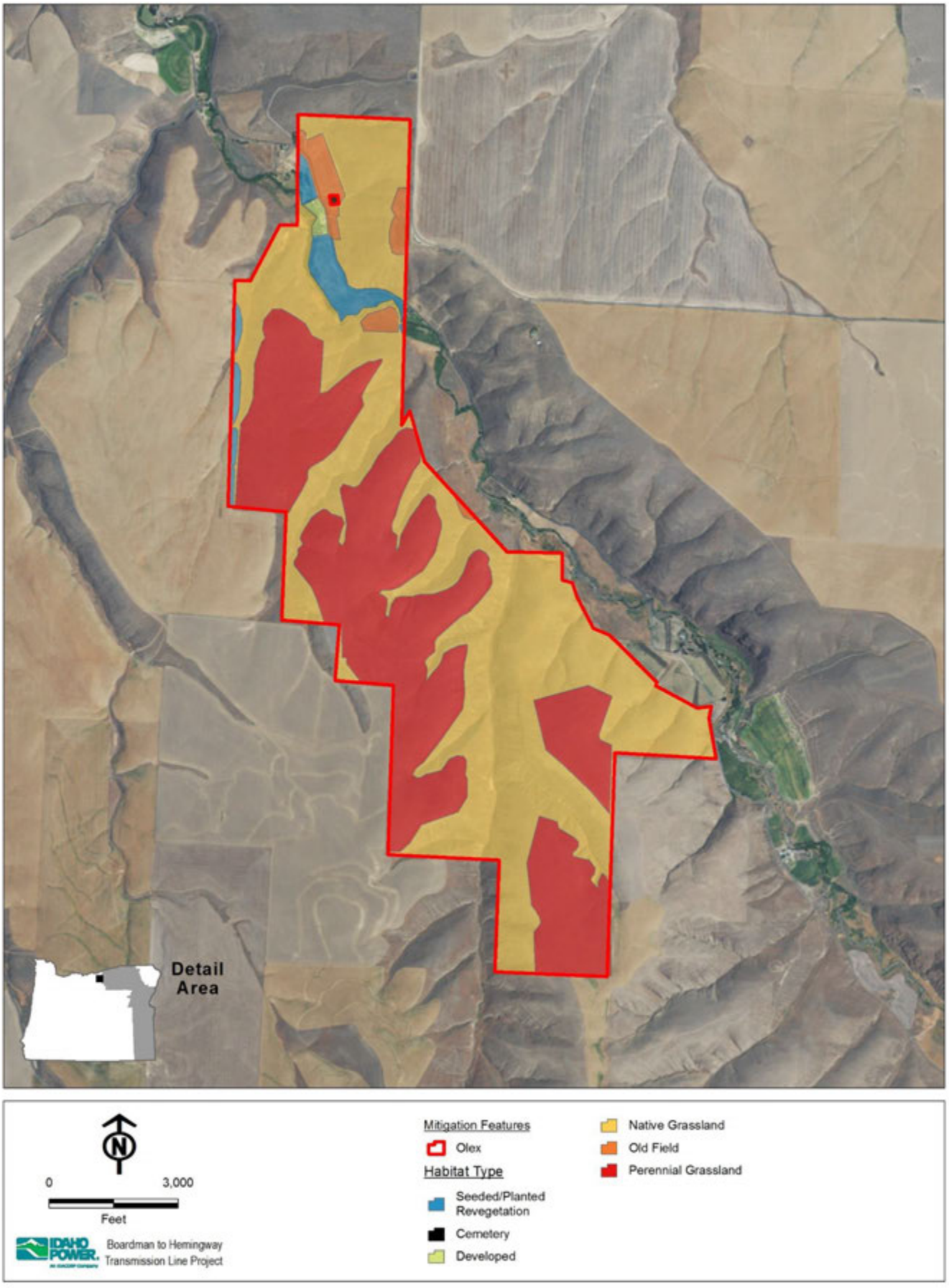

Figure 2. Olex Habitat Types

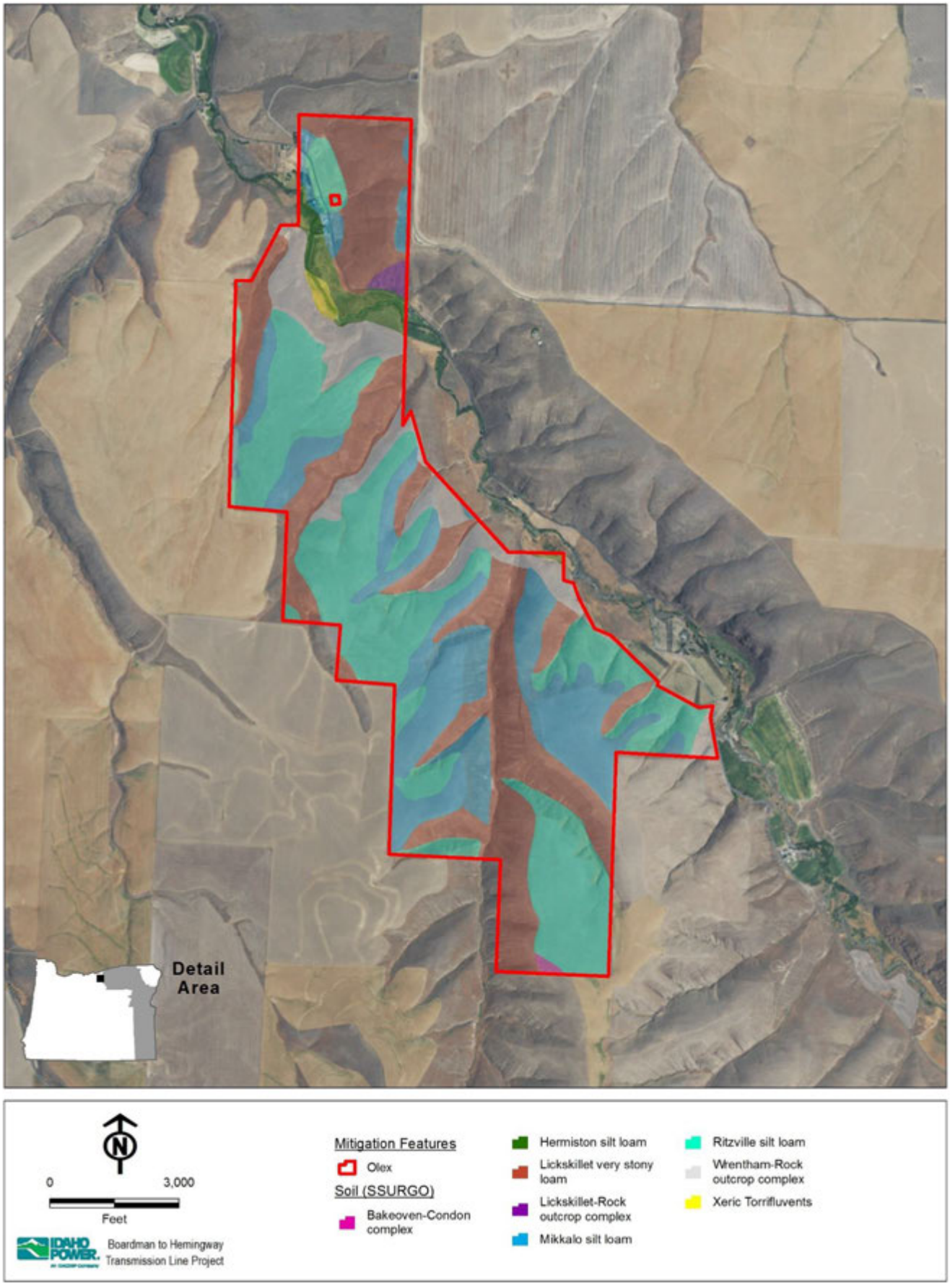

Figure 3. Olex Soil Types

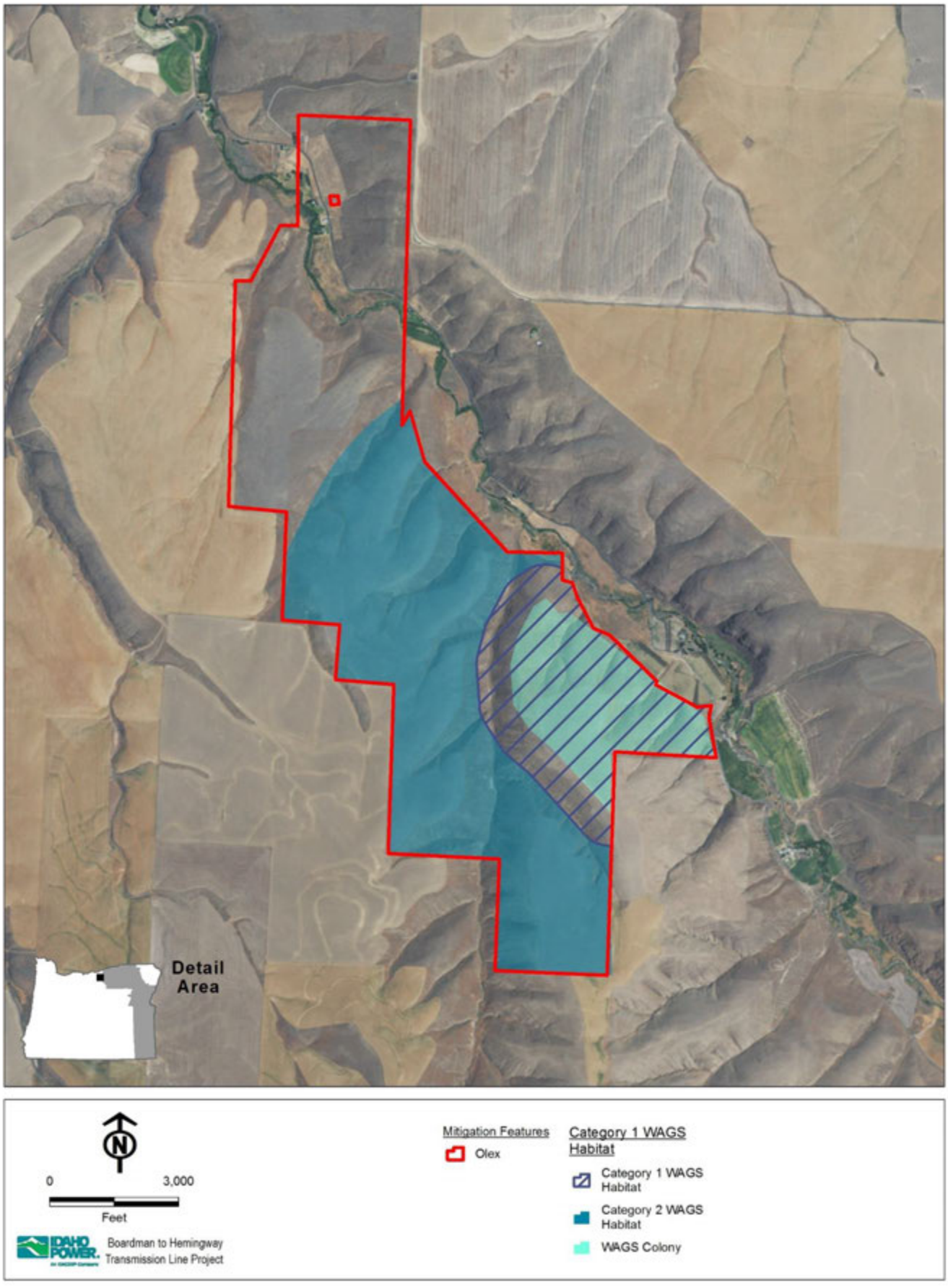

Figure 4. Olex Ground Squirrel Habitat

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Eightmile (**Figure 1**)
Landowner:
Parcel Size in Acres: 838

Date of Assessment: 2/12/2016
Parcel Elevation (ft): 1,600 – 2,100
Within Mitigation Service Area?: No

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Morrow County, 10 miles south of Ione.
T2S R23E Sections 25, 26, 36. T2S R24E Section 31.

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Parcel	Wildlife Habitat[3]
Category 1				
Category 2		**799.4**	**95.6**	
CRP	Agriculture / Developed	429.9	51.4	MDWR
Shrub-Steppe with Big Sage	Shrub / Grass	357.8	42.8	MDWR
Native Grasslands	Shrub / Grass	6.2	0.7	MDWR
Shrub-Steppe without Big Sage	Shrub / Grass	3.3	0.4	MDWR
Introduced Upland Vegetation	Shrub / Grass	2.2	0.3	MDWR
Category 3				-
Category 4				-
Category 5				-
Category 6		**36.7**	**4.4**	-
Developed	Agriculture / Developed	4.2	0.5	MDWR
Agriculture	Agriculture / Developed	32.5	3.9	MDWR
Total		**836.1**	**100**	**-**

[1]USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P-2 of Exhibit P).
[2]Represents the highest category that the habitat type can be attributed based only on vegetation metrics. Field review of this site would likely warrant modification of categorization.
[3]MDWR = Category 2 ODFW mule deer winter range.

Soil types	The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the following soils were identified on the property (**Figure 3**): *Lickskillet very stony loam* (**219 acres**). Lickskillet soils consist of shallow, well drained soils typically found on south-facing canyon and mountain side slopes at elevations of 200 to 4,500 feet. Lickskillet soils are dominantely used for livestock grazing. Other uses include watershed, recreation, and wildlife habitat. Vegetation is bluebunch wheatgrass, Sandberg bluegrass, Thurber needlegrass, western yarrow, and Wyoming big sagebrush. *Rhea silt loam* (**22 acres**). Rhea soils consist of deep, well drained soils found on upland slopes at elevations of 1,600 to 3,200 feet. Rhea soils are cultivated or used as rangeland. Small grains, hay and pasture are the principal crops. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass and forbs such as yarrow, phlox and buckwheat. *Ritzville silt loam* (**6.6 acres**). Ritzville soils consist of very deep and deep to duripan, well drained soils found on uplands including plateaus, benches, and canyon side slopes at elevations ranging between 700 to 3,000 feet. Ritzville soils are used for dryland wheat production and some livestock grazing. Native vegetation is bluebunch wheatgrass, Sandberg bluegrass, Wyoming big sagebrush, and yarrow. *Valby silt loam* (**590 acres**). Valby soils consist of moderately deep, well drained soils on upland slopes at elevations of 1,600 to 3,000 feet. Valby soils are used for dryfarm small grains, hay, pasture and range. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass and forbs such as yarrow, phlox and buckwheat.
Hydrologic Features Present (SteamNet, NWI, NHD)	One intermittent water feature crosses the property, in Lundell Canyon. The property borders Eightmile Canyon for approximately 0.75 mile, which contains an intermittent water feature. The property also borders an intermittent water feature associated with Gooseberry and Lundell Canyon for 1 mile. Wetland features are along the intermittent water features; otherwise the property is dry.
Adjacent land ownership, use, and condition	All adjacent land is privately held. A majority of adjacent land use is dry land agriculture with some open rangeland.
Infrastructure Density within or Near the Parcel (Qualitative Description)	The property contains a 2,400 square foot residence, a feeder barn, shop, additional barn, and four metal grain bins. The Ione-Gooseberry Road borders the northern portion of the property. Rural area is relatively devoid of major infrastructure.
Summary	The property is outside of the mitigation service area. Mule deer winter range completely overlaps the property. It provides non-agriculture and native habitat adjacent to a couple of canyon features, so likely provides relatively undisturbed nesting and hiding cover for numerous species. Aerial photo review shows livestock trailing and congregation areas on the property. The CRP contract expires in September of 2017 (per real estate listing). The property overlaps with a historic WAGS occurrence from ORBIC. The property is outside of modeled habitat, but is within 2.5 miles of a habitat concentration area.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This potential mitigation site could provide mitigation for impacts on Category 2 mule deer winter range within the shrub/grass general vegetation type of the Columbia Basin. The mitigation site is outside of Washington ground squirrel modeled habitat (habitat concentration areas [WWHCWG 2012]) and only historical records of squirrel activity occur within the property. This mitigation site provides CRP and native habitat features within an agricultural-dominated landscape. Wildlife species including mule deer and especially migratory birds that utilize shrub-steppe and grassland habitats would benefit from implementation of mitigation actions that result in ecological uplift.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to, State of Oregon, Federal Land Management Agency, approved NPO or Land Trust.
Mitigation Actions	The following are mitigation actions that may be implemented at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Livestock grazing restrictions* – the current level of grazing on this property is unknown. Mitigation action could avoid grazing practices that would compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. • *Native revegetation/restoration* – the focus would be sagebrush and bunchgrasses on this mitigation site. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed. • *Fence removal/fence upgrade* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).
Success Criteria	Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to: • Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift. • Successful weed control through documentation of a reduction in weeds and non-native invasive plant species. • Mitigation success will not be dependent on documentation of increased use of the mitigation site by wildlife species.

Financial Outline

Estimated Budget for the Eightmile Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition	700,000	1		700,000
Recurring Costs (Annually)				
O&M[1]	30	838	50	1,257,000
Total	**-**			**$1,957,000** ($2,335/acre)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The average cost per acre presented in that document was $24 in 2004 dollars, this has been adjusted to reflect 2015 dollars.

[2] Cost per acre here includes cost of acquisition/easement and initial mitigation actions and long-term O&M for 50 years.

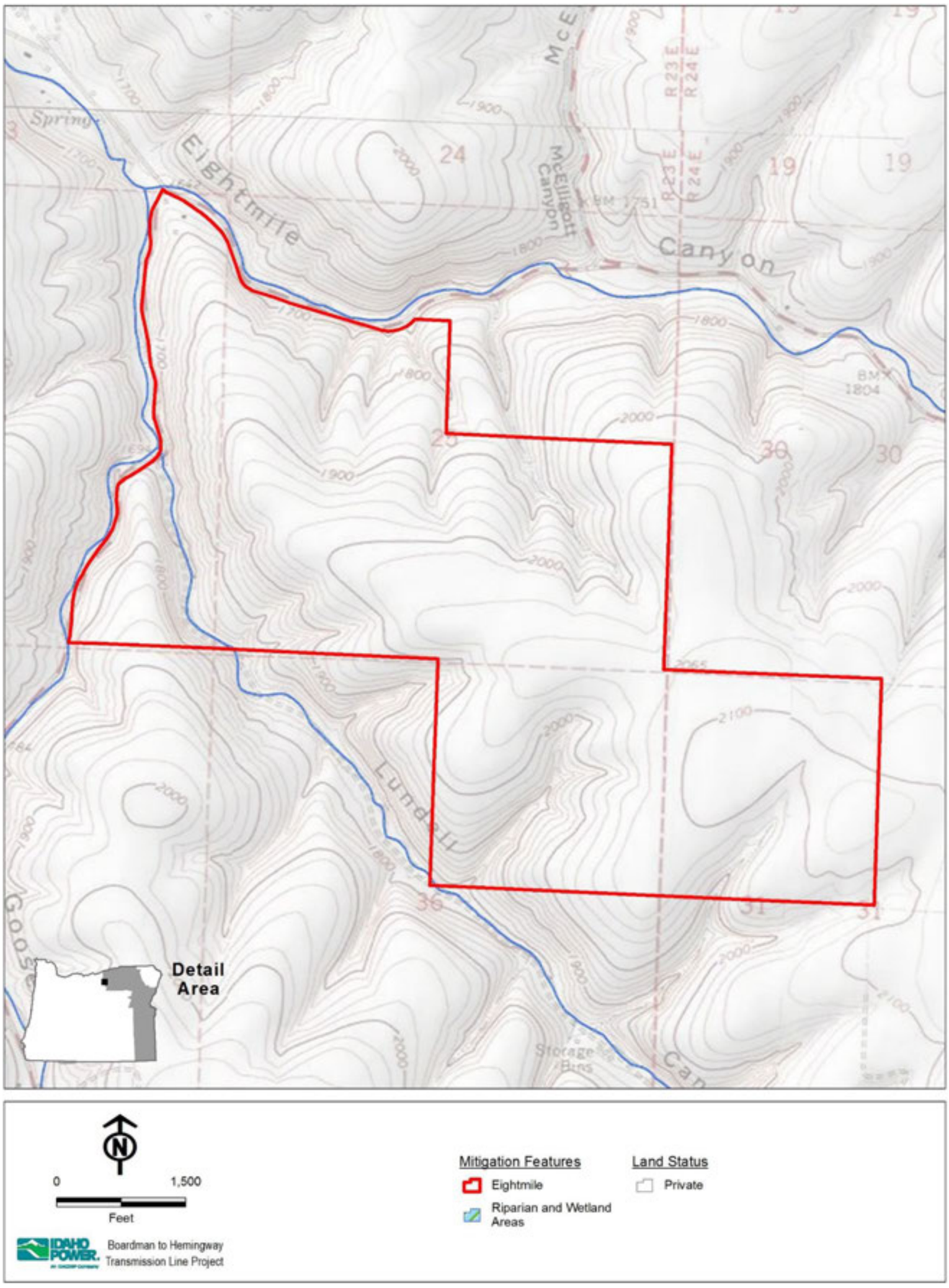

Figure 1. Eightmile Ownership and Water

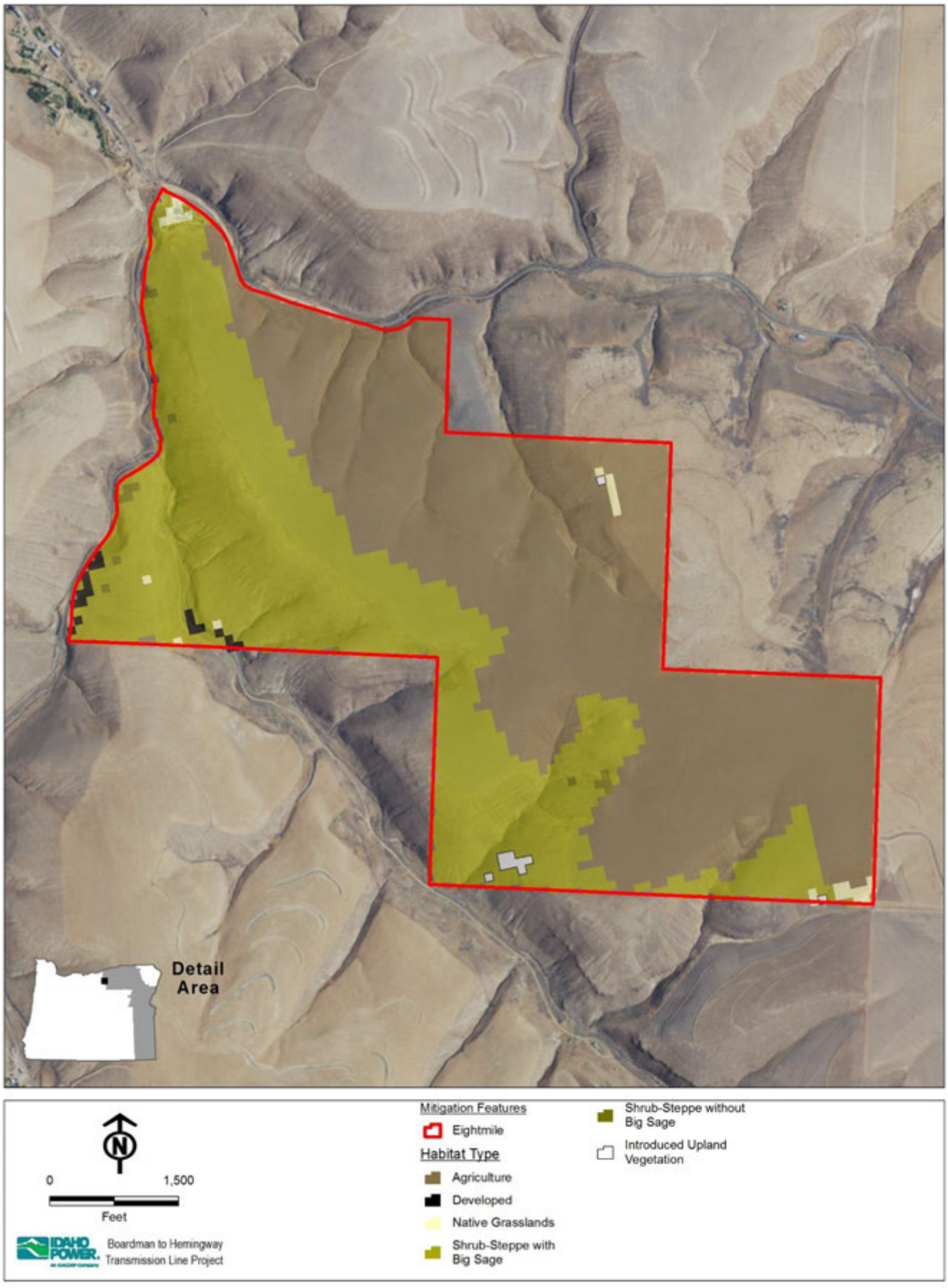

Figure 2. Eightmile Habitat Types

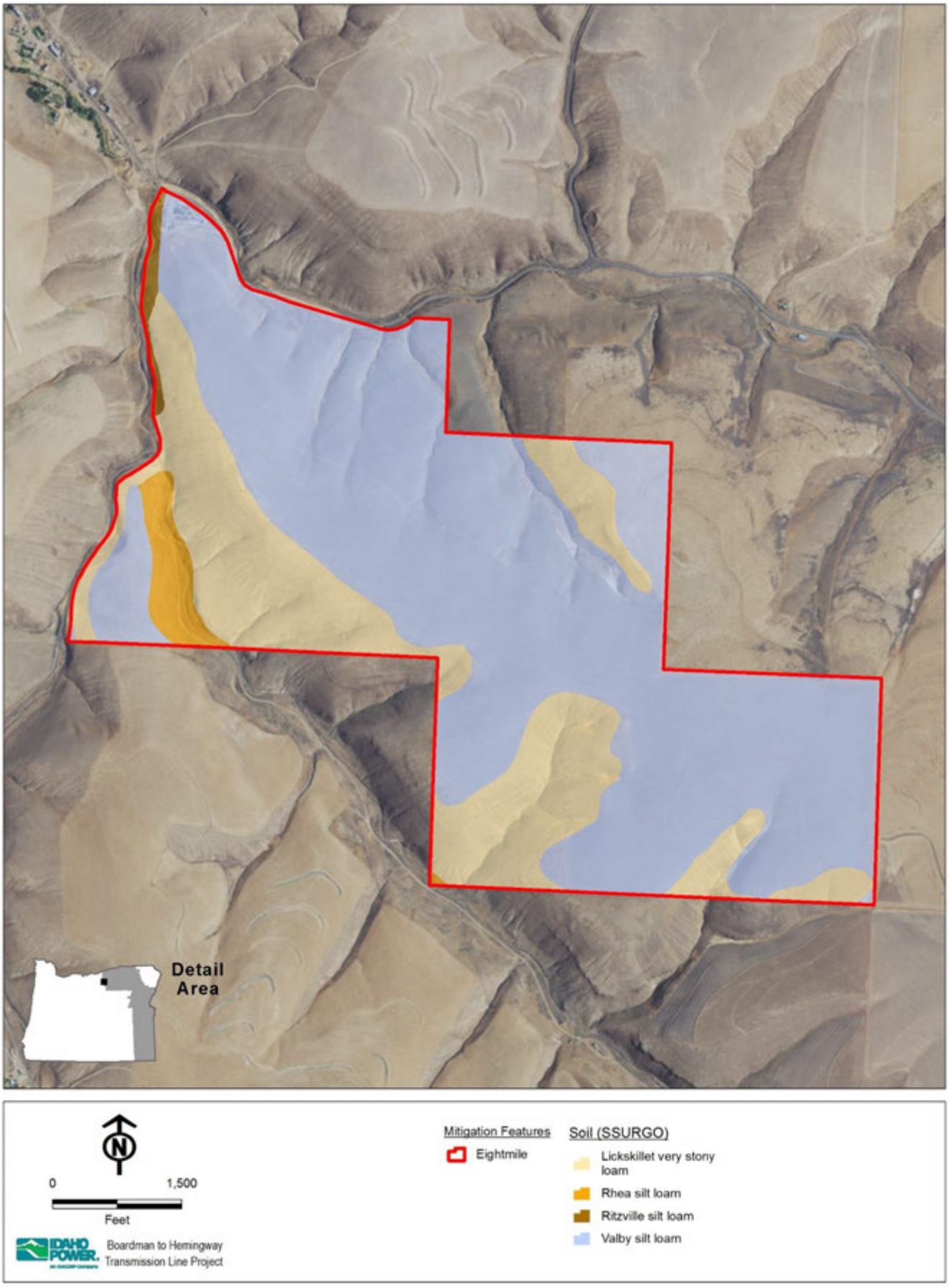

Figure 3. Eightmile Soil Types

Habitat Mitigation Areas with Mitigation Zone 2

- Antelope Mountain
- County Line
- Glass Hill
- High Valley

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Antelope Mountain (**Figure 1**)
Landowner:
Parcel Size in Acres: 1,623
Date of Assessment: 8/11/2014
Parcel Elevation (ft): 3,690 – 5,128
Within Mitigation Service Area?: Yes

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Baker County, T7S R38E S4, 7 miles southwest of North Powder, OR.
T7S R38E Sections 3, 4, 5, 8, 9, 16, 17

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Parcel	Wildlife Habitat[3]
Category 1, 3, 4, 5, & 6		**0**	**0**	
Category 2[4]		**1,623.4**	**100**	-
Ponderosa Pine	Forest/Woodland	448.3	27.6	RMEWR, MDWR, RMESR
Ponderosa Pine	Forest/Woodland	57.5	3.5	RMEWR, MDWR
Mixed Grand Fir / Douglas Fir	Forest/Woodland	388.7	23.9	RMEWR, MDWR, RMESR
Mixed Grand Fir / Douglas Fir	Forest/Woodland	183.8	11.3	RMEWR, MDWR
Shrub-Steppe without Big Sage	Shrub/Grassland	70.7	4.4	RMEWR, MDWR, RMESR
Shrub-Steppe without Big Sage	Shrub/Grassland	144.6	8.9	RMEWR, MDWR
Rocky Mountain Aspen	Forest/Woodland	58.6	3.6	RMEWR, MDWR, RMESR
Rocky Mountain Aspen	Forest/Woodland	5.1	0.3	RMEWR, MDWR
Western Juniper / Mountain Mahogany Woodland	Forest/Woodland	46.6	2.9	RMEWR, MDWR, RMESR
Western Juniper / Mountain Mahogany Woodland	Forest/Woodland	12.3	0.8	RMEWR, MDWR
Forested Wetland	Open Water/ Wetland	28.7	1.8	RMEWR, MDWR, RMESR
Forested Wetland	Open Water/ Wetland	4.4	0.3	RMEWR, MDWR
Subalpine/Montane Forest	Forest/Woodland	22.2	1.4	RMEWR, MDWR
Shrub-Steppe with Big Sage	Shrub/Grassland	19.9	1.2	RMEWR, MDWR, RMESR
Shrub-Steppe with Big Sage	Shrub/Grassland	90.2	5.6	RMEWR, MDWR
Lodgepole Pine	Forest/Woodland	7.6	0.5	RMEWR, MDWR, RMESR
Lodgepole Pine	Forest/Woodland	2.9	2.9	RMEWR, MDWR
Mixed Tamarack	Forest/Woodland	6.2	0.4	RMEWR, MDWR, RMESR
Scrub-Shrub Wetland	Open Water/ Wetland	4.2	0.3	RMEWR, MDWR, RMESR
Remaining	-			

[1] USGS Gap Analysis Project (GAP) GIS data. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P1-1 of Exhibit P1).
[2] Represents the habitat category based on overlap with wildlife habitat layers.
[3] MDWR = ODFW mule deer winter range; RMEWR = ODFW Rocky Mountain elk winter range; RMESR = Rocky Mountain Elk Foundation Rocky Mountain elk summer range.
[4] Total acres of habitat type will not match actual parcel size due to resolution of the GAP raster dataset.

Soil types The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the

following soils were identified on the property (**Figure 3**):

Bouldrock-Kilmerque complex (**25 acres**). Bouldrock soils consist of moderately deep, well drained soils found on south-facing side slopes of mountainous areas at elevations ranging from 4,000 to 6,200 feet. Bouldrock soils are used for rangeland. The native vegetation is bluebunch wheatgrass, mountain big sagebrush, arrowleaf balsamroot and gray rabbitbrush. Kilmerque soils consist of moderately deep, well drained soils on gently rolling bench tops to moderately steep south aspect side slopes in forested mountains at elevations ranging from 3,500 to 6,000 feet. Kilmerque soils are used for woodland. The native vegetation is ponderosa pine, Douglas fir and pinegrass.

Brownlee-Shangland loams (**0.2**). Brownlee soils consist of deep and very deep, well drained soils that are found on nearly level to steep inclines on hill summits, backslopes and footslopes, and fan remnants at elevations of 2,500 to 5,800 feet. Brownlee soils are used mainly for rangeland and wildlife habitat. Native vegetation is bluebunch wheatgrass, Idaho fescue, xeric big sagebrush and antelope bitterbrush. Some areas are used for irrigated or nonirrigated cropland (small grains) and hayland/pasture. Shangland soils consist of moderately deep, well drained soils on hills with slopes of 2 to 35 percent and elevation ranging from 3,600 to 4,000 feet. Shangland soils are used mainly for rangeland. Some small areas are used for nonirrigated small grain, hay and pasture. The native vegetation is mainly mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, needlegrass, buckwheat, antelope bitterbrush, and squaw apple.

Crackler-Rouen gravelly silt loams (**275**). Crackler soils consist of deep, well drained soils found on north-facing side slopes of forested mountains at elevations ranging from 3,800 to 6,200 feet. Crackler soils are used for woodland, watershed and wildlife habitat. The native vegetation is Douglas fir, ponderosa pine, grand fir and western larch with an understory of pinegrass, elk sedge, huckleberry and snowberry. Rouen soils consist of moderately deep, well drained soils on north side slopes of forested areas at elevations of 3,800 to 6,200 feet. Rouen soils are used mainly for timber production. The vegetation is mainly Douglas fir, grand fir, western larch, minor amounts of ponderosa pine and lodgepole pine, common snowberry, princes pine, low Oregon grape, myrtle pachystima, elk sedge, pinegrass, big huckleberry, western rattlesnake plantain, twinflower, and heartleaf arnica.

Dogtown complex (**340**). Dogtown soils consist of deep and very deep, well drained soils on moderately steep and steep metastable and active north-facing side slopes of forested mountains at elevations ranging from 3,800 to 6,200 feet. Dogtown soils are used for woodland, watershed and wildlife habitat. The native vegetation is Douglas fir, grand fir, ponderosa pine and western larch with an understory of pinegrass, elk sedge, huckleberry and snowberry.

Greenscombe loam (**129**). Greenscombe soils consist of moderately deep, well drained soils on low hills at elevations 3,200 to 3,800 feet. Greenscombe soils are Rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, Sandberg bluegrass, Thurber needlegrass, and big sagebrush.

Hibbard silt loam (**117**). Hibbard soils consist of moderately deep to a duripan, well drained soils found on fan terraces at elevations of 3,000 to 3,700 feet. Hibbard soils are used for rangeland. The native vegetation is bluebunch wheatgrass, Idaho fescue and big sagebrush.

Soil types (cont.)

Highhorn-Huntrock very gravelly silt loams (**282**). Highhorn soils consist of deep, well drained soils on moderately steep to steep south-facing side slopes of mountains at elevations from 3,800 to 7,200 feet. Highhorn soils are used for timber production, watershed and wildlife habitat. The native vegetation is ponderosa pine, Douglas fir

	and grand fir with an understory of pinegrass and elk sedge. Huntrock soils consist of moderately deep, well drained soils on moderately steep to steep south side slopes of mountains at elevations from 3,800 to 7,200 feet. Huntrock soils are used for woodland, watershed and wildlife habitat. The native vegetation is ponderosa pine, Douglas fir and grand fir with an understory of pinegrass and elk sedge. *Kilmerque loam* (**272**). Kilmerque soils consist of moderately deep, well drained soils on gently rolling bench tops to moderately steep south aspect side slopes in forested mountains at elevations ranging from 3,500 to 6,000 feet. Kilmerque soils are used for woodland. The native vegetation is ponderosa pine, Douglas fir and pinegrass. *Ladd loam* (**24**). Ladd soils consist of deep, well drained soils on alluvial fans, terraces, and colluvial footslopes at elevations ranging from 2,700 to 5,050 feet. Ladd soils are mostly used in irrigated crops of alfalfa, grass and small grain or dryland pasture and hay or range. Vegetation is mainly Idaho fescue, associated forbs, a few ponderosa pine or western juniper, big sagebrush, rabbitbrush, bluebunch wheatgrass, and cheatgrass. *Tolo-Dogtown complex* (**159**). Tolo soils consist of deep and very deep, well drained soils found on nearly level upland plateaus and steep north and east-facing mountain side slopes at elevations of 2,800 to 5,400 feet. Tolo soils used for timber production and livestock grazing with small areas at lower elevations cleared for cultivation. Principal trees include Douglas fir, grand fir, larch, ponderosa pine, and lodgepole pine. Dogtown soils consist of deep and very deep, well drained soils on moderately steep and steep metastable and active north-facing side slopes of forested mountains at elevations ranging from 3,800 to 6,200 feet. Dogtown soils are used for woodland, watershed and wildlife habitat. The native vegetation is Douglas fir, grand fir, ponderosa pine and western larch with an understory of pinegrass, elk sedge, huckleberry and snowberry.
Hydrologic Features Present (SteamNet, NWI, NHD)	A couple of intermittent drainages are identified through NHD, as well as a couple of canal/ditch features. According to the real estate listing, numerous springs occur on site. The North Powder River runs within 0.10 mile along the western border of the parcel.
Adjacent land ownership, use, and condition	One small BLM parcel borders the property; otherwise the entire property is bordered by private landowners. Immediate adjacent land use includes some pasture/ag lands, otherwise a majority appears to be rangeland and wildlife. Large tracts of USFS occur approximately 1.5 miles to the west and the ODFW North Powder Elkhorn Wildlife Management Area is within 0.5 mile, located to the northwest of the parcel. The Rocky Ford campground is located along the North Powder River within 0.25 mile to the west of the parcel.
Infrastructure Density within or Near the Parcel (Qualitative Description)	I-84 is 6.5 miles to the east of the property. Anthony Lakes Hwy is just outside of the parcel to the east, and a few rural homes and rural access roads border the parcel. The parcel itself contains a couple of dirt/gravel access roads. Infrastructure is nearly absent within the parcel and is at minimal densities in the immediate vicinity.
Summary	Parcel is dominated by conifer forest type habitat with secondary habitat of shrub-steppe habitat both with and without big sage species. USFS land and an ODFW WMA are in close proximity; however, there are no shared borders with those lands. The parcel overlaps with the Elkhorn Mountains area of the TNC Portfolio. The parcel

	also overlaps an ODFW Conservation Opportunity Area within the Blue Mountains ecoregion, the Baker Valley. Most of the recommended conservation actions in this area include watershed, riparian, and wetland improvements, along with the protection or enhancement of habitat for ESA listed plants (Howell's spectacular thelopody, Oregon semaphore grass). The parcel is completely with ODFW elk and mule deer winter range and is also identified as summer elk range. The parcel is within an ODFW linkage buffer for elk, which were identified to show areas important to animal movement that cross paved roads.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on Category 2 elk and mule deer winter habitat within the forest/woodland general vegetation group. This mitigation site could also help meet the Project need for elk summer habitat. It contains important habitat features with opportunities to provide durable ecological uplift through implementation of standard mitigation actions. Opportunities to improve the watershed would be in line with the recommendations of the Oregon Conservation Strategy for the Baker Valley Conservation Opportunity Area. The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to elk and mule deer (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to State of Oregon, Federal Land Management Agency, approved NPO or Land Trust
Mitigation Actions	The following are mitigation actions that may be implemented at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Livestock grazing restrictions* – avoid grazing practices that would compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. • *Native revegetation/restoration* – the focus would be planting forage shrubs and implementing forest management practices that would create structural diversity and enhance desirable habitat conditions. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed. • *Fence removal/fence upgrade* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).

Success Criteria

Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to:

- Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift.
- Successful weed control through documentation of a reduction in weeds and non-native invasive plant species.
- Mitigation success will not be dependent on documentation of increased use of the mitigation site by WAGS or any other wildlife species.

Financial Outline

Estimated Budget for the Antelope Mountain Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition (from listing)	$3,000,000	1	-	$3,000,000
Recurring Costs (Annually)				
O&M[1]	$53.75	1,623	50	$4,361,813
Total	-			$7,361,813 ($4,536/acre)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The cost per acre identified in that study for the Elkhorn Wildlife Management Area (which this mitigation site will be modeled after) was $43 in 2004 dollars, this has been adjusted to reflect 2015 dollars.

[2] Cost per acre here includes cost of acquisition/easement and long-term O&M for 50 years.

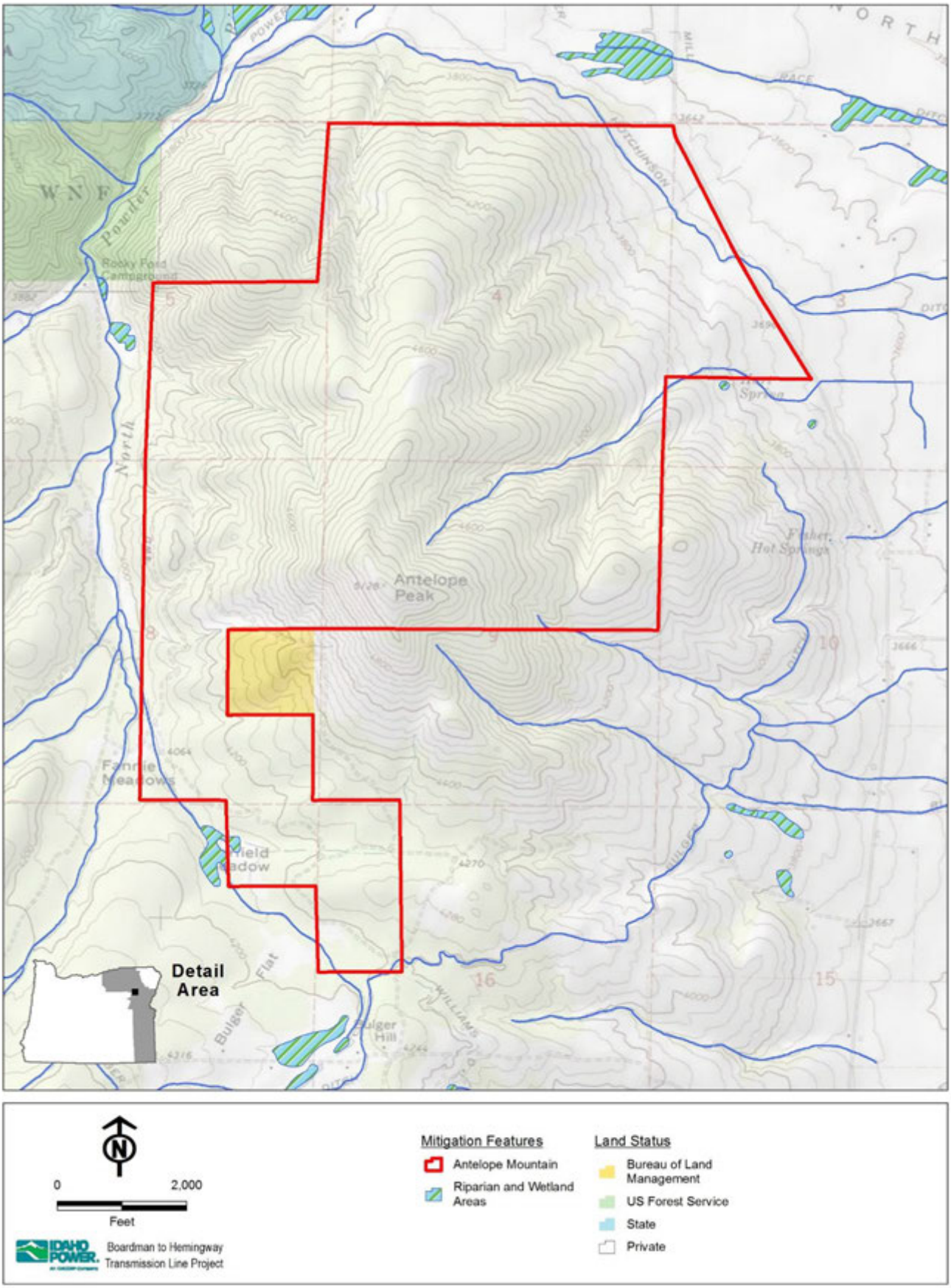

Figure 1. Antelope Mountain Ownership and Water

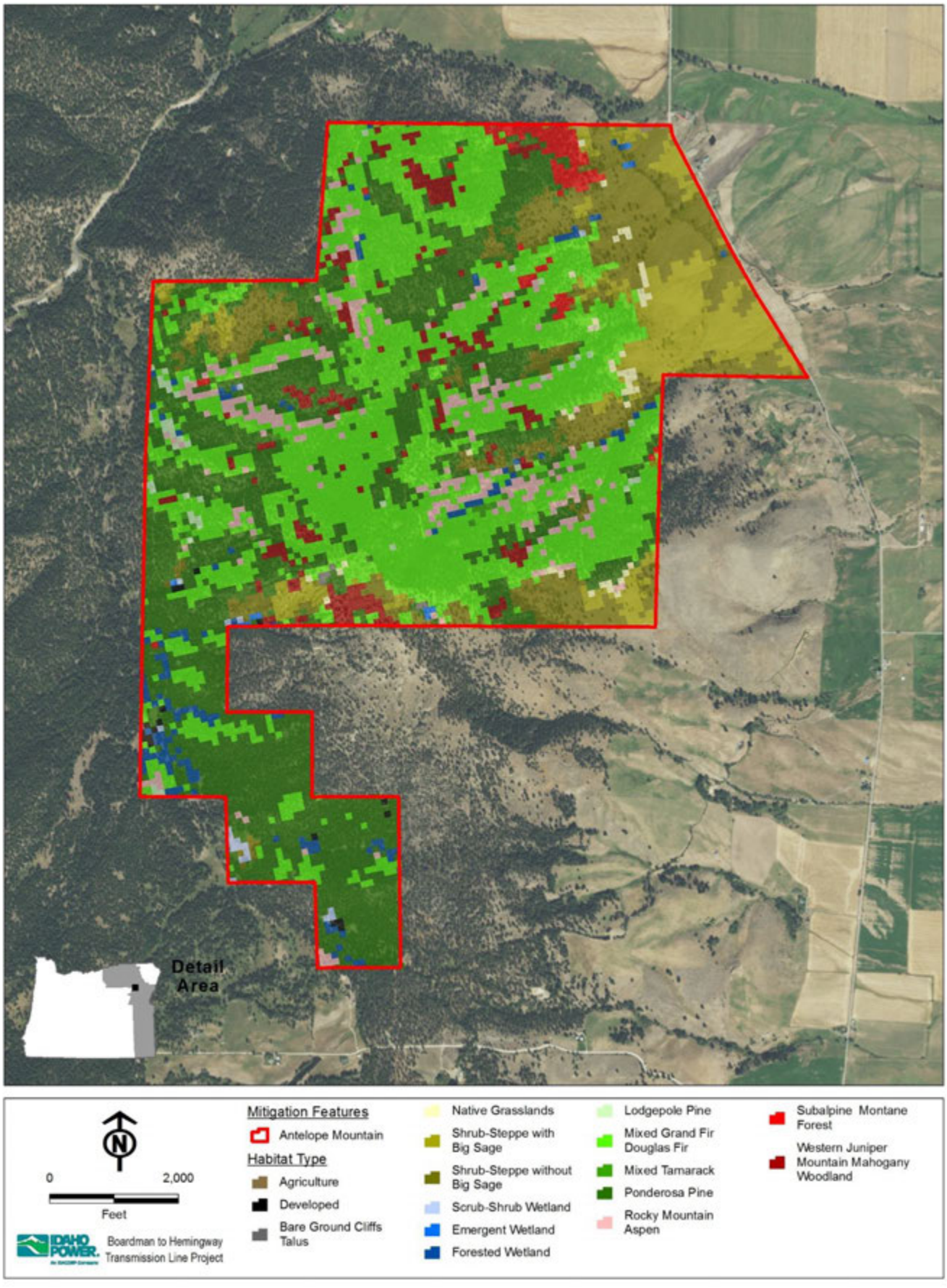

Figure 2. Antelope Mountain Habitat Types

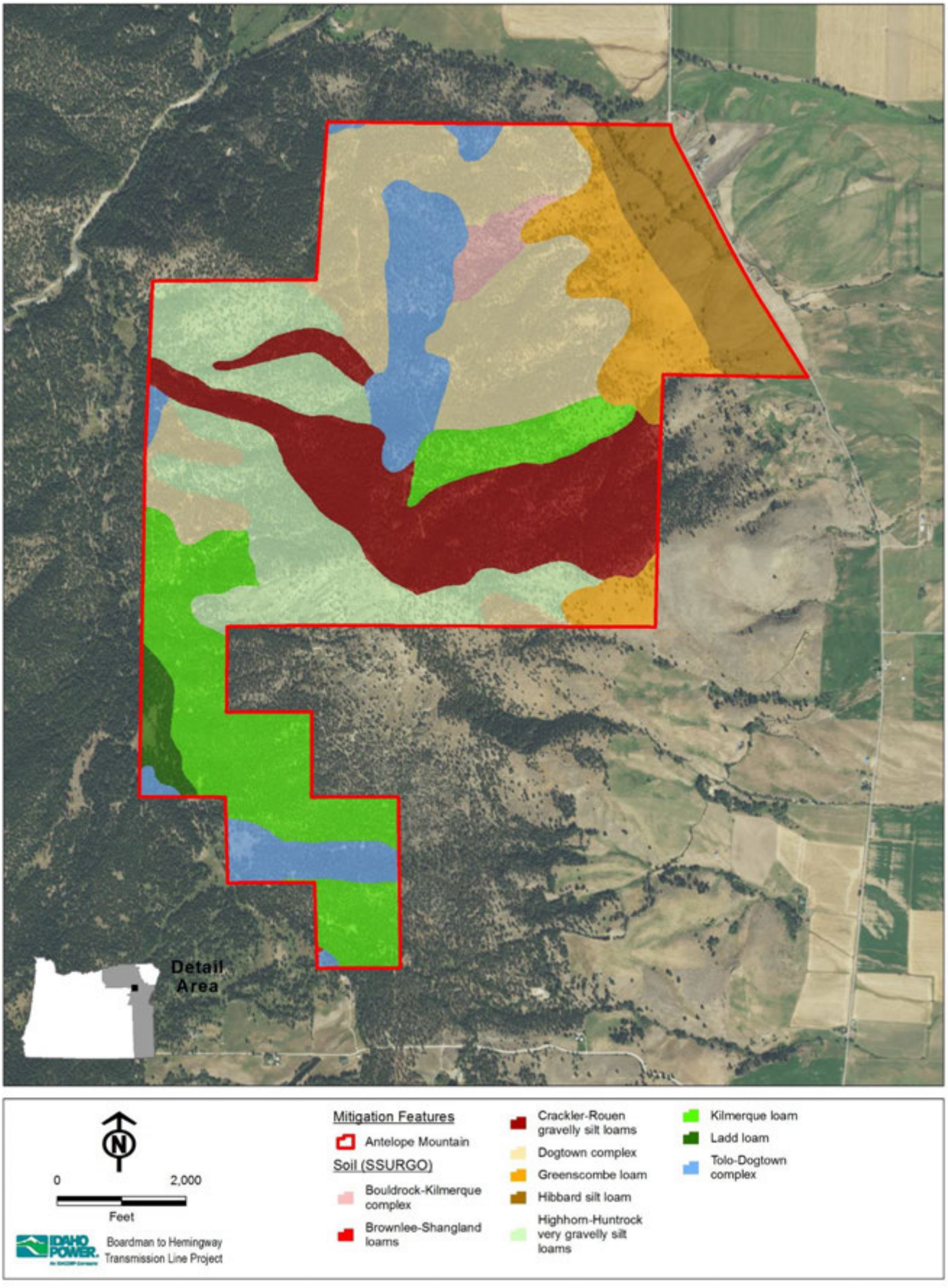

Figure 3. Antelope Mountain Soil Types

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: County Line (**Figure 1**) **Date of Assessment:** 10/15/2014
Landowner: **Parcel Elevation (ft):** 4,000 – 4,800
Parcel Size in Acres: 792 **Within Mitigation Service Area?:** Yes

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Baker and Union County, 9 miles west of North Powder.
T6S R38E Sections 7, 18, 19.

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Parcel	Wildlife Habitat[3]
Category 1		**-**	**-**	-
Category 2		**775.5**	**100**	-
Mixed Grand Fir / Douglas Fir	Forest/Woodland	305.4	39.4	RMEWR, RMESR, MDWR, MDSR
Ponderosa Pine	Forest/Woodland	244.7	31.6	
Rocky Mountain Aspen	Forest/Woodland	97.8	12.6	
Shrub-Steppe without Big Sage	Shrub/Grass	31.3	4.0	
Lodgepole Pine	Forest/Woodland	30.7	4.0	
Forested Wetland	Wetland	24.9	3.2	
Mixed Tamarack	Forest/Woodland	13.1	1.7	
Western Juniper / Mountain Mahogany Woodland	Forest/Woodland	11.3	1.5	
Shrub-Steppe with Big Sage	Shrub/Grass	6.0	0.8	
Subalpine / Montane Forest	Forest/Woodland	4.0	0.5	
Native Grasslands	Shrub/Grass	2.7	0.3	
Remaining (**Figure 2**)	-	3.6	0.5	
Category 3		**-**	**-**	-
Category 4		**-**	**-**	-
Category 5		**-**	**-**	-
Category 6		**-**	**-**	-
Total		**775.5**	**100**	**-**

[1] USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P1-1 of Exhibit P1).
[2] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3] MDWR = Category 2 habitat for ODFW mule deer winter range; RMEWR = Category 2 habitat for ODFW Rocky Mountain elk winter range; RMESR = Category 3 habitat for Rocky Mountain Elk Foundation Rocky Mountain elk summer range; MDSR = Category 3 habitat for WAFWA mule deer summer range.
[4] Total acres of habitat type may not match actual parcel size due to resolution of the GAP raster dataset. Pixels of the raster dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Soil types The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the

following soils were identified on the property (**Figure 3**):

Hudspeth very stony clay loam (**9 acres**). Hudspeth soils consist of moderately deep, well drained soils found on side slopes of forested areas at elevations ranging from 4,000 to 5,700 feet. Hudspeth soils are used mainly for rangeland and wildlife habitat. The vegetation is mainly curlleaf mountainmahogany, western juniper, scattered ponderosa pine, mountain big sagebrush, bitterbrush, squaw apple, wax currant, bluebunch wheatgrass, Sandberg bluegrass, along with minor amounts of elk sedge, pinegrass, Idaho fescue and arrowleaf balsamroot.

Klicker-Anatone complex (**45 acres**). Klicker soils consist of moderately deep, well drained soils on mountains, plateaus, and benches at elevations from 2,500 to 6,200 feet. Klicker soils are used mainly for timber production and wildlife habitat. Native vegetation is an open stand of ponderosa pine and Douglas-fir with an understory of bluebunch wheatgrass, slender wheatgrass, brome grass, elk sedge, Oregon-grape, common snowberry, Saskatoon serviceberry, creambush oceanspray, mallow ninebark and wild rose. Anatone soils consist of shallow, well drained soils found on mountain side slopes, ridgetops, hills, and plateaus at elevations of 2,000 to 6,200 feet. Anatone soils are mostly used for livestock grazing, wildlife habitat, and recreation. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, mossy stonecrop, curlleaf mountain mahogany and stiff sagebrush.

Klicker stony silt loam (**269 acres**). Klicker soils consist of moderately deep, well drained soils on mountains, plateaus, and benches at elevations from 2,500 to 6,200 feet. Klicker soils are used mainly for timber production and wildlife habitat. Native vegetation is an open stand of ponderosa pine and Douglas-fir with an understory of bluebunch wheatgrass, slender wheatgrass, brome grass, elk sedge, Oregon-grape, common snowberry, Saskatoon serviceberry, creambush oceanspray, mallow ninebark and wild rose.

Lookingglass silt loam (**4 acres**) and *Lookingglass very stony silt loam* (**2 acres**). Lookingglass soils consist of very deep, moderately well drained soils found on uplands at elevations of 1,800 to 4,000 feet. Lookingglass soils are used mainly for timber production. Cleared areas are cropped to small grains, hay, pasture, and peas. The native vegetation is ponderosa pine and Douglas fir with an understory of spirea, oceanspray, Idaho fescue, pinegrass and elksedge.

Tolo silt loam (**47 acres**). Top soils consist of deep and very deep, well drained soils found on mountains at elevations ranging from 3,000 to 5,400 feet. Top soils are used mainly for timber production and cropland. Most areas with slopes of less than 15 percent have been cleared and are used for production for dryland grain and hay. Native vegetation is ponderosa pine, Douglas fir, white fir, pinegrass and elksedge. This series is in what is called the Douglas-fir forest plant community.

Top-McGarr complex (**238 acres**). Top soils consist of deep and very deep, well drained soils found on mountains at elevations ranging from 3,000 to 5,400 feet. Top soils are used mainly for timber production and cropland. Most areas with slopes of less than 15 percent have been cleared and are used for production for dryland grain and hay. Native vegetation is ponderosa pine, Douglas fir, white fir, pinegrass and elksedge. This series is in what is called the Douglas-fir forest plant community. McGarr soils consist of moderately deep, well drained soils found on mountains and hills at elevations of 3,000 to 5,800 feet. McGarr soils are used for timber production with some grazing. Vegetation is mainly Douglas fir and ponderosa pine with an understory of pinegrass and elk sedge.

Top silt loam (**160 acres**). Top soils consist of deep and very deep, well drained soils found on mountains at elevations ranging from 3,000 to 5,400 feet. Top soils are used mainly for timber production and cropland. Most areas with slopes of less than 15 percent have been cleared and are used for production for dryland grain and hay. Native vegetation is ponderosa pine, Douglas fir, white fir, pinegrass and elksedge. This series is in what is called the Douglas-fir forest plant community.

Hydrologic Features Present (SteamNet, NWI, NHD)	Property contains one intermittent stream, one perennial stream, and two canals/ditches (NHD). The perennial stream is Anthony Creek, which is designated critical habitat for bull trout. NWI identifies an emergent wetland not associated with the NHD streams.
Adjacent land ownership, use, and condition	Property is located between USFS land and the ODFW Elkhorn WMA. Some private parcels are located around the northern portion of the property. The property has been logged recently, as well as adjacent private parcels. Land use in the area is timber production, wildlife conservation, and rangelands.
Infrastructure Density within or Near the Parcel (Qualitative Description)	Property contains canals/ditches, logging roads throughout, and a small shack, otherwise devoid of development. Some WMA buildings, a gravel pit, Pilcher Creek reservoir, and well-maintained Tucker Flat Rd are within 0.5 mile of the property.
Summary	This property borders another property considered during desktop assessments (Cantrell). Property is within The Nature Conservancy's Elkhorn Mountains priority conservation area. It is immediately adjacent to ODFW's Elkhorn WMA. Contains critical habitat for bull trout and is completely within Rocky Mountain elk winter and summer range and mule deer winter and summer range. Property was recommended by ODFW.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on Category 2 elk and mule deer winter range within the forest/woodland general vegetation type. This mitigation site could help meet the Project need for elk and mule deer summer habitat as well. It contains important habitat features with opportunities to provide durable ecological uplift through implementation of standard mitigation actions. Opportunities to improve the watershed would benefit bull trout and their designated critical habitat. The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to elk and mule deer (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to State of Oregon, Federal Land Management Agency, approved NPO or Land Trust
Mitigation Actions	The following are mitigation actions that may be implemented at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Livestock grazing restrictions* – historic grazing practices at this property are unknown. However, the objective would be to avoid grazing practices that would compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. • *Native revegetation/restoration* – forest management practices would be implemented to create structural diversity and enhance desirable habitat conditions. • *Road closure* – restrict motor vehicle use to just those roads that are necessary; seasonally close access based on use by elk and mule deer. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed. • *Fence removal/fence upgrade* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).

Success Criteria

Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to:

- Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift.
- Successful weed control through documentation of a reduction in weeds and non-native invasive plant species.
- Mitigation success will not be dependent on documentation of increased use of the mitigation site by wildlife species.

Financial Outline

Estimated Budget for the County Line Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition (from 2009 listing attached to ODFW nomination form)	$1,200,000	1		$1,200,000
50-year Operation and Management Costs				
O&M[1]	$53.75	792	50	$2,128,500
Total	**-**			**$3,328,500** ($4,202/acre)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The cost per acre identified in that study for the Elkhorn Wildlife Management Area (which this mitigation site will be modeled after) was $43 in 2004 dollars, this has been adjusted to reflect 2015 dollars.

[2] Cost per acre here includes cost of acquisition/easement and long-term O&M for 50 years.

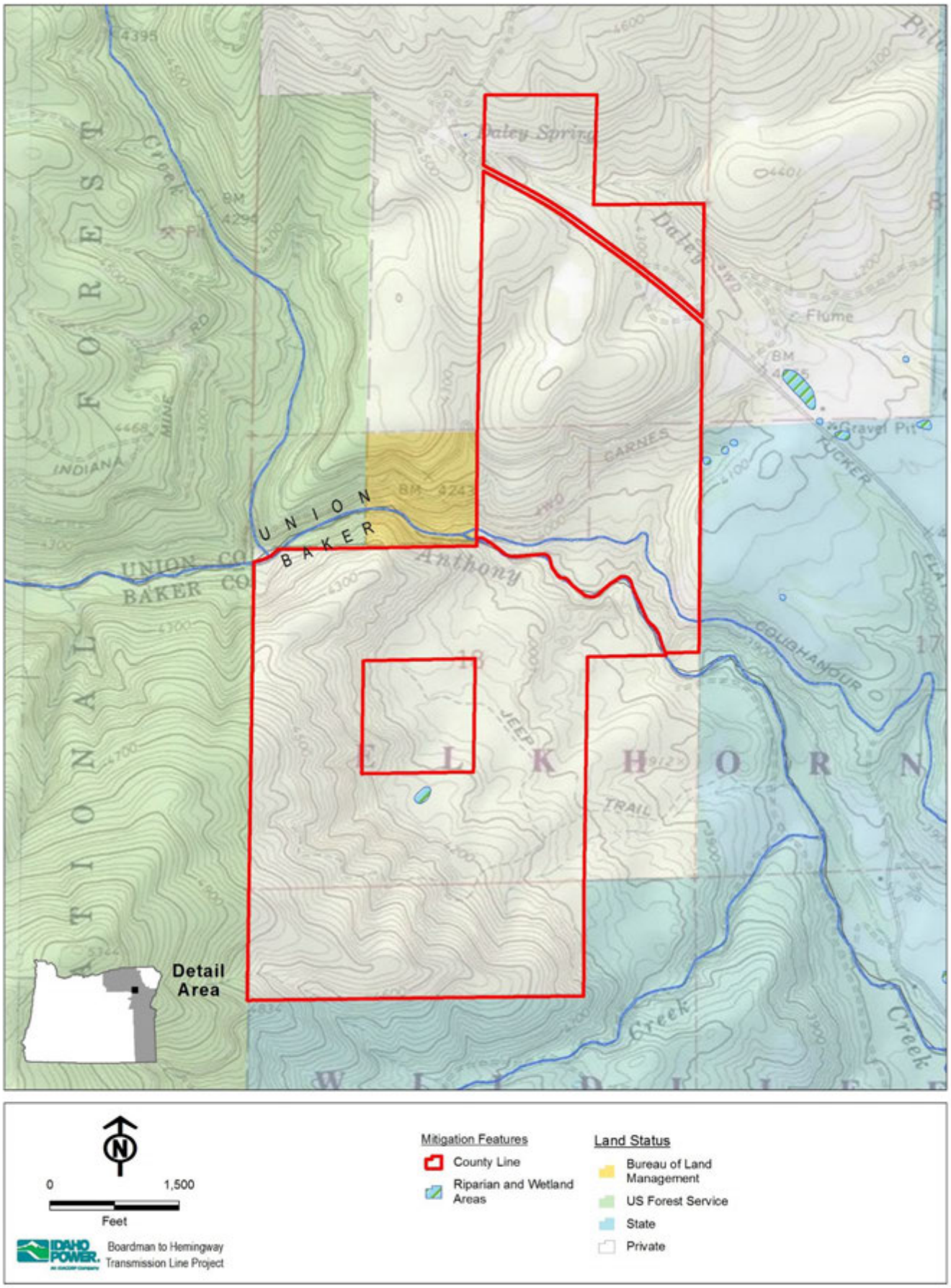

Figure 1. County Line Ownership and Water

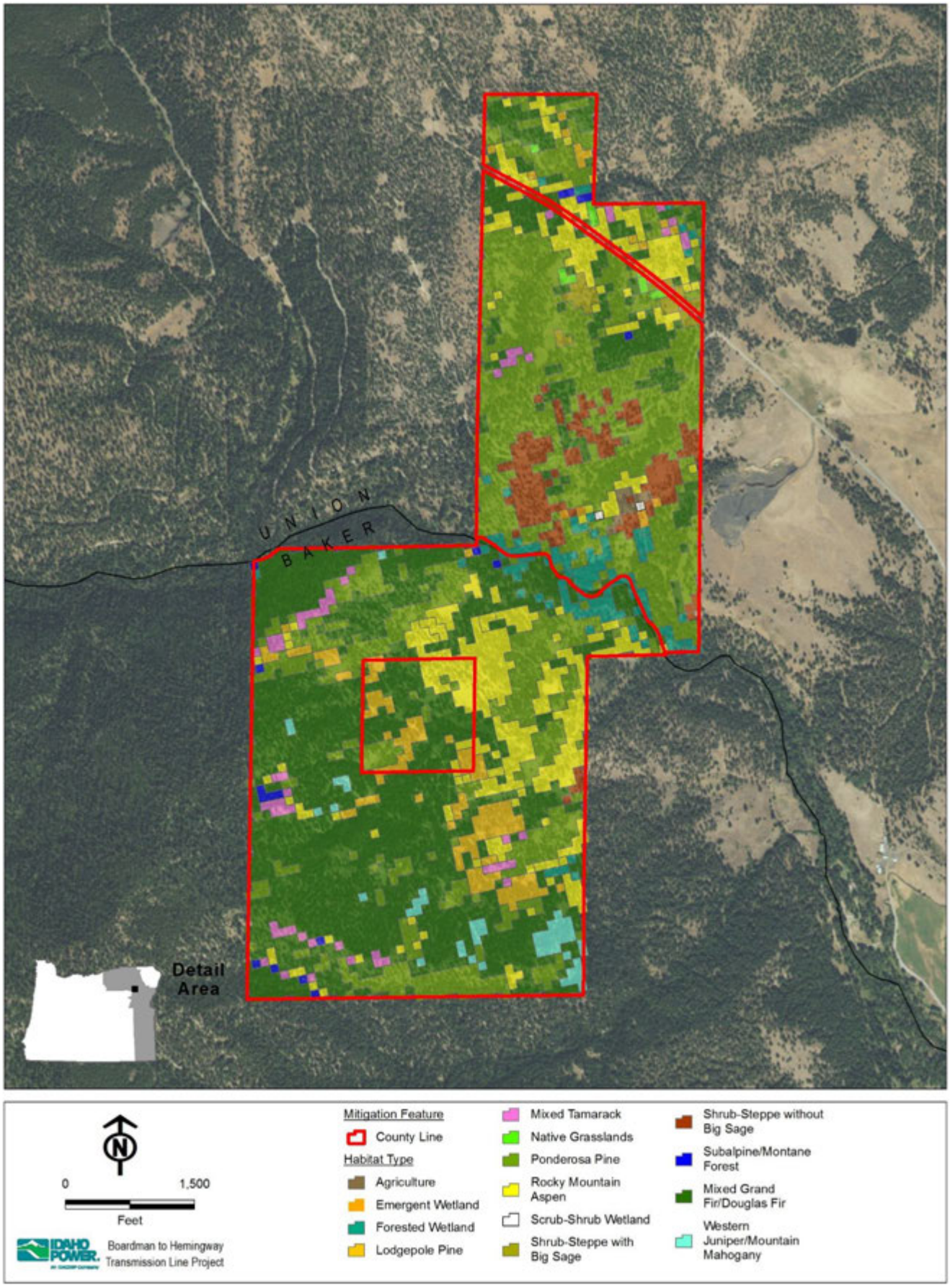

Figure 2. County Line Habitat Types

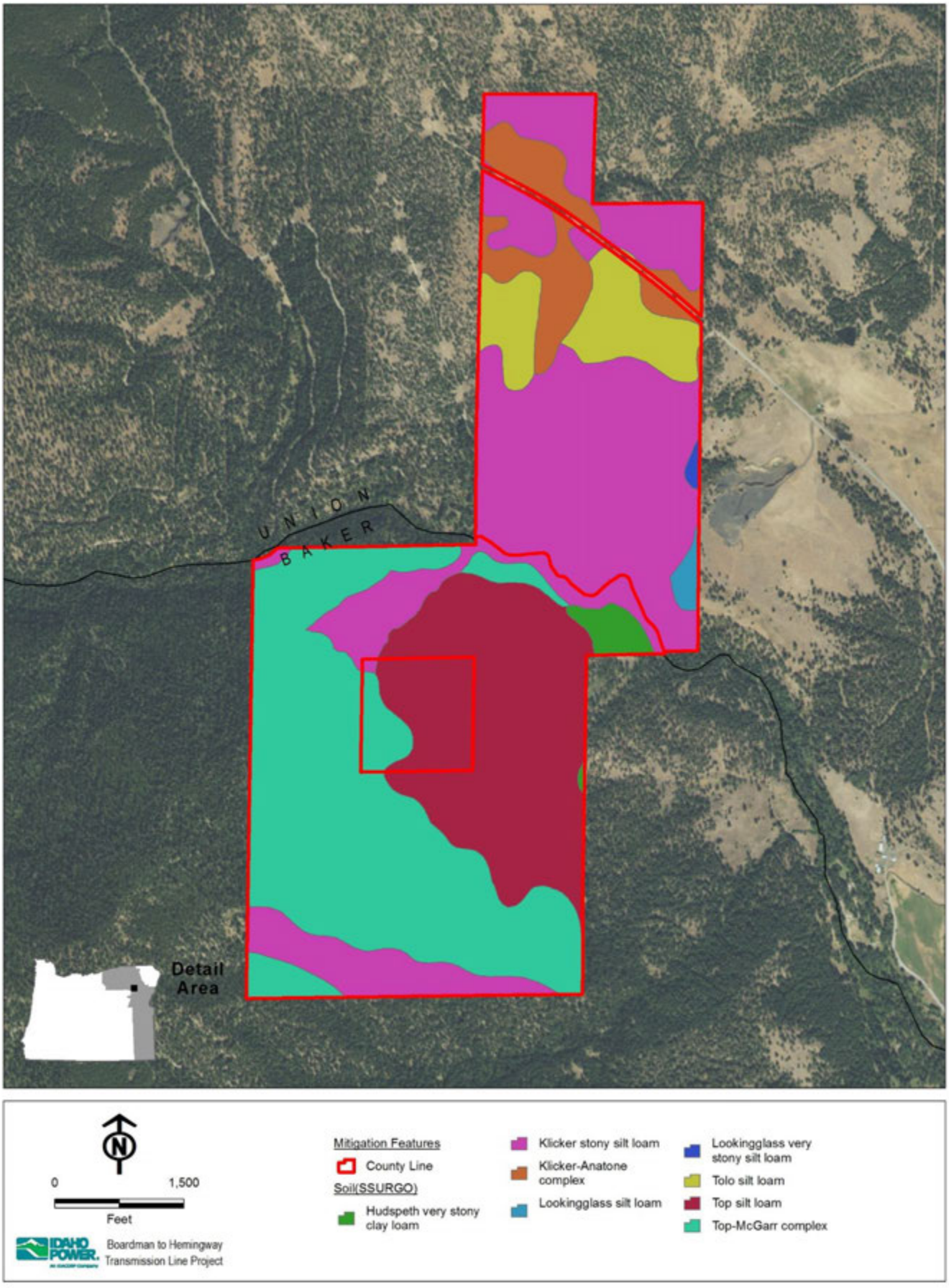

Figure 3. County Line Soil Types

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: High Valley (**Figure 1**)
Landowner:
Parcel Size in Acres: Approx. 14,886 acres
Date of Assessment: 10/21/2015
Parcel Elevation (ft):
Within Mitigation Service Area?: Yes

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Union County, just west of I-84 at Ladd Canyon.
T4S R38E Sections 4, 5, 8, 9, 10, 14, 15, 16, 17, 19, 20, 21, 22, 23, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36
T5S R38E Sections 1, 2, 3, 4, 10, 11, 12, 13, 14, 15, 18, 19, 21, 22, 23, 24, 25, 26, 27, 28, 30, 34, 35

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Total	Wildlife Habitat[3]
Category 1		**0**	**0**	-
Category 2		**7,455**	**50.1**	-
Mixed Grand Fir/Douglas Fir	Forest/Woodland	3,158	21.2	RMEWR, RMESR, MDSR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	58	0.4	RMEWR, MDWR, MDSR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	111	0.7	RMEWR, MDWR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	474	3.2	RMEWR, MDSR
Ponderosa Pine	Forest/Woodland	671	4.5	RMEWR, RMESR, MDSR
Ponderosa Pine	Forest/Woodland	256	1.7	RMEWR, MDWR, MDSR
Ponderosa Pine	Forest/Woodland	119	0.8	RMEWR, MDWR
Ponderosa Pine	Forest/Woodland	823	5.5	RMEWR, MDSR
Subalpine/Montane Forest	Forest/Woodland	445	3.0	RMEWR, RMESR, MDSR
Subalpine/Montane Forest	Forest/Woodland	14	0.1	RMEWR, MDSR
Mixed Tamarack	Forest/Woodland	424	2.9	RMEWR, RMESR, MDSR
Mixed Tamarack	Forest/Woodland	8	0.1	RMEWR, MDWR
Mixed Tamarack	Forest/Woodland	60	0.4	RMEWR, MDSR
Forested Wetland	Wetland	151	1.0	RMEWR, RMESR, MDSR
Forested Wetland	Wetland	21	0.1	RMEWR, MDWR, MDSR
Forested Wetland	Wetland	9	0.1	RMEWR, MDWR
Forested Wetland	Wetland	87	0.6	RMEWR, MDSR
Lodgepole Pine	Forest/Woodland	175	1.2	RMEWR, RMESR, MDSR
Lodgepole Pine	Forest/Woodland	10	0.1	RMEWR, MDSR
Native Grasslands	Shrub/Grass	34	0.2	RMEWR, RMESR, MDSR
Native Grasslands	Shrub/Grass	45	0.3	RMEWR, MDWR
Native Grasslands	Shrub/Grass	9	0.1	RMEWR, MDSR
Rocky Mountain Aspen	Forest/Woodland	47	0.3	RMEWR, RMESR, MDSR
Rocky Mountain Aspen	Forest/Woodland	68	0.5	RMEWR, MDWR, MDSR
Rocky Mountain Aspen	Forest/Woodland	13	0.1	RMEWR, MDSR

[1] USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P1--1 of Exhibit P1).
[2] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3] MDWR = Category 2 habitat for ODFW mule deer winter range; RMEWR = Category 2 habitat for ODFW Rocky Mountain elk winter range; RMESR = Category 3 habitat for Rocky Mountain Elk Foundation Rocky Mountain elk summer range; MDSR = Category 3 habitat for WAFWA mule deer summer range.
[4] Total acres of habitat type will not match actual parcel size due to resolution of the GAP raster dataset. Pixels of the dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Glass Hill (**Figure 1**)
Landowner:
Parcel Size in Acres: Appx. 14,000 acres
Date of Assessment: 10/21/2015
Parcel Elevation (ft): 3,200 – 5,300
Within Mitigation Service Area?: Yes

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Union County, just west of I-84 at Ladd Canyon.
T4S R38E Sections 4, 5, 8, 9, 10, 14, 15, 16, 17, 19, 20, 21, 22, 23, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36
T5S R38E Sections 1, 2, 3, 4, 10, 11, 12, 13, 14, 15, 18, 19, 21, 22, 23, 24, 25, 26, 27, 28, 30, 34, 35

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Parcel	Wildlife Habitat[3]
Category 1, 4, 5, & 6		**0**	**0**	-
Category 2		**10,038**	**72**	-
Mixed Grand Fir/Douglas Fir	Forest/Woodland	2,551	18.3	RMEWR, RMESR, MDSR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	2,446	17.5	RMEWR, RMESR, MDWR, MDSR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	226	1.6	RMEWR, MDWR, MDSR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	30	0.2	RMEWR, MDWR
Ponderosa Pine	Forest/Woodland	334	2.4	RMEWR, RMESR, MDSR
Ponderosa Pine	Forest/Woodland	751	5.4	RMEWR, RMESR, MDWR, MDSR
Ponderosa Pine	Forest/Woodland	147	1.1	RMEWR, MDWR, MDSR
Ponderosa Pine	Forest/Woodland	8	0.1	RMEWR, MDWR
Shrub-Steppe without Big Sage	Shrub/Grass	109	0.8	RMEWR, RMESR, MDSR
Shrub-Steppe without Big Sage	Shrub/Grass	433	3.1	RMEWR, RMESR, MDWR, MDSR
Shrub-Steppe without Big Sage	Shrub/Grass	147	1.1	RMEWR, MDWR, MDSR
Shrub-Steppe without Big Sage	Shrub/Grass	20	0.1	RMEWR, MDWR
Shrub-Steppe with Big Sage	Shrub/Grass	153	1.1	RMEWR, RMESR, MDSR
Shrub-Steppe with Big Sage	Shrub/Grass	269	1.9	RMEWR, RMESR, MDWR, MDSR
Shrub-Steppe with Big Sage	Shrub/Grass	82	0.6	RMEWR, MDWR, MDSR
Shrub-Steppe with Big Sage	Shrub/Grass	7	0.0	RMEWR, MDWR

[1]USGS Gap Analysis Project (GAP) GIS data. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P1--1 of Exhibit P1).
[2]Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3]MDWR = Category 2 habitat for ODFW mule deer winter range; RMEWR = Category 2 habitat for ODFW Rocky Mountain elk winter range; RMESR = Category 3 habitat for Rocky Mountain Elk Foundation Rocky Mountain elk summer range; MDSR = Category 3 habitat for WAFWA mule deer summer range.
[4]Total acres of habitat type will not match actual parcel size due to resolution of the GAP raster dataset. Pixels of the dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Vegetation Cover Classes cont.

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Total	Wildlife Habitat[3]
Category 2 cont				
Mixed Tamarack	Forest/Woodland	338	2.4	RMEWR, RMESR, MDSR
Mixed Tamarack	Forest/Woodland	233	1.7	RMEWR, RMESR, MDWR, MDSR
Mixed Tamarack	Forest/Woodland	12	0.1	RMEWR, MDWR, MDSR
Subalpine/Montane Forest	Forest/Woodland	502	3.6	RMEWR, RMESR, MDSR
Subalpine/Montane Forest	Forest/Woodland	240	1.7	RMEWR, RMESR, MDWR, MDSR
Western Juniper/Mountain Mahogany Woodland	Forest/Woodland	207	1.5	RMEWR, RMESR, MDSR
Western Juniper/Mountain Mahogany Woodland	Forest/Woodland	175	1.3	RMEWR, RMESR, MDWR, MDSR
Forested Wetland	Wetland	81	0.6	RMEWR, RMESR, MDSR
Forested Wetland	Wetland	125	0.9	RMEWR, RMESR, MDWR, MDSR
Native Grasslands	Shrub/Grass	17	0.1	RMEWR, RMESR, MDSR
Native Grasslands	Shrub/Grass	63	0.5	RMEWR, RMESR, MDWR, MDSR
Native Grasslands	Shrub/Grass	6	0.0	RMEWR, MDWR, MDSR
Lodgepole Pine	Forest/Woodland	151	1.1	RMEWR, RMESR, MDSR
Lodgepole Pine	Forest/Woodland	59	0.4	RMEWR, RMESR, MDWR, MDSR
Rocky Mountain Aspen	Forest/Woodland	22	0.2	RMEWR, RMESR, MDSR
Rocky Mountain Aspen	Forest/Woodland	26	0.2	RMEWR, RMESR, MDWR, MDSR
Emergent Wetland	Wetland	5	0.0	RMEWR, RMESR, MDWR, MDSR
Remaining	-	63	0.5	-
Category 3		**3,913**	**28**	-
Mixed Grand Fir/Douglas Fir	Forest/Woodland	1,826	13.1	RMESR, MDSR
Subalpine/Montane Forest	Forest/Woodland	658	4.7	RMESR, MDSR
Ponderosa Pine	Forest/Woodland	467	3.3	RMESR, MDSR
Mixed Tamarack	Forest/Woodland	364	2.6	RMESR, MDSR
Lodgepole Pine	Forest/Woodland	266	1.9	RMESR, MDSR
Western Juniper/Mountain Mahogany Woodland	Forest/Woodland	119	**0.9**	RMESR, MDSR
Forested Wetland	Wetland	70	**0.5**	RMESR, MDSR
Shrub-Steppe without Big Sage	Shrub/Grass	51	**0.4**	RMESR, MDSR
Rocky Mountain Aspen	Forest/Woodland	34	**0.2**	RMESR, MDSR
Shrub-Steppe with Big Sage	Shrub/Grass	27	**0.2**	RMESR, MDSR
Native Grasslands	Shrub/Grass	18	**0.1**	RMESR, MDSR
Emergent Wetland	Wetland	10	**0.1**	RMESR, MDSR
Remaining	-	3	**0.0**	-
Total		**13,952**	**100**	**-**

[1]USGS Regional Gap Analysis Project (GAP) GIS data. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P1--1 of Exhibit P1).
[2]Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3]MDWR = Category 2 habitat for ODFW mule deer winter range; RMEWR = Category 2 habitat for ODFW Rocky Mountain elk winter range; RMESR = Category 3 habitat for Rocky Mountain Elk Foundation Rocky Mountain elk summer range; MDSR = Category 3 habitat for WAFWA mule deer summer range.
[4]Total acres of habitat type will not match actual parcel size due to resolution of the GAP raster dataset. Pixels of the dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Soil Types

The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the following soils were identified on the property (**Figure 3**):

Anatone-Bocker complex (**34 acres**). Anatone soils consist of shallow, well drained soils found on mountain side slopes, ridgetops, hills, and plateaus at elevations of 2,000 to 6,200 feet. Anatone soils are mostly used for livestock grazing, wildlife habitat, and recreation. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, mossy stonecrop, curlleaf mountain mahogany and stiff sagebrush. Bocker soils consist of very shallow, well drained soils found on hills, plateaus and mountains at elevations of 2,800 to 6,600 feet. Bocker soils are used for livestock grazing and recreation. The native vegetation is buckwheat, Sandberg bluegrass, Idaho fescue, bluebunch wheatgrass, bottlebrush squirreltail, stiff sagebrush and low sagebrush.

Anatone-Klicker complex (**991 acres**). Anatone soils consist of shallow, well drained soils found on mountain side slopes, ridgetops, hills, and plateaus at elevations of 2,000 to 6,200 feet. Anatone soils are mostly used for livestock grazing, wildlife habitat, and recreation. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, mossy stonecrop, curlleaf mountain mahogany and stiff sagebrush. Klicker soils consist of moderately deep, well drained soils on mountains, plateaus, and benches at elevations from 2,500 to 6,200 feet. Klicker soils are used mainly for timber production and wildlife habitat. Native vegetation is an open stand of ponderosa pine and Douglas-fir with an understory of bluebunch wheatgrass, slender wheatgrass, brome grass, elk sedge, Oregon-grape, common snowberry, Saskatoon serviceberry, creambush oceanspray, mallow ninebark and wild rose.

Anatone extremely stony loam (**665 acres**). Anatone soils consist of shallow, well drained soils found on mountain side slopes, ridgetops, hills, and plateaus at elevations of 2,000 to 6,200 feet. Anatone soils are mostly used for livestock grazing, wildlife habitat, and recreation. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, mossy stonecrop, curlleaf mountain mahogany and stiff sagebrush.

Cowsly silt loam (**81 acres**) and *Cowsly very stony silt loam* (**164 acres**). Cowsly soils consist of deep or very deep, moderately well drained soils found on plateaus at elevations from 2800 to 5000 feet. Cowsly soils are used primarily for timber production. Other uses are dryland small grain, pasture, wildlife habitat and water supply. Native vegetation is ponderosa pine and Douglas fir with an understory of spirea, ocean spray, snowberry, Idaho fescue, pinegrass and elksedge.

Gwinly-Rockly (**429 acres**). The Gwinly soils consist of shallow, well drained soils found on hills, plateaus, structural benches, mountains, and canyons at elevations from 1,400 to 4,600 feet. Used for livestock grazing and wildlife habitat. Potential native vegetation is dominantly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass and low sagebrush. Rockly soils consist of shallow and very shallow, well drained soils found on mesas, ridges, plateaus, structural benches, canyon walls, and nearly level to very steep south and west slopes on uplands at elevations of 300 to 5,000 feet. Rockly soils are used for livestock grazing, wildlife habitat, and water supply purposes. Native vegetation is mostly stiff sagebrush, lomatium, bluebunch wheatgrass, and Sandberg bluegrass.

Gwinly very cobbly silt loam (**202 acres**). The Gwinly soils consist of shallow, well drained soils found on hills, plateaus, structural benches, mountains, and canyons at elevations from 1,400 to 4,600 feet. Used for livestock grazing and wildlife habitat. Potential native vegetation is dominantly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass and low sagebrush.

Kamela very stony silt loam (**2,379 acres**). Kamela soils consist of moderately deep, well drained soils found on ridgetops and side slopes of mountains at elevations of 3,000 to 6,200 feet. Kamela soils are used primarily for timber production. They are used also for wildlife habitat. Native vegetation dominantly is grand fir, Douglas fir,

ponderosa pine and some western larch. Understory vegetation is willow, oceanspray, rocky mountain maple, ninebark, false Solomons seal, snowberry, elk sedge, pinegrass, heartleaf arnica and princes pine.

Klicker-Anatone complex (**1,447 acres**). Klicker soils consist of moderately deep, well drained soils on mountains, plateaus, and benches at elevations from 2,500 to 6,200 feet. Klicker soils are used mainly for timber production and wildlife habitat. Native vegetation is an open stand of ponderosa pine and Douglas-fir with an understory of bluebunch wheatgrass, slender wheatgrass, brome grass, elk sedge, Oregon-grape, common snowberry, Saskatoon serviceberry, creambush oceanspray, mallow ninebark and wild rose. Anatone soils consist of shallow, well drained soils found on mountain side slopes, ridgetops, hills, and plateaus at elevations of 2,000 to 6,200 feet. Anatone soils are mostly used for livestock grazing, wildlife habitat, and recreation. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, mossy stonecrop, curlleaf mountain mahogany and stiff sagebrush.

Klicker stony silt loam (**3,213 acres**). Klicker soils consist of moderately deep, well drained soils on mountains, plateaus, and benches at elevations from 2,500 to 6,200 feet. Klicker soils are used mainly for timber production and wildlife habitat. Native vegetation is an open stand of ponderosa pine and Douglas-fir with an understory of bluebunch wheatgrass, slender wheatgrass, brome grass, elk sedge, Oregon-grape, common snowberry, Saskatoon serviceberry, creambush oceanspray, mallow ninebark and wild rose.

Loneridge stony silt loam (**337 acres**). Loneridge soils consist of very deep, well drained soils found on mountain side slopes, plateaus and benches at elevations of 2,400 to 5,400 feet. Loneridge soils are used for timber production, livestock grazing, recreation, wildlife habitat, and watershed. Native vegetation is mainly Douglas-fir, ponderosa pine, grand fir, and western larch, with an understory of pinegrass, elk sedge, Oregon-grape, ceanothus, creambush oceanspray, lupine, common snowberry and pinemat manzanita.

Lookingglass silt loam (**108 acres**) and *Lookingglass very stony silt loam* (**0.1 acres**). Lookingglass soils consist of very deep, moderately well drained soils found on uplands at elevations of 1,800 to 4,000 feet. Lookingglass soils are used mainly for timber production. Cleared areas are cropped to small grains, hay, pasture, and peas. The native vegetation is ponderosa pine and Douglas fir with an understory of spirea, oceanspray, Idaho fescue, pinegrass and elksedge.

Olot silt loam (**200 acres**) and *Olot stony silt loam* (**2,001 acres**). Olot soils consist of moderately deep, well drained soils found on plateaus, canyons, mountains and structural benches at elevations typically between 2,800 to 5,000 feet. Olot soils are used mainly for timber production. Also used for wildlife habitat. Vegetation is western larch, Douglas fir, willow, mountain alder, common snowberry, elk sedge, and pinegrass.

Pits, gravel (**7 acres**).

Ramo very stony silty clay loam (**34 acres**). Ramo soils consist of very deep, well drained soils found on concave foot slopes at elevations of 2,800 to 3,800 feet. Ramo soils are used for hay, pasture, small grain and livestock grazing. Potential native vegetation is mainly Idaho fescue and bluebunch wheatgrass.

Hydrologic Features Present (SteamNet, NWI, NHD)	Four perennial streams flow through the property. This includes Ladd Creek and three of its tributaries. Seven intermittent streams also cross the project, all but one are tributaries to Ladd Creek. Wetland features include several emergent wetlands, springs, and at least two impoundments.

Adjacent land ownership, use, and condition	Most of adjacent landowners are private; however the property does border a large tract of USFS lands and smaller BLM holdings. The northern tip of the property borders the ODFW Ladd Marsh WMA.
Infrastructure Density within or Near the Parcel (Qualitative Description)	The property borders I84 through Ladd Canyon. The Quartz to La Grande 230kV transmission line is within 1 mile of a portion of the eastern border of the property. Access roads occur throughout the property. A different landowner maintains an inholding of approximately 1.7 acres that includes a residential structure/cabin and a couple of out buildings.
Summary	The property is currently used for timber production. The property is within elk and mule deer winter range and borders some USFS and BLM lands as well as ODFW Ladd Marsh WMA. The recent (2015) removal and replacement of an impassable culvert at I84 in Ladd Canyon opens several miles of spawning and rearing habitat within the property to listed runs of Chinook salmon and steelhead. The proposed B2H Project (winter 2015) would cross the northern portion of the property (**Figure 1**).
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on Category 2 elk and mule deer winter range within the forest/woodland general vegetation type. This mitigation site could help meet the Project need for elk and mule deer summer habitat as well. The property has some shrub/grass general vegetation communities that could be considered for mitigation for impacts to Category 3 & 4 shrub-steppe and grassland habitat types. It contains important habitat features with opportunities to provide durable ecological uplift through implementation of standard mitigation actions. Opportunities to improve the watershed would benefit Chinook salmon and steelhead (no critical habitat on the property). The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to elk and mule deer (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to State of Oregon, Federal Land Management Agency, approved NPO or Land Trust
Mitigation Actions	The following are mitigation actions that may be implemented at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Livestock grazing restrictions* – historic grazing practices at this property are unknown. However, the objective would be to avoid grazing practices that would compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. • *Native revegetation/restoration* – the focus would be planting forage shrubs and bunchgrasses; forest management practices would be implemented to create structural diversity and enhance desirable habitat conditions. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed. • *Fence removal/fence upgrade* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing, such as lay down fencing.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).

Success Criteria

Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to:

- Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift.
- Successful weed control through documentation of a reduction in weeds and non-native invasive plant species.
- Mitigation success will not be dependent on documentation of increased use of the mitigation site by any wildlife species.

Financial Outline

Estimated Budget for the Glass Hill Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition	?			?
Recurring Costs (Annually)				
O&M[1]	$53.75	13,868	50	
Total	**-**			**$37,270,250** ($?/acre)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The cost per acre identified in that study for the Elkhorn Wildlife Management Area (which this mitigation site will be modeled after) was $43 in 2004 dollars, this has been adjusted to reflect 2015 dollars.

[2] Cost per acre here includes cost of acquisition/easement and initial mitigation actions and long-term O&M for 50 years.

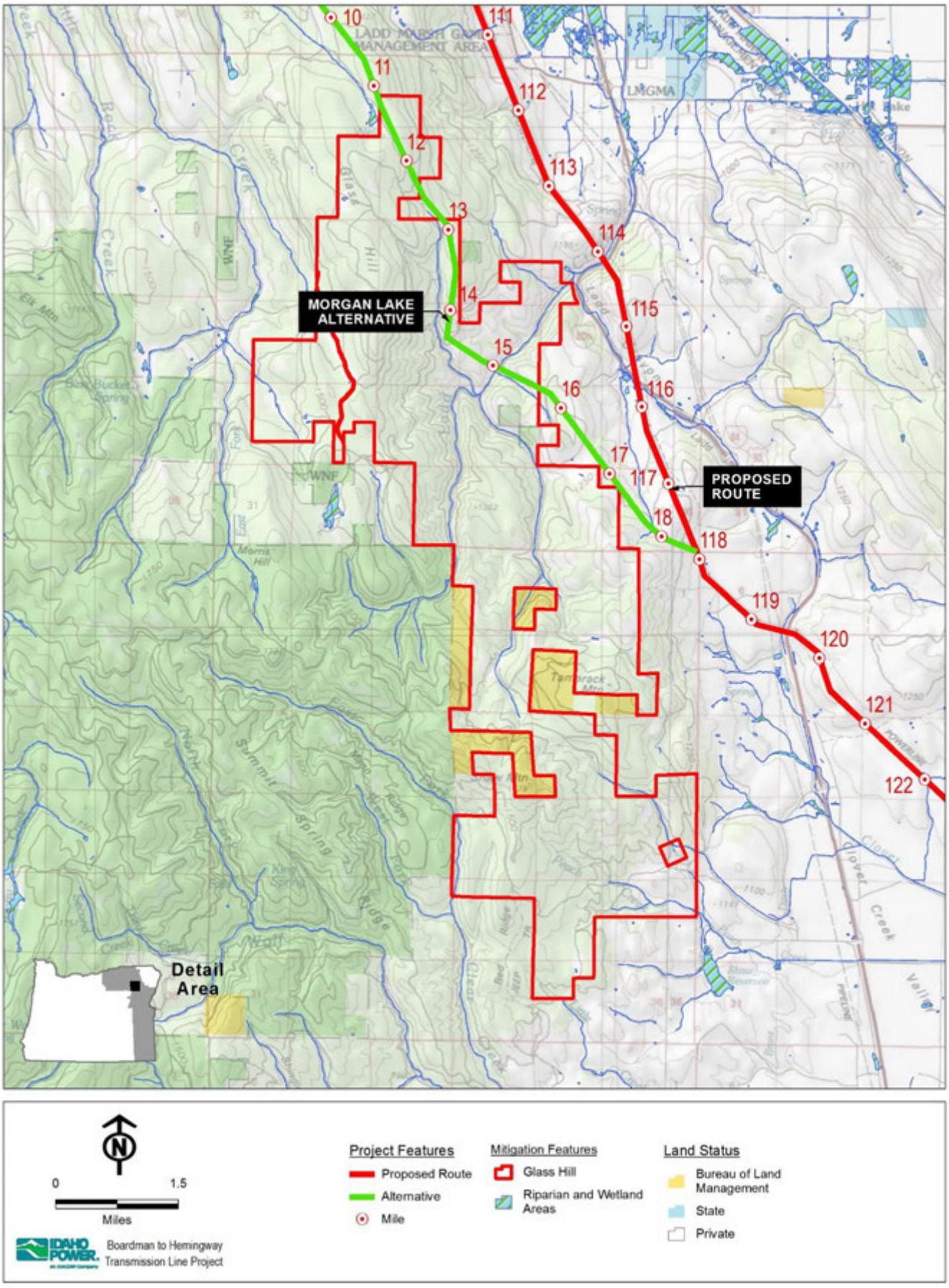

Figure 1. Glass Hill Ownership and Water

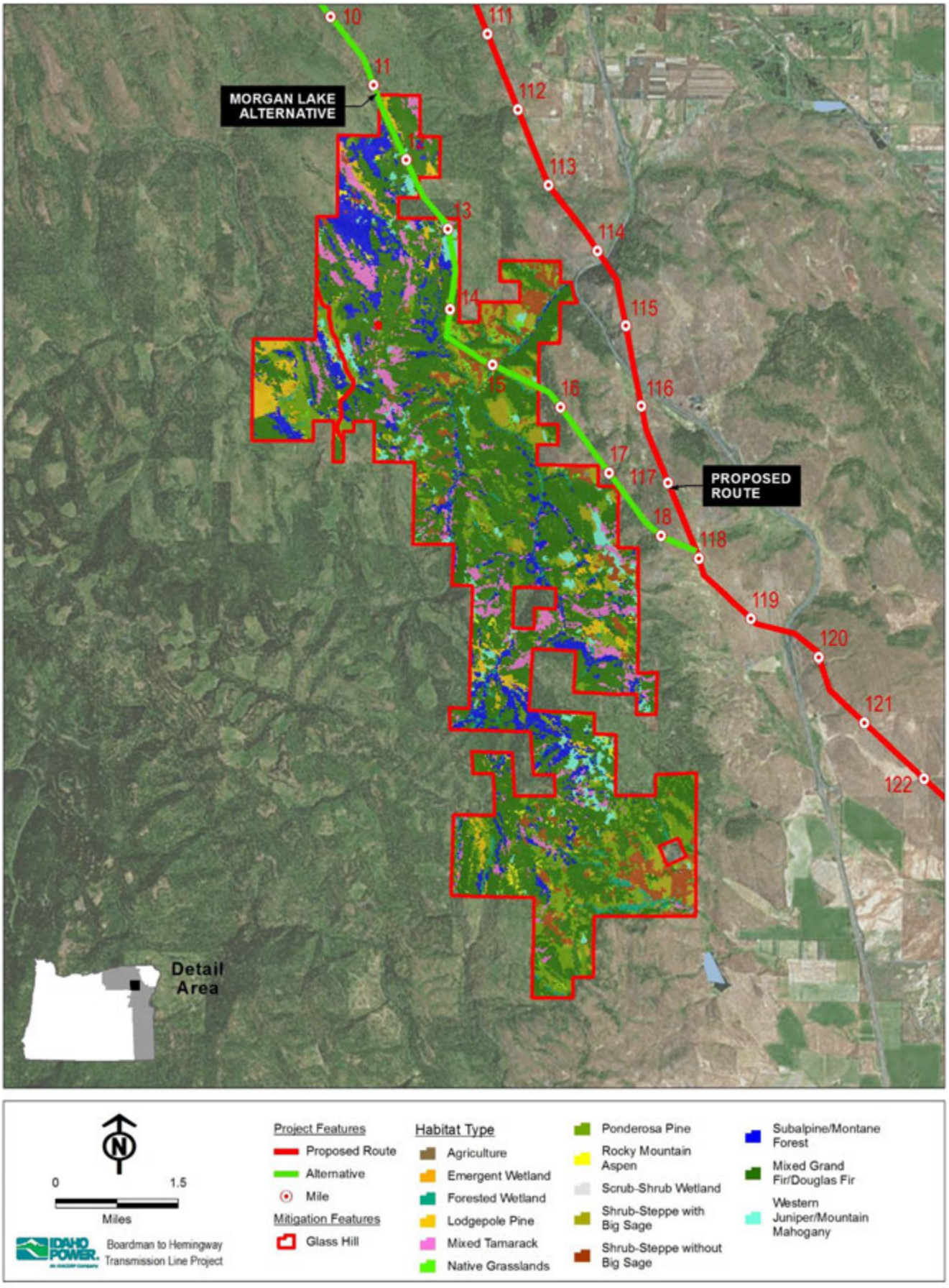

Figure 2. Glass Hill Habitat Types

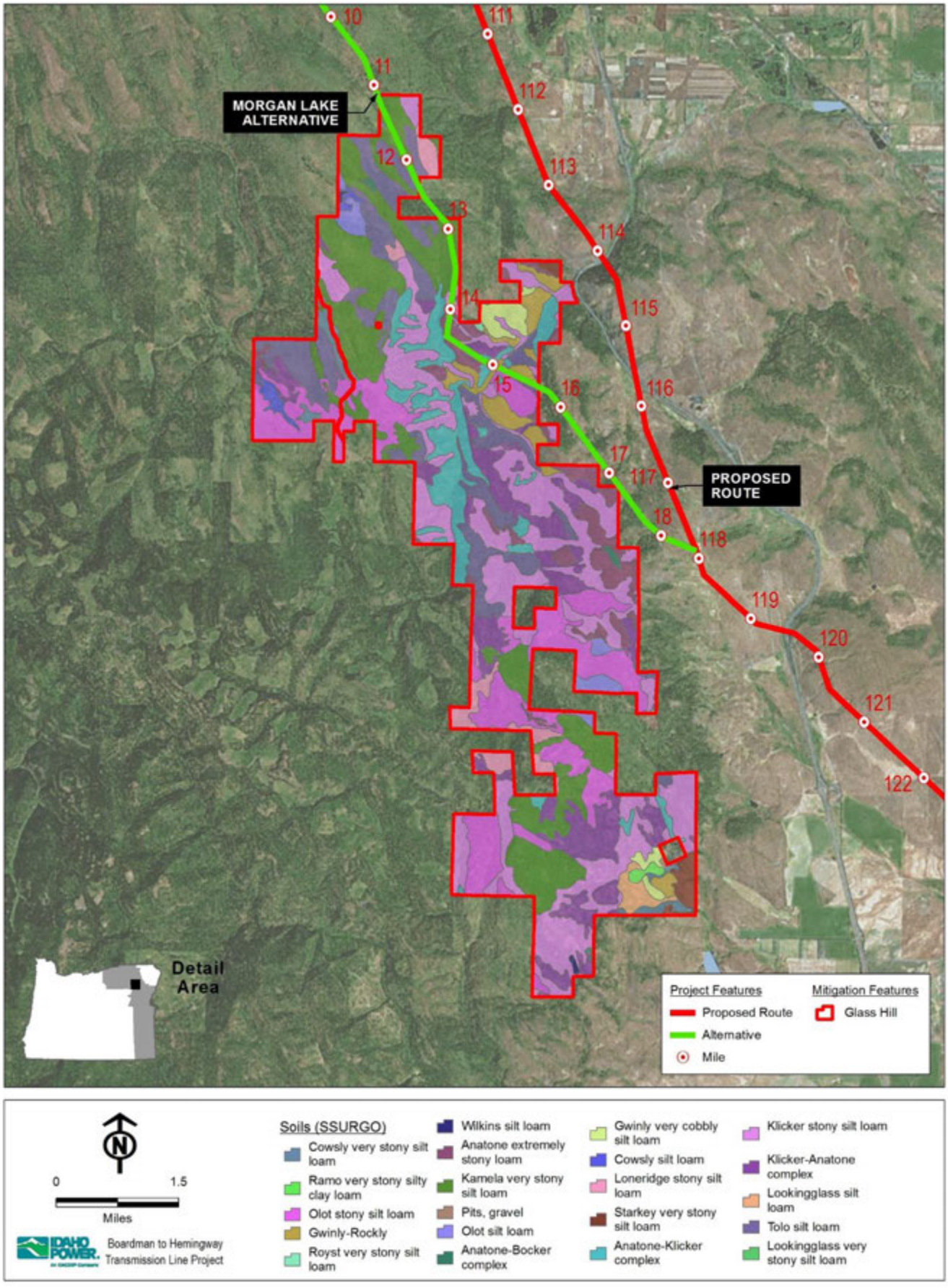

Figure 3. Glass Hill Soil Types

Vegetation Cover Classes cont. (GAP[1])

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Total	Wildlife Habitat[3]
Category 2 cont.				
Shrub-Steppe without Big Sage	Shrub/Grass	28	0.2	RMEWR, MDWR, MDSR
Shrub-Steppe without Big Sage	Shrub/Grass	52	0.3	RMEWR, MDSR
Shrub-Steppe with Big Sage	Shrub/Grass	13	0.1	RMEWR, RMESR, MDSR
Shrub-Steppe with Big Sage	Shrub/Grass	11	0.1	RMEWR, MDWR
Shrub-Steppe with Big Sage	Shrub/Grass	20	0.1	RMEWR, MDSR
Remaining	-	44	0.3	-
Category 3		**7,411**	**49.8**	-
Mixed Grand Fir / Douglas Fir	Forest/Woodland	3,757	25.2	RMESR, MDSR
Mixed Grand Fir / Douglas Fir	Forest/Woodland	520	3.5	MDSR
Subalpine / Montane Forest	Forest/Woodland	1,519	10.2	RMESR, MDSR
Subalpine / Montane Forest	Forest/Woodland	16	0.1	MDSR
Mixed Tamarack	Forest/Woodland	431	2.9	RMESR, MDSR
Mixed Tamarack	Forest/Woodland	3	0.0	MDSR
Ponderosa Pine	Forest/Woodland	397	2.7	RMESR, MDSR
Ponderosa Pine	Forest/Woodland	126	0.8	MDSR
Lodgepole Pine	Forest/Woodland	252	1.7	RMESR, MDSR
Forested Wetland	Wetland	185	1.2	RMESR, MDSR
Forested Wetland	Wetland	6	0.0	MDSR
Native Grasslands	Shrub/Grass	100	0.7	RMESR, MDSR
Native Grasslands	Shrub/Grass	1	0.0	MDSR
Rocky Mountain Aspen	Forest/Woodland	38	0.3	RMESR, MDSR
Western Juniper / Mountain Mahogany Woodland	Forest/Woodland	24	0.2	RMESR, MDSR
Shrub-Steppe without Big Sage	Shrub/Grass	21	0.1	RMESR, MDSR
Emergent Wetland	Wetland	4	0.0	RMESR, MDSR
Emergent Wetland	Wetland	1	0.0	MDSR
Shrub-Steppe with Big Sage	Shrub/Grass	4	0.0	RMESR, MDSR
Remaining	-	6	0.0	RMESR, MDSR
Category 4				-
Category 5				-
Category 6				-
Developed	Agriculture / Developed	1	0.0	RMEWR
Developed	Agriculture / Developed	11	0.1	RMEWR, MDWR
Total		**14,879**	**100**	**-**

[1] USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P1--1 of Exhibit P1).

[2] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.

[3] MDWR = Category 2 habitat for ODFW mule deer winter range; RMEWR = Category 2 habitat for ODFW Rocky Mountain elk winter range; RMESR = Category 3 habitat for Rocky Mountain Elk Foundation Rocky Mountain elk summer range; MDSR = Category 3 habitat for WAFWA mule deer summer range.

[4] Total acres of habitat type will not match actual parcel size due to resolution of the GAP raster dataset. Pixels of the dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Soil types

The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the following soils were identified on the property (**Figure 3**):

Anatone-Bocker complex (**122 acres**). Anatone soils consist of shallow, well drained soils found on mountain side slopes, ridgetops, hills, and plateaus at elevations of 2,000 to 6,200 feet. Anatone soils are mostly used for livestock grazing, wildlife habitat, and recreation. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, mossy stonecrop, curlleaf mountain mahogany and stiff sagebrush. Bocker soils consist of very shallow, well drained soils found on hills, plateaus and mountains at elevations of 2,800 to 6,600 feet. Bocker soils are used for livestock grazing and recreation. The native vegetation is buckwheat, Sandberg bluegrass, Idaho fescue, bluebunch wheatgrass, bottlebrush squirreltail, stiff sagebrush and low sagebrush.

Anatone-Klicker-McCartycreek complex (**3 acres**). Anatone soils consist of shallow, well drained soils found on mountain side slopes, ridgetops, hills, and plateaus at elevations of 2,000 to 6,200 feet. Anatone soils are mostly used for livestock grazing, wildlife habitat, and recreation. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, mossy stonecrop, curlleaf mountain mahogany and stiff sagebrush. Klicker soils consist of moderately deep, well drained soils on mountains, plateaus, and benches at elevations from 2,500 to 6,200 feet. Klicker soils are used mainly for timber production and wildlife habitat. Native vegetation is an open stand of ponderosa pine and Douglas-fir with an understory of bluebunch wheatgrass, slender wheatgrass, brome grass, elk sedge, Oregon-grape, common snowberry, Saskatoon serviceberry, creambush oceanspray, mallow ninebark and wild rose. McCartycreek soils consist of moderately deep, well-drained soils found on mountain backslopes and footslopes at elevations from 3,000 to 5,500 feet. McCartycreek soils are used for watershed, wildlife habitat, livestock grazing and recreation. Native vegetation is mountain big sagebrush, western serviceberry, bitter cherry, chokecherry, creamy buckwheat, low Oregon grape, mountain snowberry, scouler's willow, common yarrow, arrowleaf balsamroot, Gray's desert parsley, mint, Brown's peony, showy aster, bluebunch wheatgrass, and mountain brome.

Anatone-Klicker complex (**203 acres**). Anatone soils consist of shallow, well drained soils found on mountain side slopes, ridgetops, hills, and plateaus at elevations of 2,000 to 6,200 feet. Anatone soils are mostly used for livestock grazing, wildlife habitat, and recreation. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, mossy stonecrop, curlleaf mountain mahogany and stiff sagebrush. Klicker soils consist of moderately deep, well drained soils on mountains, plateaus, and benches at elevations from 2,500 to 6,200 feet. Klicker soils are used mainly for timber production and wildlife habitat. Native vegetation is an open stand of ponderosa pine and Douglas-fir with an understory of bluebunch wheatgrass, slender wheatgrass, brome grass, elk sedge, Oregon-grape, common snowberry, Saskatoon serviceberry, creambush oceanspray, mallow ninebark and wild rose.

Anatone extremely stony loam (**117 acres**). Anatone soils consist of shallow, well drained soils found on mountain side slopes, ridgetops, hills, and plateaus at elevations of 2,000 to 6,200 feet. Anatone soils are mostly used for livestock grazing, wildlife habitat, and recreation. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, mossy stonecrop, curlleaf mountain mahogany and stiff sagebrush.

Cowsly silt loam (**58 acres**) *and Cowsly very stony silt loam* (**0.1 acre**). Cowsly soils consist of deep or very deep, moderately well drained soils found on plateaus at elevations from 2800 to 5000 feet. Cowsly soils are used primarily for timber production. Other uses are dryland small grain, pasture, wildlife habitat and water supply. Native vegetation is ponderosa pine and Douglas fir with an understory of spirea, ocean spray, snowberry, Idaho fescue, pinegrass and elksedge.

Gwinly very cobbly silt loam (**174**). The Gwinly soils consist of shallow, well drained soils found on hills, plateaus, structural benches, mountains, and canyons at elevations from 1,400 to 4,600 feet. Used for livestock grazing and wildlife habitat. Potential native

vegetation is dominantly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass and

low sagebrush.

Hall Ranch stony loam (**6,836**). Hall Ranch soils consist of moderately deep, well drained soils found on mountainous areas at elevations of 3,000 to 5,400 feet. Hall Ranch soils are used for timber production and rangeland. Native vegetation is ponderosa pine and Douglas fir with an understory of pinegrass and elk sedge.

Limberjim-Getaway-Rock Outcrop complex (**7**). Limberjim soils consist of deep, well drained soils on stable slopes of mountains, plateaus, canyons, and structural benches at elevations from 2,800 to 5,800 feet. Limberjim soils are used for timber production, watershed, recreation and wildlife habitat. Native vegetation is grand fir, western larch, lodgepole pine, Douglas fir, Rocky Mountain maple, twinflower, princes pine, big huckleberry, round-leaved violet, meadowrue, fragrant bedstraw, and fairybells. Getaway soils consist of deep, well drained soils found on mountain side slopes and canyon walls at elevations from 2,800 to 5,000 feet.

Olot-Crackercreek-Lowerbluff complex (**4**). Olot soils consist of moderately deep, well drained soils found on plateaus, canyons, mountains and structural benches at elevations typically between 2,800 to 5,000 feet. Olot soils are used mainly for timber production. Also used for wildlife habitat. Vegetation is western larch, Douglas fir, willow, mountain alder, common snowberry, elk sedge, and pinegrass. Crackercreek soils consist of deep, well drained soils on north- facing mountainsides and canyon walls at elevations from 3,200 to 4,800 feet. Crackercreek soils are used for woodland, watershed and wildlife habitat. The native vegetation is Douglas-fir, ponderosa pine, grand fir and western larch with an understory of pine grass, elk sedge, huckleberry and common snowberry. Lowerbluff soils consist of shallow, well drained soils usually found on summits of plateaus or structural benches at elevations of 2,800 to 5,700 feet. Lowerbuff soils are used for timber production, watershed, recreation, livestock grazing, and wildlife habitat. The native vegetation is Douglas fir, ponderosa pine, grand fir, common snowberry, spiraea, pinegrass, elk sedge, heartleaf arnica, strawberry, yarrow, and lupine.

Olot silt loam (**350**) and *Olot stony silt loam* (**3297**). Olot soils consist of moderately deep, well drained soils found on plateaus, canyons, mountains and structural benches at elevations typically between 2,800 to 5,000 feet. Olot soils are used mainly for timber production. Also used for wildlife habitat. Vegetation is western larch, Douglas fir, willow, mountain alder, common snowberry, elk sedge, and pinegrass.

Tolo silt loam (**1555**). Top soils consist of deep and very deep, well drained soils found on mountains at elevations ranging from 3,000 to 5,400 feet. Top soils are used mainly for timber production and cropland. Most areas with slopes of less than 15 percent have been cleared and are used for production for dryland grain and hay. Native vegetation is ponderosa pine, Douglas fir, white fir, pinegrass and elksedge. This series is in what is called the Douglas-fir forest plant community.

Veazie-Voats complex (**1**). Veazie soils consist of very deep, well drained soils found on flood plains broken by old stream channels at elevations of 750 to 4,000 feet. Veazie soils are used mainly for irrigated hay and pasture. Other uses are livestock grazing and wildlife. Native vegetation is bluebunch wheatgrass, basin wildrye, sedges, rushes and willows. Voats soils consist of very deep, well drained soils found on flood plains broken by old stream channels and occur at elevations of 1,600 to 4,000 feet. Voats soils are used mainly for pasture. Other uses are livestock grazing and wildlife habitat. Potential native vegetation is bluebunch wheatgrass, basin wildrye, timothy, Kentucky bluegrass, sedges, rushes, and scattered willow, alder, hawthorne, and rose.

Ramo silty clay loam (**3**). Ramo soils consist of very deep, well drained soils found on concave foot slopes at elevations of 2,800 to 3,800 feet. Ramo soils are used for hay, pasture, small grain and livestock grazing. Potential native vegetation is mainly Idaho fescue and bluebunch wheatgrass.

Hydrologic Features Present (SteamNet, NWI, NHD)	Property contains four intermittent streams per NHD. Rock Creek supports redband trout and ESA listed summer steelhead. Rock Creek supports migrating and spawning steelhead and provides rearing areas for fry and juveniles. NWI did not identify any wetland features outside those associated with riparian areas of NHD streams.
Adjacent land ownership, use, and condition	The entire eastern boundary of the property borders USFS lands and ranges from 1-3 miles from the Eagle Cap Wilderness. To the west are foothills dominated by dryland farming and open rangeland. The towns of Union and Cove are approximately 2 to 5 miles west of the property.
Infrastructure Density within or Near the Parcel (Qualitative Description)	The property contains roads that provide access throughout. The towns of Union and Cove are nearby to the west, with rural infrastructure development. The property and most lands to the north, south, and east are forested with no development other than access roads.
Summary	The property contains winter range for both elk and mule deer, as well as summer range for both species. The property is immediately north of Catherine Creek State Park. Little Catherine Creek crosses the property and is identified as critical habitat for Chinook salmon. Little Creek (critical habitat for steelhead downstream from the property) and its tributaries originate on or cross through the property. Timber harvest is the main use of the property today.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	Given the size of the property, mitigation opportunities would likely be considered for smaller portions of the property. This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on Category 2 elk and mule deer winter range within the forest/woodland general vegetation type. This mitigation site could help meet the Project need for elk and mule deer summer habitat as well. It contains important habitat features with opportunities to provide durable ecological uplift through implementation of standard mitigation actions. Opportunities to improve the watershed would benefit Chinook salmon and steelhead (Chinook salmon critical habitat occurs on the property). The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to elk and mule deer (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to State of Oregon, Federal Land Management Agency, approved NPO or Land Trust
Mitigation Actions	The following are mitigation actions that may be implemented at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Livestock grazing restrictions* – historic grazing practices at this property are unknown. However, the objective would be to avoid grazing practices that would compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. • *Native revegetation/restoration* – the focus would be planting forage shrubs and bunchgrasses; forest management practices would be implemented to create structural diversity and enhance desirable habitat conditions. • *Road closure* – restrict motor vehicle use to just those roads that are necessary; seasonally close access based on use by elk and mule deer. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed. • *Fence removal/fence upgrade* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing, such as lay down fencing.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation.

Success Criteria

Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to:

- Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift.
- Successful weed control through documentation of a reduction in weeds and non-native invasive plant species.
- Mitigation success will not be dependent on documentation of increased use of the mitigation site by any wildlife species.

Financial Outline

Estimated Budget for the Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition	?	1		?
50-year Operation and Management Costs				
O&M[1]	$53.75	14,886	50	$40,006,125
Total	**-**			**$?** (?/acre)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The cost per acre identified in that study for the Elkhorn Wildlife Management Area (which this mitigation site will be modeled after) was $43 in 2004 dollars, this has been adjusted to reflect 2015 dollars.

[2] Cost per acre here includes cost of acquisition/easement and initial mitigation actions and long-term O&M for 50 years.

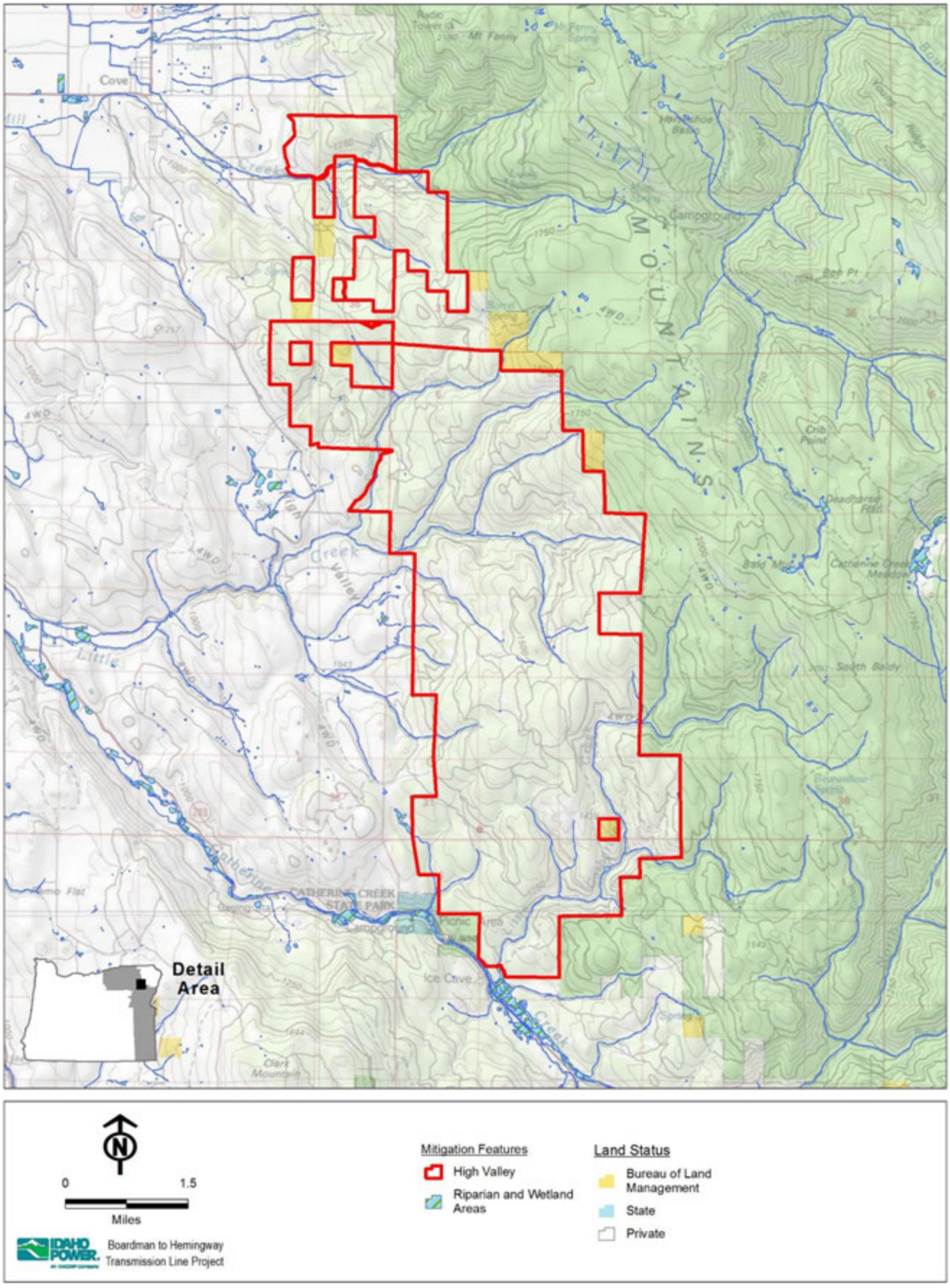

Figure 1. High Valley Ownership and Water

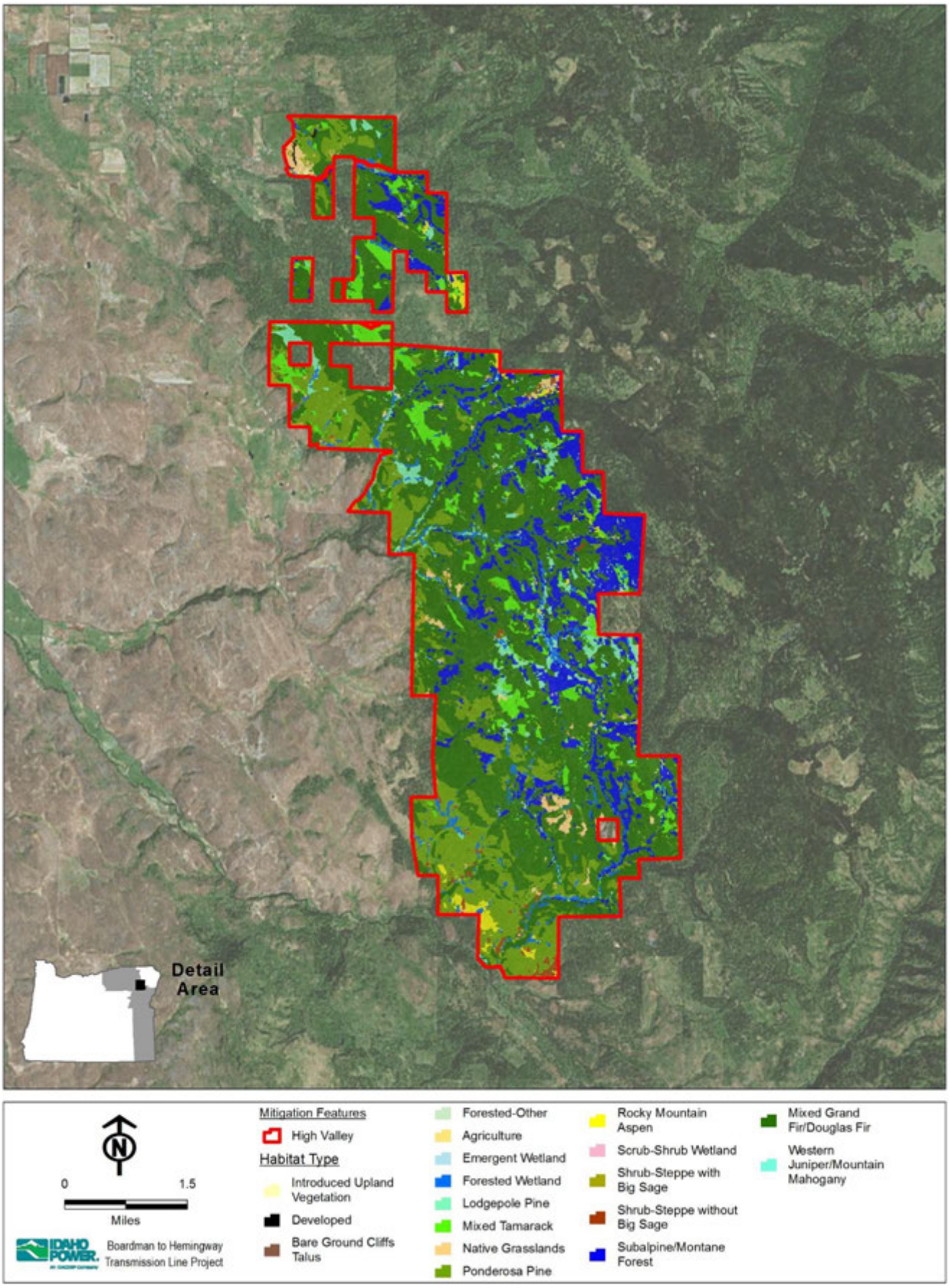

Figure 2. High Valley Habitat Types

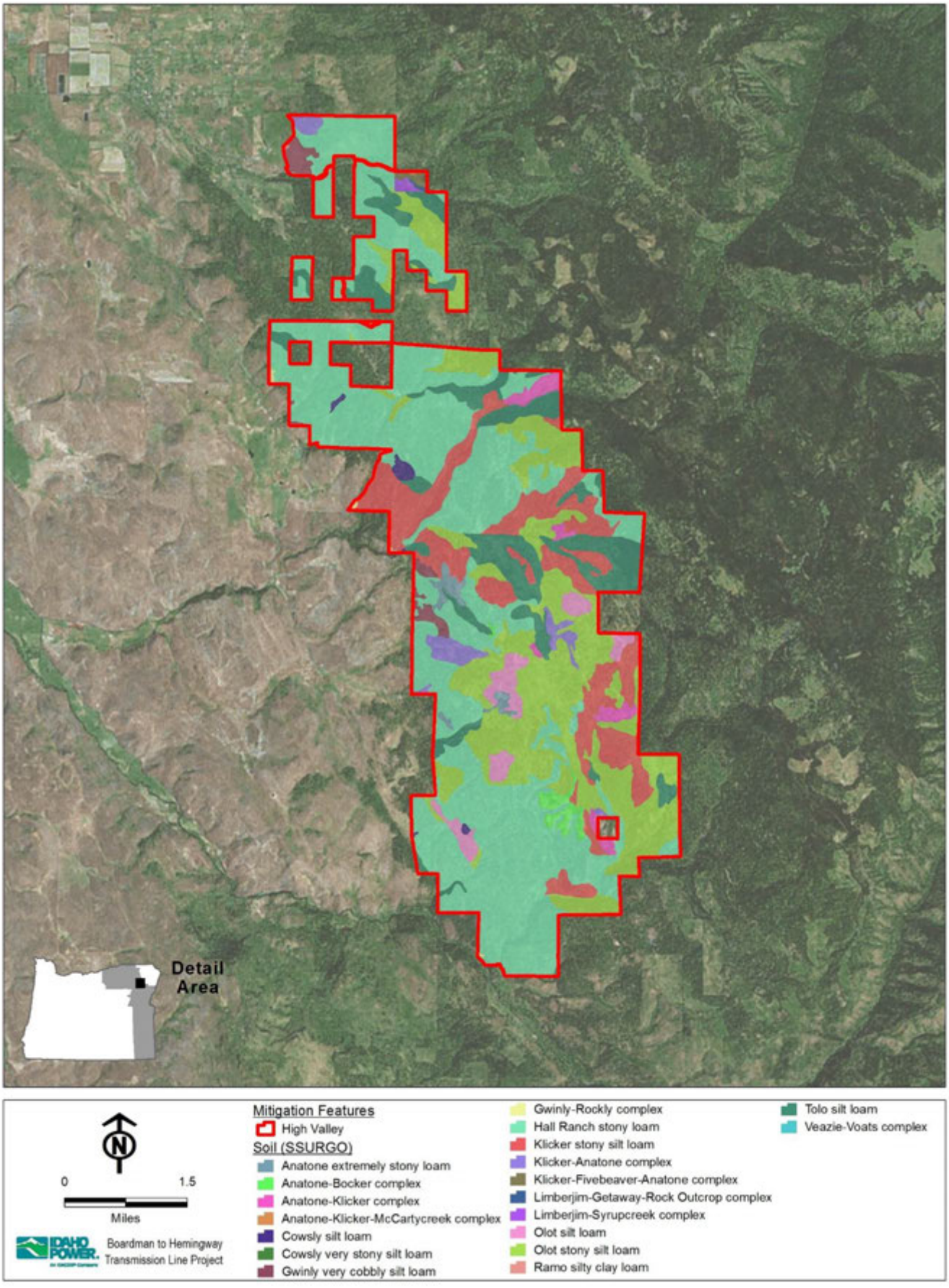

Figure 3. High Valley Soil Types

Habitat Mitigation Areas with Mitigation Zone 3

- Pole Creek
- Alder Creek
- Glasgow
- Trail Creek
- Upper Timber

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Pole Creek (**Figure 1**)
Landowner:
Parcel Size in Acres: 3,233
Date of Assessment: 2/10/2016
Parcel Elevation (ft): 4,100 – 5,100
Within Mitigation Service Area?: Yes

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Baker County, 3 miles west of Unity, OR.
T12S R36E Section 34, T13S R36E Sections 1, 2, 3, 10, 11, 12, & 15.

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Parcel	Wildlife Habitat[3]
Category 1				
Category 2		**3,233.2**	**100**	-
Shrub-Steppe with Big Sage	Shrub/Grassland	644.4	19.9	MDWR, MDSR, RMESR
Shrub-Steppe with Big Sage	Shrub/Grassland	685.7	21.2	MDWR, MDSR
Shrub-Steppe with Big Sage	Shrub/Grassland	43.3	1.3	MDWR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	488.8	15.1	MDWR, MDSR, RMESR
Western Juniper/Mountain Mahogany Woodland	Forest/Woodland	432.0	13.4	MDWR, MDSR, RMESR
Western Juniper/Mountain Mahogany Woodland	Forest/Woodland	117.9	3.6	MDWR, MDSR
Ponderosa Pine	Forest/Woodland	380.7	11.8	MDWR, MDSR, RMESR
Ponderosa Pine	Forest/Woodland	3.4	0.1	MDWR, MDSR
Shrub-Steppe without Big Sage	Shrub/Grassland	172.8	5.3	MDWR, MDSR, RMESR
Shrub-Steppe without Big Sage	Shrub/Grassland	15.2	0.5	MDWR, MDSR
Shrub-Steppe without Big Sage	Shrub/Grassland	5.6	0.2	MDWR
Rocky Mountain Aspen	Forest/Woodland	89.8	2.8	MDWR, MDSR, RMESR
Rocky Mountain Aspen	Forest/Woodland	3.6	0.1	MDWR, MDSR
Forested Wetland	Open Water/Wetland	27.6	0.9	MDWR, MDSR, RMESR
Introduced Upland Vegetation	Shrub/Grassland	10.2	0.3	MDWR, MDSR, RMESR
Introduced Upland Vegetation	Shrub/Grassland	20.4	0.6	MDWR, MDSR

[1] USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P-2 of Exhibit P).
[2] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3] WAGS1 = Category 1 habitat consisting of the active ground squirrel colony which is defined as single or cluster of holes as well as the required habitat for squirrel survival (785 feet from the edge of the extent of active holes). WAGS2 = Category 2 habitat consisting of the area of potential Washington ground squirrel use (1.5km from the edge of the WAGS1 area in similar habitat type and quality). MDWR = Category 2 habitat for ODFW mule deer winter range.
[4] Total acres of habitat type will not match actual parcel size due to resolution of the GAP raster dataset.

Vegetation Cover Classes cont. (GAP[1])

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Parcel	Wildlife Habitat[3]
Category 2 cont.				
Emergent Wetland	Open Water/Wetland	10.0	0.3	MDWR, MDSR, RMESR
Native Grasslands	Shrub/Grassland	9.9	0.3	MDWR, MDSR, RMESR
Native Grasslands	Shrub/Grassland	44.6	1.4	MDWR, MDSR
Scrub-Shrub Wetland	Open Water/Wetland	9.8	0.3	MDWR, MDSR, RMESR
Lodgepole Pine	Forest/Woodland	7.3	0.2	MDWR, MDSR, RMESR
Subalpine/Montane Forest	Forest/Woodland	4.4	0.1	MDWR, MDSR, RMESR
Remaining	-	5.8	0.2	-
Category 3				-
Category 4				-
Category 5				-
Category 6				-
Total		**3,233.2**	**100**	**-**

[1] USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P-2 of Exhibit P).
[2] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3] MDWR = Category 2 habitat for ODFW mule deer winter range; RMESR = Category 3 habitat for Rocky Mountain Elk Foundation Rocky Mountain elk summer range; MDSR = Category 3 habitat for WAFWA mule deer summer range.

Soil types

The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the following soils were identified on the property (**Figure 3**):

Ateron-Roostercomb extremely gravelly clay loams (**718 acres**). Ateron soils consist of shallow, well drained soils found on ridge tops and side slopes of hills and mountains at elevations of 3,600 to 5,800 feet. Ateron soils are used for livestock grazing. The native vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and Sandberg bluegrass. Roostercomb soils consist of moderately deep, well drained soils found on stable to meta-stable side slopes of hills with elevations ranging from 3,800 to 5,700 feet. Roostercomb soils are used for rangeland and wildlife habitat. The native vegetation is mainly mountain big sagebrush, threetip sagebrush, squaw apple, antelope bitterbrush, Idaho fescue, bluebunch wheatgrass and Sandberg bluegrass.

Ateron very stony loam (**505 acres**). Ateron soils consist of shallow, well drained soils found on ridge tops and side slopes of hills and mountains at elevations of 3,600 to 5,800 feet. Ateron soils are used for livestock grazing. The native vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and Sandberg bluegrass.

Damore-Silvies silt loams (**0.1 acre**). Damore soils consist of deep, somewhat poorly drained soils found on flood plains with elevations ranging from 3,700 to 5,000 feet. Damore soils are mostly used for meadow hay production and pasture. The native vegetation is mainly tufted hairgrass, sedge, and Baltic rush. Silvies soils consist of very deep, poorly drained soils found on flood plains and in basins at elevations of 3,300 to 5,000 feet. Silvies soils are mostly used for meadow hay production and pasture. The native vegetation is sedges and rushes.

Soil types (cont.)

Hall Ranch stony loam (**151 acres**). Hall Ranch soils consist of moderately deep, well drained soils found in mountainous areas at elevations of 3,000 to 5,400 feet. Hall

Ranch soils are used as timber production and rangeland. Native vegetation is ponderosa pine and Douglas fir with an understory of pinegrass and elk sedge.

Klicker-Fivebit complex (**473 acres**). Klicker soils consist of moderately deep, well drained soils on mountains, plateaus, and benches at elevations from 2,500 to 6,200 feet. Klicker soils are used mainly for timber production and wildlife habitat. Native vegetation is an open stand of ponderosa pine and Douglas-fir with an understory of bluebunch wheatgrass, slender wheatgrass, brome grass, elk sedge, Oregon-grape, common snowberry, Saskatoon serviceberry, creambush oceanspray, mallow ninebark and wild rose. Fivebit soils consist of shallow, well drained soils found on ridgetops and side slopes of mountains, plateaus, canyons, and structural benches at elevations from 2,800 to 6,200 feet. Fivebit soils are used for livestock grazing, recreation, water supply, and wildlife habitat. The vegetation is mainly curlleaf mountain mahogany, western juniper, scattered ponderosa pine, mountain big sagebrush, bitterbrush, squaw apple, wax currant, bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, some elk sedge and pinegrass, and arrowleaf balsamroot.

Marack-Badland complex (**58 acres**). Marack soils consist of deep, well drained soils found on old terraces at elevations ranging from 3,800 to 4,400 feet. Marack soils are used for rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, Mountain big sagebrush, basin big sagebrush, and prairie junegrass. Badlands are a type of dry terrain where softer sedimentary rocks and clay-rich soils have been extensively eroded by wind and water. They are characterized by steep slopes, minimal vegetation, lack of a substantial regolith, and high drainage density. They can resemble malpaís, a terrain of volcanic rock. Canyons, ravines, gullies, buttes, mesas, hoodoos and other such geological forms are common in badlands.

Marack gravelly silty clay loam (**186 acres**). Marack soils consist of deep, well drained soils found on old terraces at elevations ranging from 3,800 to 4,400 feet. Marack soils are used for rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, Mountain big sagebrush, basin big sagebrush, and prairie junegrass.

Marack silt loam (**51 acres**). Marack soils consist of deep, well drained soils found on old terraces at elevations ranging from 3,800 to 4,400 feet. Marack soils are used for rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, Mountain big sagebrush, basin big sagebrush, and prairie junegrass.

Marack very gravelly silty clay loam (**25 acres**). Marack soils consist of deep, well drained soils found on old terraces at elevations ranging from 3,800 to 4,400 feet. Marack soils are used for rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, Mountain big sagebrush, basin big sagebrush, and prairie junegrass.

McGarr-Kahler complex (**497 acres**). Marack soils consist of deep, well drained soils found on old terraces at elevations ranging from 3,800 to 4,400 feet. Marack soils are used for rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, Mountain big sagebrush, basin big sagebrush, and prairie junegrass. Kahler soils consist of deep and very deep, well drained soils found on back slopes of plateaus, canyons, hills, and mountains at elevations ranging from 2,000 to 6,000 feet. Kahler soils are used for timber production, limited cropland, livestock grazing, watershed, recreation, and wildlife habitat. Many areas with slopes of less than 15 percent have been cleared and produce dryland hay and grain, or irrigated crops. The native vegetation is mainly ponderosa pine, Douglas fir, pinegrass and elk sedge.

Soil types (cont.)	*Roostercomb-Longbranch complex* (**492 acres**). Roostercomb soils consist of moderately deep, well drained soils found on stable to meta-stable side slopes of hills with elevations ranging from 3,800 to 5,700 feet. Roostercomb soils are used for rangeland and wildlife habitat. The native vegetation is mainly mountain big sagebrush, threetip sagebrush, squaw apple, antelope bitterbrush, Idaho fescue, bluebunch wheatgrass and Sandberg bluegrass. Longbranch soils consist of deep, well drained soils found on stable to meta-stable north-facing side slopes of hills with elevations ranging from 3,800 to 5,700 feet. Longbranch soils are used for rangeland and wildlife habitat. The native vegetation is mainly mountain big sagebrush, wax currant, Idaho fescue and basin wildrye with minor amounts of prairie junegrass and green rabbitbrush. *Snell-Ateron complex* (**74 acres**). Snell soils consists of moderately deep, well drained soils on hills, plateaus, mountains and on canyon walls at elevations of 2,000 to 6,800 feet, mainly on north and east exposures and on south exposures at higher elevations. Snell soils are used for livestock grazing and wildlife habitat. Potential native vegetation is bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass. Ateron soils consist of shallow, well drained soils found on ridge tops and side slopes of hills and mountains at elevations of 3,600 to 5,800 feet. Ateron soils are used for livestock grazing. The native vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and Sandberg bluegrass. *Xeric Torriorthents* (**2 acres**). Torriorthents are the dry Orthents of cool to hot, arid regions. They have an aridic (or torric) moisture regime. Orthents are primarily Entisols on recent erosional surfaces. The erosion may be geologic or may have been induced by cultivation, mining, or other factors. Any former soil that was on the landscape has been completely removed or so truncated that the diagnostic horizons for all other orders do not occur.
Hydrologic Features Present (SteamNet, NWI, NHD)	Property contains a perennial stream, Pole Creek, and an unnamed intermittent tributary. Powell Gulch also contains an intermittent stream feature. The southeast corner of the property crosses over the South Fork Burnt River just below Whited Reservoir. Wetland features exist along the streams, including some man made impoundments.
Adjacent land ownership, use, and condition	The property borders USFS lands to the west, with a small BLM in holding also sharing a boundary. The remainder of the property borders private lands, which appear to be mostly open rangeland in the foothills west of Unity, OR. Agriculture and pastures also occur west of the property around Unity.
Infrastructure Density within or Near the Parcel (Qualitative Description)	Property has a 4,000 square foot log home and a large 5,000 square foot shop. A transmission line is located just west of the property and a substation is less than 2 miles west of the property. A well maintained county road, Cemetery Road, runs along the western border and HWY 26 is within 1 mile of the property.
Summary	Property is within The Nature Conservancy Ecoregional Assessment (Monument Rock Area). An ODFW Conservation Opportunity Area (North Fork Malheur-Monument Rock area) overlaps a very small portion of the property near Buck Mountain. This conservation actions listed in the Oregon Conservation Strategy for this area include: 1) Initiate or continue wet meadow conservation and restoration efforts; 2) Maintain and enhance aspen stands; 3) Maintain or restore riparian habitat and ecological function; 4) Ensure sufficient habitat complexity for wildlife; 5) Restore and maintain complex, continuous sage habitat; 6) Restore and maintain grassland habitat; and 7) Restore and maintain ponderosa pine habitats. Property contains mule deer winter and summer range and elk summer range.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on Category 2 mule deer winter range within the shrub/grass general vegetation type. It also provides opportunity for shrub/grass and forest/woodland mitigation of Category 3, 4, & 5 habitats. It contains important habitat features that could be preserved and has some uplift opportunities that could be achieved through implementation of standard mitigation actions. The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to sage-grouse, elk, and deer (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to, State of Oregon, Federal Land Management Agency, approved NPO or Land Trust.
Mitigation Actions	The following are mitigation actions that may be implemented at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Livestock grazing restrictions* – avoid grazing practices that would compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Fence Removal/Marking* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. • *Native revegetation/restoration* – focus of efforts would be to promote establishment of forage shrubs and bunchgrasses; opportunities exist but have not been specifically identified at this time. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed. • *Juniper removal* – review of aerial photography shows juniper/conifer encroachment into sagebrush habitat, some opportunity may exists for long-term maintenance of encroachment.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).

Success Criteria

Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to:

- Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift.
- Successful weed control through documentation of a reduction in weeds and non-native invasive plant species.
- Mitigation success will not be dependent on documentation of increased use of the mitigation site by WAGS or any other wildlife species.

Financial Outline

Estimated Budget for the Pole Creek Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition	1,400,000	1		1,400,000
Recurring Costs (Annually)				
O&M[1]	30	3,233	50	4,849,500
Total		**-**		**$6,249,500** ($1,933/acre)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The average cost per acre presented in that document was $24 in 2004 dollars, this has been adjusted to reflect 2015 dollars.

[2] Cost per acre here includes cost of acquisition/easement and initial mitigation actions and long-term O&M for 50 years.

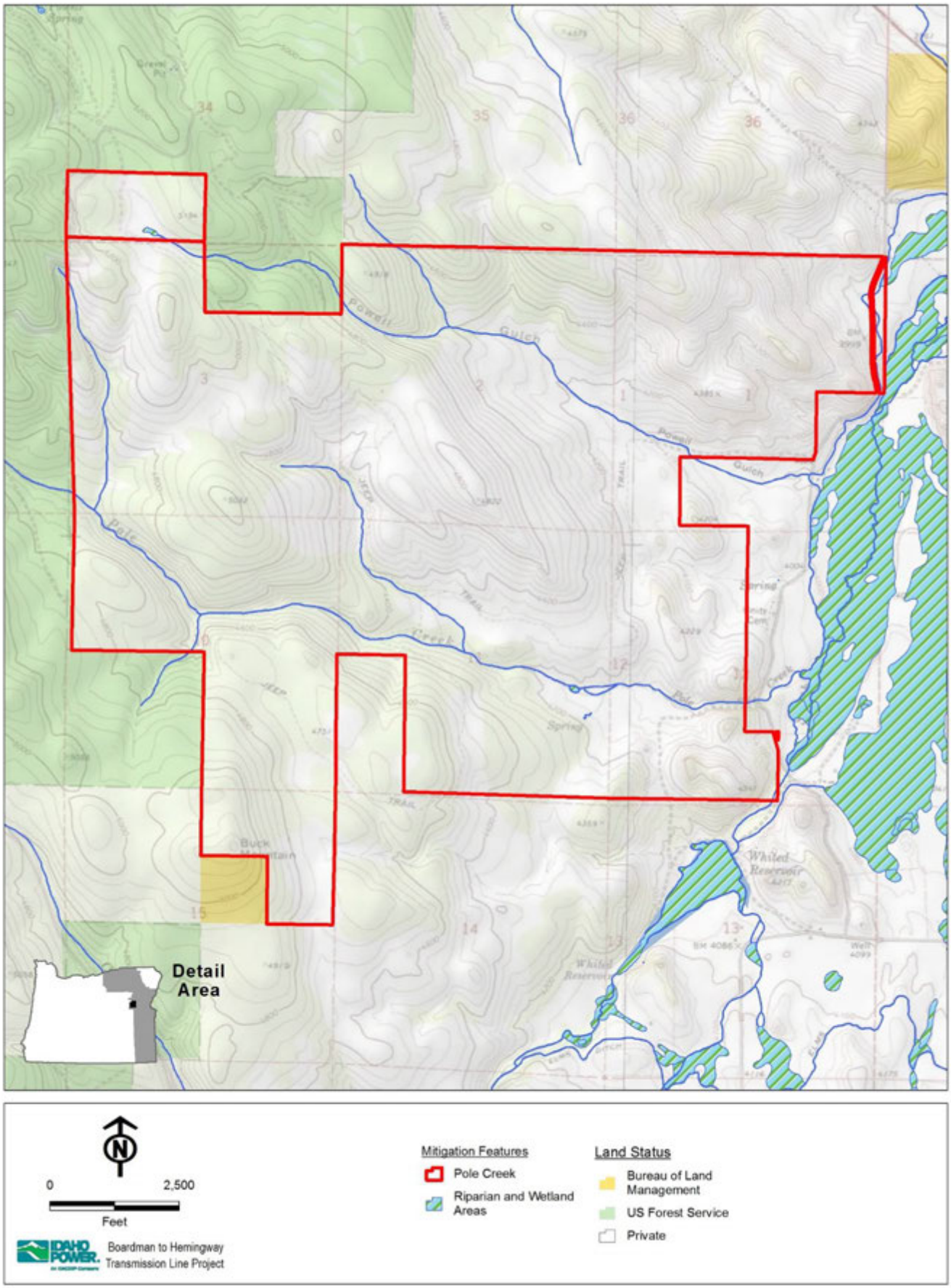

Figure 1. Pole Creek Ownership and Water

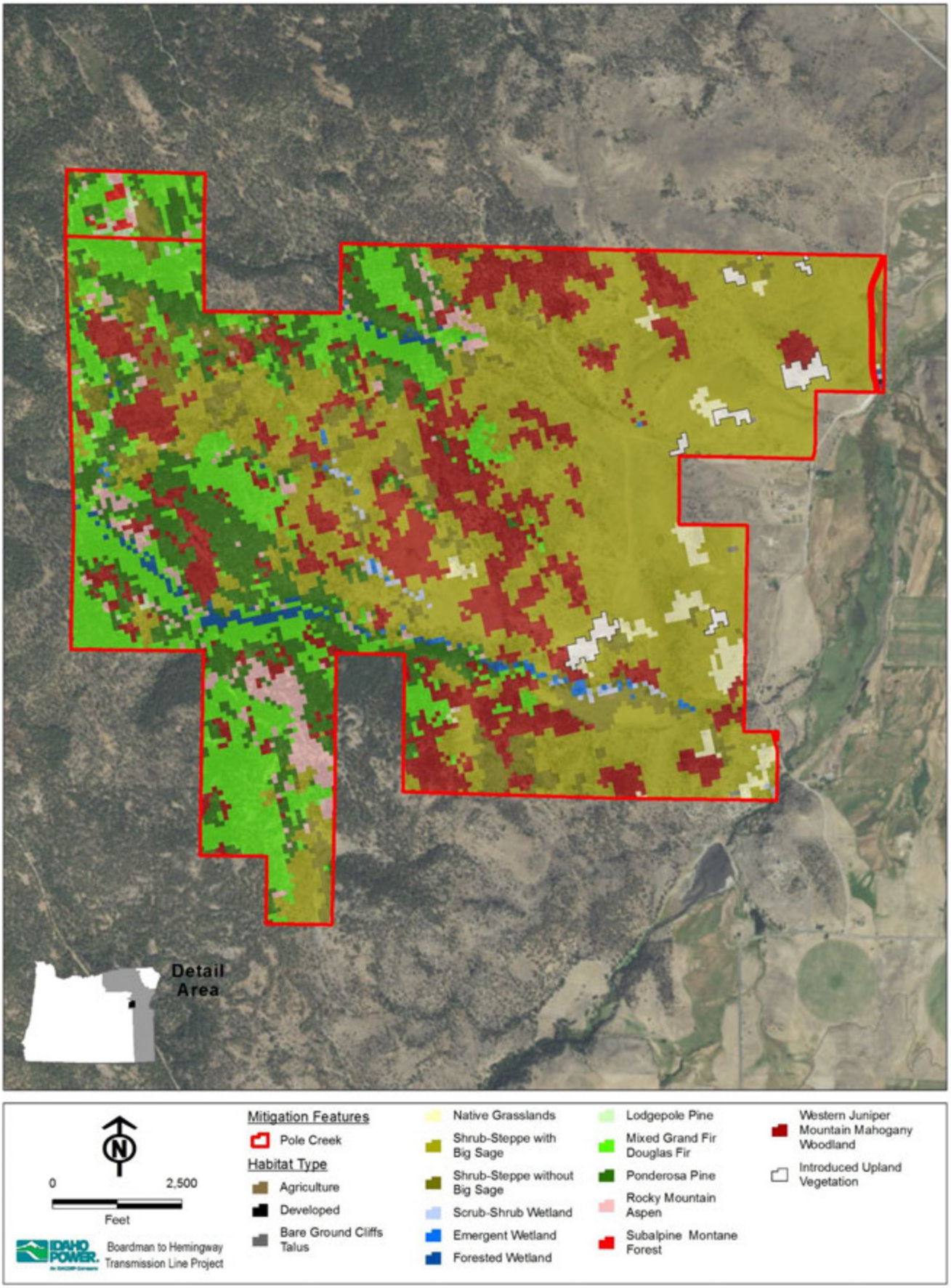

Figure 2. Pole Creek Habitat Types

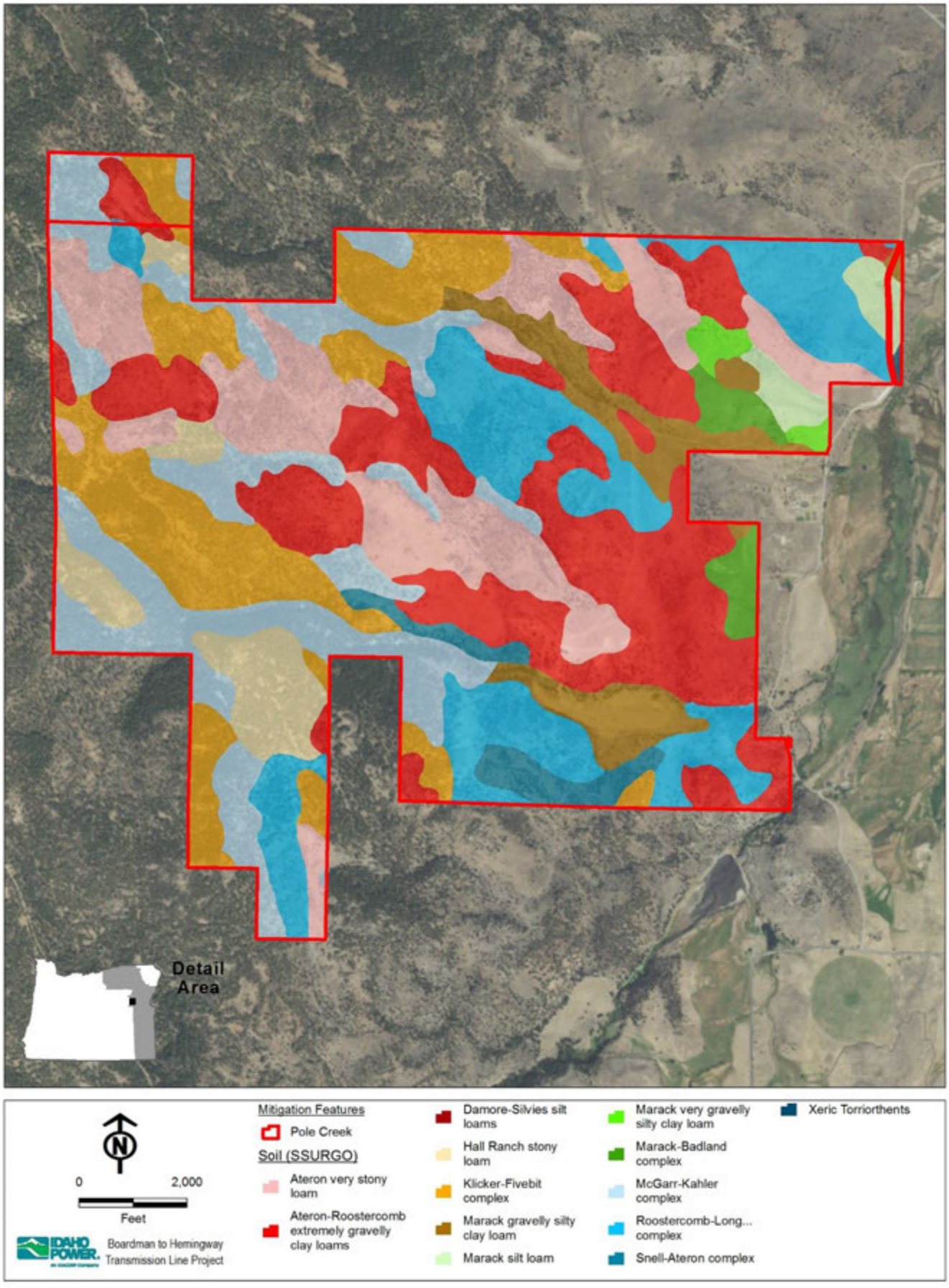

Figure 3. Pole Creek Soil Types

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Alder Creek
Landowner:
Parcel Size in Acres: 3,081
Date of Assessment: 9/11/2014
Parcel Elevation (ft): 3,700 – 4,450
Within Mitigation Service Area?: Yes

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Baker County, approximately 20 miles northwest of Brogan, 20 miles southwest of Durkee.
T13S R40E Sections 14, 15, 16, 21, 22, 23, 26, 27, 28 (**Figure 1**)

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Parcel	Wildlife Habitat[3]
Category 1		**0**	**0**	
Category 2		**0**	**0**	-
Shrub-Steppe with Big Sage	Shrub/Grass	1,452.3	49.3	RMEWR
Shrub-Steppe with Big Sage	Shrub/Grass	294.1	10.0	RMEWR, MDWR
Introduced Upland Vegetation	Shrub/Grass	258.1	8.8	RMEWR
Introduced Upland Vegetation	Shrub/Grass	233.7	7.9	RMEWR, MDWR
Shrub-Steppe without Big Sage	Shrub/Grass	213.7	7.3	RMEWR
Shrub-Steppe without Big Sage	Shrub/Grass	171.6	5.8	RMEWR, MDWR
Native Grasslands	Shrub/Grass	41.2	1.4	RMEWR
Native Grasslands	Shrub/Grass	27.0	0.9	RMEWR, MDWR
Bare Ground Cliffs Talus	Bare Ground	5.6	0.2	RMEWR
Bare Ground Cliffs Talus	Bare Ground	1.3	0.0	RMEWR, MDWR
Emergent Wetland	Wetland	3.4	0.1	RMEWR
Emergent Wetland	Wetland	13.5	0.5	RMEWR, MDWR
Desert Shrub	Shrub/Grass	0.4	0.0	RMEWR
Desert Shrub	Shrub/Grass	12.2	0.4	RMEWR, MDWR
Forested Wetland	Wetland	0.2	0.0	RMEWR
Forested Wetland	Wetland	0.7	0.0	RMEWR, MDWR
Western Juniper	Forest/Woodland	13.8	0.5	RMEWR, MDWR
Ponderosa Pine	Forest/Woodland	4.4	0.2	RMEWR, MDWR
Scrub-Shrub Wetland	Wetland	1.1	0.0	RMEWR, MDWR
Rocky Mountain Aspen	Forest/Woodland	0.2	0.0	RMEWR, MDWR
Mixed Grand Fir / Douglas Fir	Forest/Woodland	0.2	0.0	RMEWR, MDWR
Category 3		**0**	**0**	-
Category 4		**0**	**0**	-
Category 5		**0**	**0**	-
Category 6		**198.3**	**6.7**	
Agriculture	Agriculture/ Developed	194.5	6.6	RMEWR
Developed	Agriculture/ Developed	3.8	0.1	RMEWR
Total[4]	**NA**	**2,947.1**	**100**	**-**

[1] USGS Gap Analysis Project (GAP) GIS data for ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in Exhibit P1, Attachment P1-1 Habitat Categorization Matrix.
[2] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3] RMEWR = Category 2 habitat for ODFW Rocky Mountain elk winter range. MDWR = Category 2 habitat for ODFW mule deer winter range.
[4] Total acres of habitat type may not match actual parcel size due to resolution of the GAP raster dataset. Pixels of the raster dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Hydrologic Features Present (SteamNet, NWI, NHD)	One perennial (Alder Creek) and four intermittent streams (NHD). Some spring and emergent wetlands not associated with the NHD streams are identified in the NWI dataset.
Adjacent land ownership, use, and condition	Property is bordered by both BLM and private lands. Land use is mostly rangeland with some agricultural developments. A majority of the adjacent landscape is classified as intermountain basins big sagebrush-steppe by GAP.
Infrastructure Density within or Near the Parcel (Qualitative Description)	Per the real estate listing, the property contains dwellings, shop, multiple large hay sheds, center pivot irrigation, and a livestock processing facility. HWY 26 and an existing transmission line are 5 miles to the south; state route 245 is approximately 4 miles to the north. Otherwise, the landscape is open rangeland.
Soil type, soil temperature and moisture regime (NRCS 2014)	Detailed SSURGO data is not available for this portion of Malheur County. STATSGO2 identifies the property is within the Ruclick-Ruckles-Lookout mapunit. Ruckles soils are shallow. They have a surface layer of very dark grayish brown very stony clay loam and a subsoil of dark brown very stony clay. These soils are on south- and west-facing slopes of 2 to 70 percent. Ruclick soils are moderately deep. They have a surface layer of very dark grayish brown very cobbly silt loam and a subsoil of dark brown very cobbly and extremely cobbly clay. These soils are on all aspects of the terrain at a slope of 2 to 70 percent. Lookout soils are moderately deep to a duripan. They have a surface layer mainly of very dark grayish brown very cobbly silt loam and a subsoil of dark yellowish brown clay over a duripan. In some areas the surface layer is silt loam. These soils are on hilltops and benches with slopes of 2 to 12 percent. The soils in this unit are used mainly for livestock grazing. The unit also provides habitat for many kinds of wildlife. In the areas used for livestock grazing, the main limitations are the very cobbly or very stony surface layer and the slope of the Ruckles and Rucklick soils. The temperature regime is Mesic and the moisture regime is Aridic bordering on Xeric (Warm/Dry bordering on Moist). This area is identified as having low relative resilience and resistance to disturbances (drought, fire, invasive species).

NRCS. 2014. Sage Grouse Management Zones Soil Taxonomic Temperature and Moisture Regimes. GIS Dataset.

Summary	The property is in sage-grouse core area within the Cow Valley PAC. According to Alternative D of the Oregon Sub-Region SAGR FEIS (Chapter 2, Figure 2-4), this property is located within or immediately adjacent to three proposed Sage-Grouse Strategic Areas: Climate Change Consideration Area – identified as higher elevation areas of high quality habitat likely to provide habitat over the long-term; Restoration Opportunity Area – within existing habitat where restoration would increase habitat quality and connectivity; and High-density Breeding Area – high quality habitat with a high density of active lek sites. The property is also completely within elk winter range and elk summer range and the northern 1/3 of the property is within mule deer winter range. Year-round springs, perennial stream (Alder Creek), and emergent wetlands increase the value of the property to wildlife in the arid landscape as well as provide potential for watershed improvement projects. GAP data indicates that introduced upland vegetation is present on site and could provide upland habitat restoration opportunities. Weed treatment and revegetation opportunities are available across the entire property but are abundant in areas currently in agricultural production and where livestock congregate. Opportunity areas generally coincide with habitat identified as Agriculture and/or Introduced Upland Vegetation by the GAP dataset (**Figure 2**). Western juniper woodlands are encroaching into sagebrush habitats on the parcel.
Pass/Fail Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on both Category 1 and category 2 sage-grouse core area habitat and Category 2 elk and mule deer winter range within the shrub/grass general vegetation type. Areas where sage-grouse habitat and big game winter range overlap are typically shrub-steppe and native grassland types with a continuous or mosaic big sagebrush component. The mitigation site contains important habitat features with ample opportunities to provide durable ecological uplift through implementation of standard mitigation actions. The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to sage-grouse and big game (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to State of Oregon, Federal Land Management Agency, approved NPO or Land Trust
Mitigation Actions	The following are mitigation actions that IPC may consider implementing at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods and be conducted as necessary to maintain desired habitat conditions throughout the life of the Project impacts. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Juniper/Conifer Removal* – There are approximately 300-450 acres of shrub-steppe and introduced upland vegetation where juniper encroachment is occurring (**Figure 3**). The juniper stands appear to be Phase I consisting of early successional young trees at very low density. Opportunity for spot-treating single trees occurs throughout the property. • *Modification of Livestock Grazing* – this would benefit a majority of the mitigation site as grazing has reduced native plant cover and has likely been a contributor to dispersal of non-native/invasive plant species across the site. In addition, livestock grazing may be incompatible with the short-term success of some of the mitigation actions identified, such as seeding of native plant species. Long-term maintenance of the mitigation site may consider domestic livestock grazing as a management tool. • *Fence Removal/Marking/Upgrade* – the mitigation site has approximately 60,000 feet of cross fencing (**Figure 3**) that can be removed. Fence removal would reduce the potential for wildlife injuries/mortalities from collisions. Fencing acts as a source of weed establishment through accumulation of windblown weeds. Fences provide perching opportunity for raptors and corvids. Marking of perimeter fencing in areas of concern would allow sage-grouse and other wildlife to more effectively visualize the fence and avoid collisions. Fences maintained on the mitigation site can be upgraded to a more wildlife friendly design that reduces the likelihood of significant injury during crossing events. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. Opportunities likely exist in areas identified for native seeding (**Figure 3**), along fence lines, within livestock handling facilities, near the residence, and other outbuildings/haysheds etc.

Mitigation Actions (cont.)	• *Native seeding/revegetation* – opportunity exists to seed native plant species in areas currently in agriculture and lowland areas adjacent to drainages where cattle have congregated. These areas cover approximately 300 acres of the mitigation site (**Figure 3**). Other seeding opportunities are available throughout the mitigation site. • *Wetland/Spring/Riparian Improvement* – drainages and riparian/wetland areas on the mitigation site are currently lacking native vegetation components. Opportunities exist to modify/improve water resources (channel modification, erosion control, vegetation treatment/plantings) on the mitigation site to reflect a more natural state and to provide water to mitigation action areas as needed to ensure success. There is approximately 3-8 miles of riparian corridor within the mitigation site and several acres of wetlands.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).
Success Criteria	Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to: • Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift. • Successful weed control through documentation of weed reduction. • Natural recruitment of sagebrush into areas currently in Agriculture or Introduced Upland Vegetation that were seeded to native plant species. • Successful juniper removal and continued control of encroachment onto the mitigation site for the life of the project. • Mitigation success will not be dependent on documentation of increased use of the mitigation site by sage-grouse or any other wildlife species.

Financial Outline	This financial outline provides estimated figures and data for informational purposes only. These estimates are meant to provide an overview of the potential and commercially reasonable costs of acquiring and implementing mitigation on this mitigation site. The financial outline does not guarantee the final sales price and costs for the acquisition, and the price offering is subject to prior sale, price change, correction, amendment or withdrawal.
	• Initial purchase of the mitigation site: $2,750,000
	• Juniper removal: $80 - $200 per acre
	• Fence removal: $1.88 per foot
	• Fence marking: $0.11 per foot of fence ($581 per mile)
	• Weed treatment: $20 - $200 per acre
	• Native Seeding:
	  ○ Site preparation (mowing/discing) $500 per acre
	  ○ Broadcast/Drill seed: $100 - $250 per acre
	• Hydroseeding: $792 per acre

Financial Outline (cont.)

- Wetland/Spring/Riparian Improvement
  - Complex Restoration: $2,400 per acre
  - Riparian Herbacous Cover
    - Broadcast Seeding: $687 per acre
    - Pollinator Cover: $1,303 per acre
    - Plug Planting: $13,730 per acre
    - Combo Seeding and Plug Planting: $6,947 per acre
  - Riparian Forest Buffer
    - Hand Plant, bare root: $768 per acre
    - Cuttings, small to medium: $867 per acre
    - Seeding: $106 per acre

Estimated Budget for the Alder Creek Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition of mitigation site	$2,750,000	1	-	$2,750,000
Juniper Removal	$100	450	-	$45,000
Grazing Modification	-	-	-	-
Removal of cross fencing	$2	60,000	-	$120,000
Marking of perimeter fence	-	-	-	-
Weed Treatment	$20-$200	75	-	$15,000
Native Seeding	$750	300	-	$225,000
50-year Operation and Management Costs				
O&M[1]	$30	3,081	50	$4,621,500
Total	**-**			**$7,776,500** ($2,524/acre)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The average cost per acre presented in that document was $24 in 2004 dollars, this has been adjusted to reflect 2015 dollars. In addition, one of the projects presented in the document was the 10,000 acre Sagebrush Flat Wildlife Mitigation area in Washington state which is within a similar habitat type and has a FY2015 budget of approximately $300,000 (or $30/acre).

[2] Cost per acre here includes cost of acquisition and initial mitigation actions and long-term O&M for 50 years.

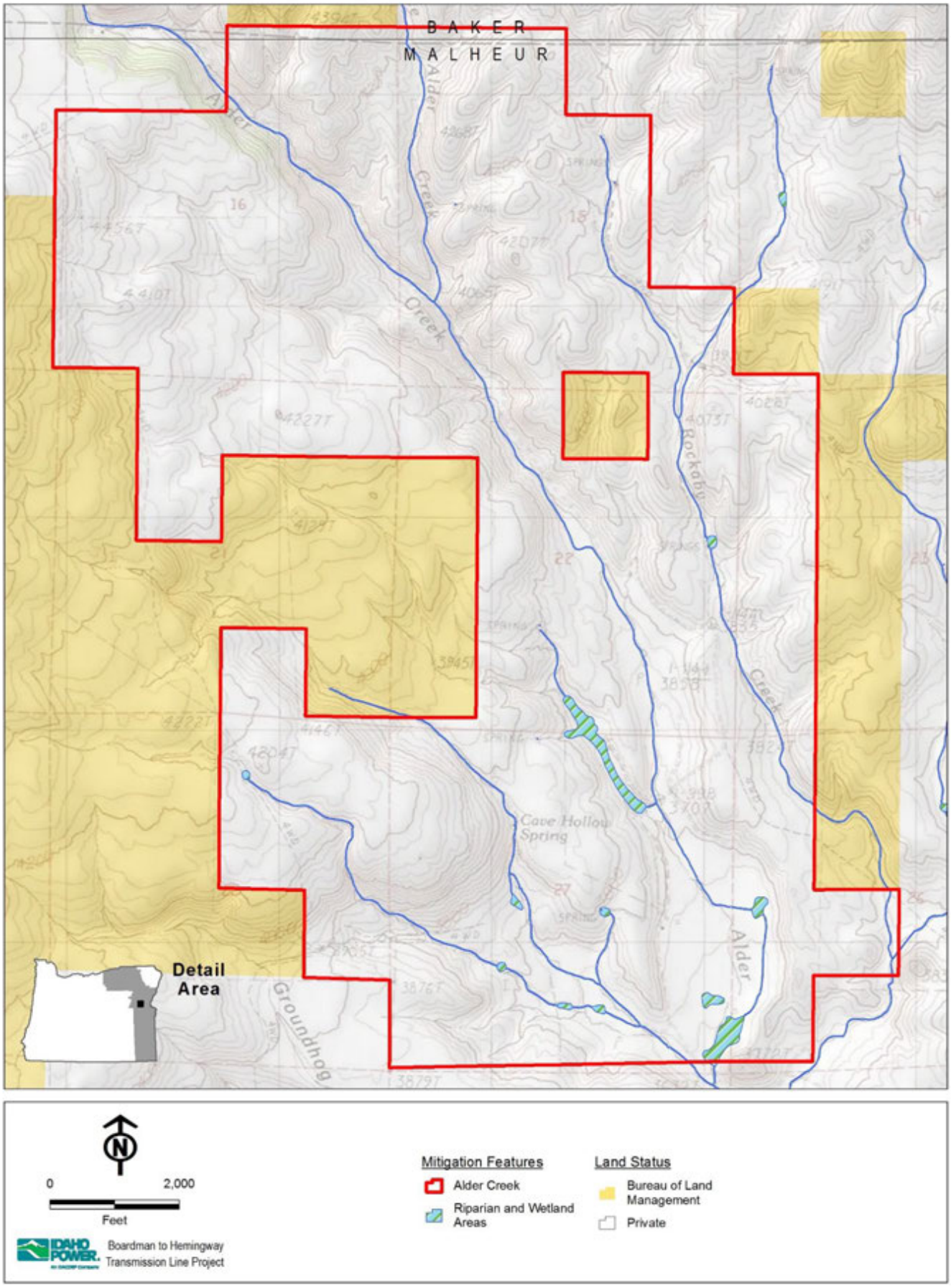

Figure 1. Alder Creek Ownership and Water

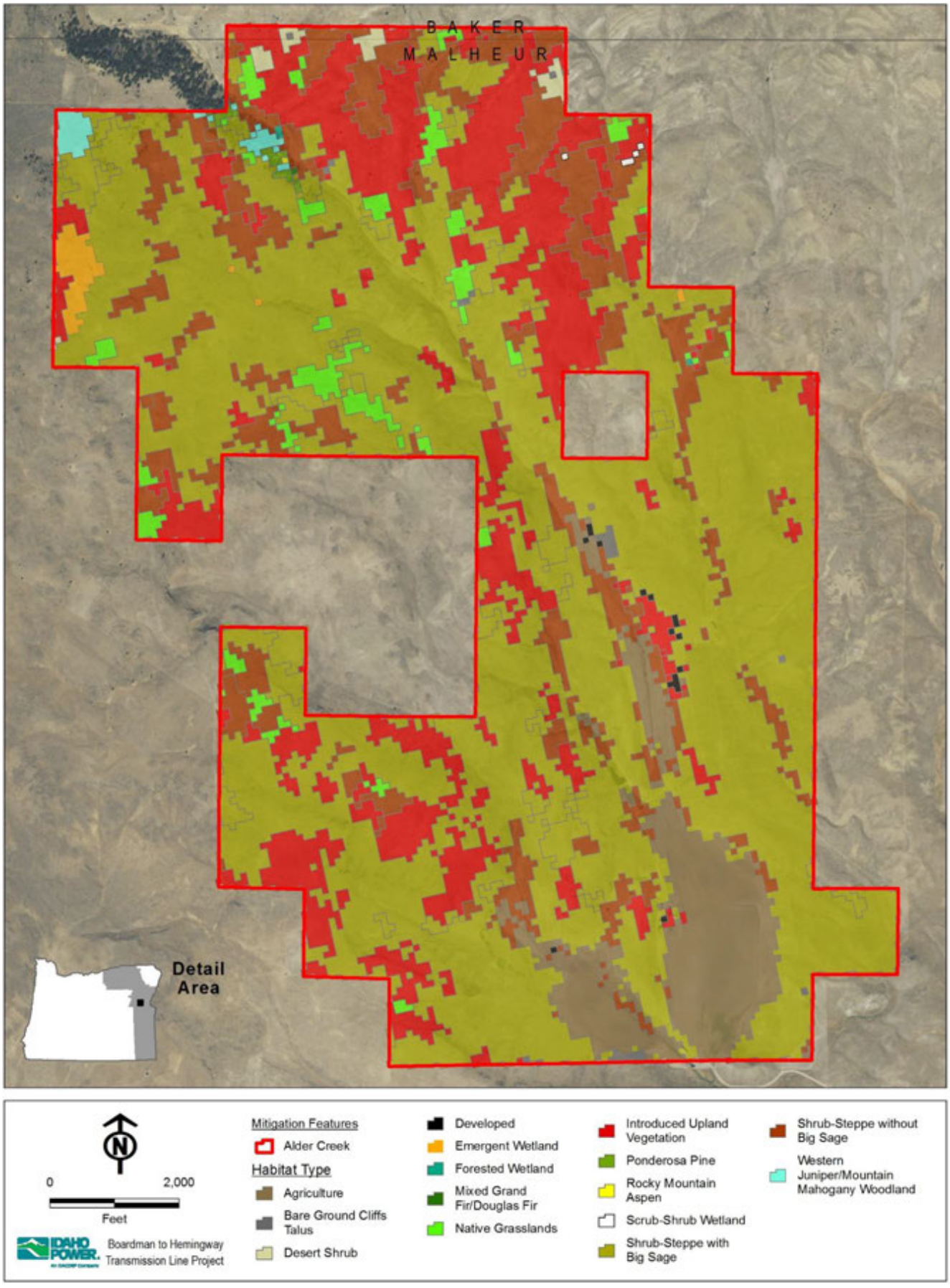

Figure 2. Alder Creek Ranch Habitat Types

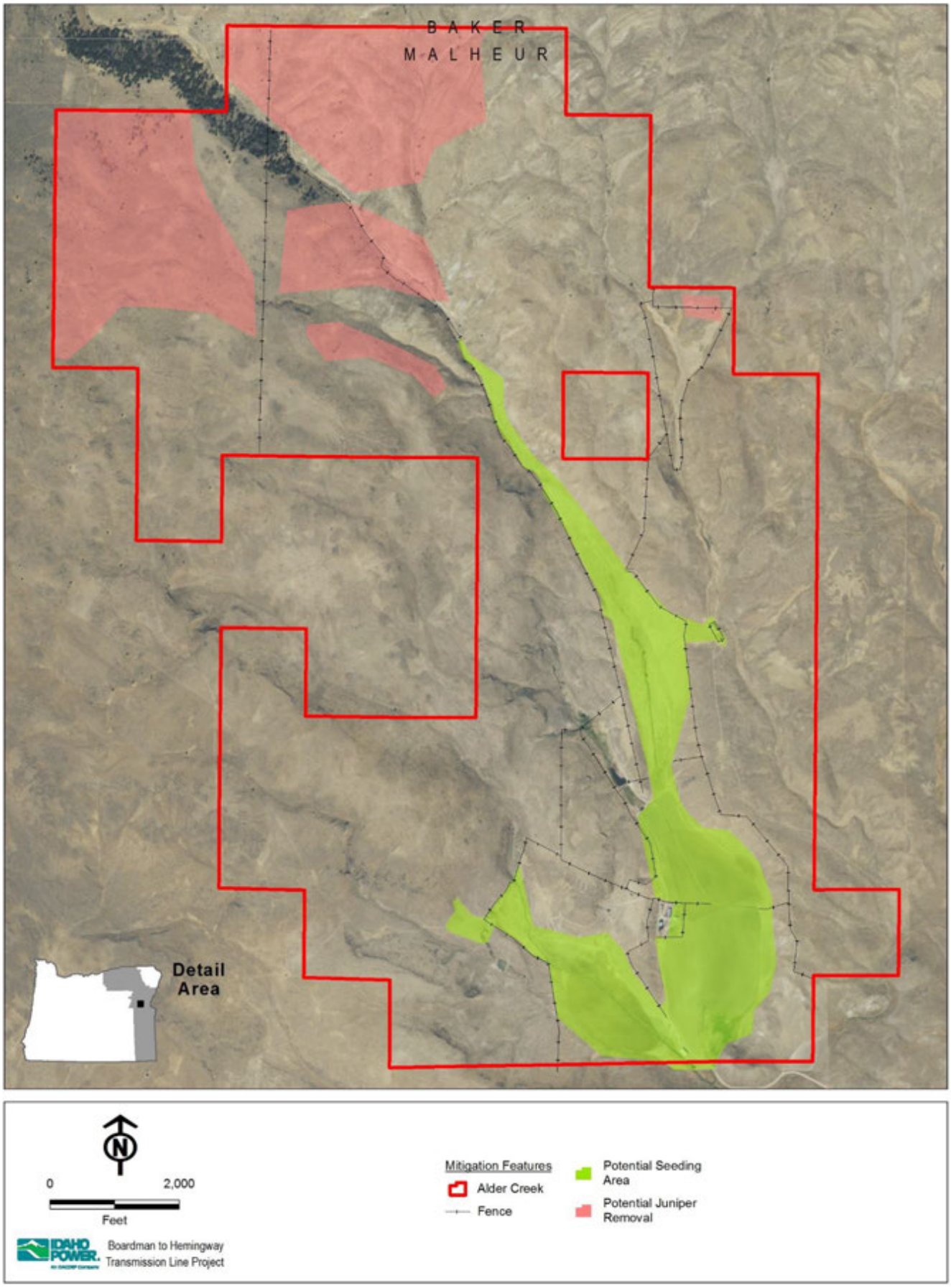

Figure 3. Alder Creek Potential Mitigation Action Areas

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Glasgow (**Figure 1**)
Landowner:
Parcel Size in Acres: 1,438
Date of Assessment: 10/13/2014
Parcel Elevation (ft): 3,000 – 4,600
Within Mitigation Service Area?: Yes

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Baker County, 10 miles southeast of Keating.
T9S R43E Sections 11, 12, 13, 14, 23, 24

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Total	Wildlife Habitat[3]
Category 1		**0**	**0**	
Category 2				-
Shrub-Steppe with Big Sage	Shrub/Grass	675.9	47.0	MDWR
Shrub-Steppe with Big Sage	Shrub/Grass	364.9	25.4	MDWR, RMEWR, RMESR
Shrub-Steppe with Big Sage	Shrub/Grass	25.9	1.8	MDWR, RMESR
Shrub-Steppe with Big Sage	Shrub/Grass	6.2	0.4	RMEWR, MDWR
Shrub-Steppe without Big Sage	Shrub/Grass	76.0	5.3	MDWR
Shrub-Steppe without Big Sage	Shrub/Grass	159.9	11.1	MDWR, RMEWR, RMESR
Shrub-Steppe without Big Sage	Shrub/Grass	10.5	0.7	MDWR, RMEWR
Native Grasslands	Shrub/Grass	39.6	2.7	MDWR, RMEWR, RMESR
Native Grasslands	Shrub/Grass	35.6	2.5	MDWR
Native Grasslands	Shrub/Grass	1.7	0.1	MDWR, RMESR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	23.8	1.7	MDWR, RMEWR, RMESR
Western Juniper/Mountain Mahogany Woodland	Forest/Woodland	4.4	0.3	MDWR, RMEWR, RMESR
Rocky Mountain Aspen	Forest/Woodland	1.6	0.1	MDWR, RMEWR, RMESR
Introduced Upland Vegetation	Shrub/Grass	8.0	0.6	MDWR
Ponderosa Pine	Forest/Woodland	0.9	0.1	MDWR, RMEWR, RMESR
Forested Wetland	Wetland	1.1	0.1	MDWR
Emergent Wetland	Wetland	0.7	0.0	MDWR
Remaining	-	2.2	0.2	-
Category 3		**0**	**0**	-
Category 4		**0**	**0**	-
Category 5		**0**	**0**	-
Category 6		**0**	**0**	-
Total		**1,438.9**	**100**	**-**

[1] USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P1-1 of Exhibit P1).
[2] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3] RMEWR = Category 2 habitat for ODFW Rocky Mountain elk winter range. MDWR = Category 2 habitat for ODFW mule deer winter range.
[4] Total acres of habitat type may not match actual parcel size due to the resolution of the GAP raster dataset. Pixels of the raster dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Soil types	The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the following soils were identified on the property (**Figure 3**): *Ateron very stony loam* (**84 acres**). Ateron soils consist of shallow, well drained soils found on ridge tops and side slopes of hills and mountains at elevations from 3,600 to 5,800 feet. Ateron soils are used for livestock grazing. The native vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and Sandberg bluegrass. *Brownscombe silt loam* (**389 acres**). Brownscombe soils consist of moderately deep, well drained soils found on hills at elevations of 2,400 to 3,600 feet. Brownscombe soils are used for range, dryland winter wheat, and wildlife habitat. Native vegetation is bluebunch wheatgrass, Sandberg bluegrass and arrowleaf balsamroot. *Hibbard gravelly silty clay loam* (**143 acres**). Hibbard soils consist of moderately deep to a duripan, well drained soils found on fan terraces at elevations of 3,000 to 3,700 feet. Hibbard soils are used for rangeland. The native vegetation is bluebunch wheatgrass, Idaho fescue and big sagebrush. *Lookout very cobbly silt loam* (**85 acres**). Lookout soils consist of moderately deep to a duripan, well drained soils found on hills at elevations of 2,800 to 3,600 feet. Lookout soils are mainly rangeland. Small acreage is irrigated for alfalfa, hay, pasture and small grain. Native vegetation dominantly is bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, buckwheat, and big sagebrush. *Ruckles-Ruclick complex* (**20 acres**). Ruckles soils consist of shallow, well drained soils found on hill and canyon side slopes at elevations ranging from 1,200 to 3,800 feet in Oregon. Ruckles soils are used for livestock grazing. Native vegetation dominantly is bluebunch wheatgrass, Idaho fescue on north slopes, Sandberg bluegrass and Wyoming big sagebrush. Ruclick soils consist of moderately deep, well drained soils found on summits, dipslopes, and sideslopes of foothills and tablelands at elevations of 4,000 to 6,500 feet in Idaho, and as low as 1,200 feet in Oregon. Ruclick soils are used mainly for rangeland and wildlife habitat. The dominant natural vegetation is Wyoming big sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. *Skullgulch silty clay loam* (**196 acres**). Skullgulch soils consist of very deep, well drained soils in concave positions on north-facing side slopes on terraces and on fans with elevations ranging from 4,000 to 5,400 feet. Skullgulch soils are used for rangeland. The native vegetation in MLRA 10 is Idaho fescue, bluebunch wheatgrass, prairie junegrass, mountain big sagebrush, and green rabbitbrush. The native vegetation in MLRA 9 is Idaho fescue, bluebunch wheatgrass and prairie junegrass. *Snell-Ateron complex* (**468 acres**). Snell series consists of moderately deep, well drained soils found on hills, plateaus, mountains and on canyon walls at elevations of 2,000 to 6,800 feet. Snell soils are used for livestock grazing and wildlife habitat. Potential native vegetation is bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass. Ateron soils consist of shallow, well drained soils found on ridge tops and side slopes of hills and mountains at elevations from 3,600 to 5,800 feet. Ateron soils are used for livestock grazing. The native vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and Sandberg bluegrass. *Virtue very gravelly silt loam* (**53 acres**). Virtue soils consist of moderately deep to a duripan well drained soils found on fans and terraces at elevations of 2,300 to 4,000 feet. Virtue soils are used for rangeland, irrigated small grain, hay and pasture. The native vegetation is bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, Thurber needlegrass and Wyoming big sagebrush.
Hydrologic Features Present	Two perennial streams and one intermittent stream within the property boundary (NHD). NWI identifies a couple of emergent wetlands, a scrub-shrub wetland, and three cold water springs in addition to riparian areas associated with NHD data.

(SteamNet, NWI, NHD)	
Adjacent land ownership, use, and condition	The northern boundary of the property connects to a very large tract of BLM land that connects many of the uplands above the Lower Powder Valley; including Spring Creek and Goose Creek areas to the north of State Route 86; Love Creek, Ritter Creek and Ruckles Creek south of State Route 86; and areas extending into the upper Lower Powder Valley including Crews Creek and portions of the Powder River north of State Route 203 to the Union/Baker County line. However, a majority of the property is immediately adjacent to private properties. Adjacent land use is rangeland that appears to be heavily grazed.
Infrastructure Density within or Near the Parcel (Qualitative Description)	Property is approximately 1 mile south of State Route 86 and contains some fencing and two-track trails; otherwise, the property is open rangeland absent of development.
Summary	The entire property is within a sage-grouse Core Area that is well-studied by ODFW. Nesting sage-grouse have been documented on the property. The property contains both elk and mule deer winter ranges and is heavily utilized by pronghorn in the spring. The property is grazed every other year, and has been managed in this manner for the last 10 years. Landowner explained that since this grazing rotation was implemented, he has seen an upward trend in desirable vegetation (Idaho fescue especially). The property is mostly Wyoming big sagebrush with islands of invasive species (Japanese brome was mentioned) that would need treatment. Landowner believes that ten years of rest from grazing and some treatments would get the property to a state where, barring fire or some other unexpected event, habitat would contain enough native desirable vegetation that few management actions would be needed to maintain the quality of habitat.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on Category 2 Rocky Mountain elk winter range and mule deer winter range within the shrub/grass general vegetation type. This mitigation site could also help meet the Project need for sage-grouse habitat mitigation. It also provides opportunity for shrub/grass mitigation of Category 3, 4, & 5 habitats. It contains important habitat features that could be preserved and has some uplift opportunities that could be achieved through implementation of standard mitigation actions. The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to sage-grouse, elk, and deer (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to State of Oregon, Federal Land Management Agency, approved NPO or Land Trust.
Mitigation Actions	The following are mitigation actions that may be implemented at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Modification of Livestock Grazing* – this property has been grazed every other year for the past ten years, allowing for re-establishment of native vegetation. Future management would focus primarily on grazing practices that would not compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Fence Removal/Marking* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. Some areas of introduced upland vegetation (specifically Japanese brome) were noted on the property in cattle congregation areas. • *Native revegetation/restoration* – focus of efforts would be to promote establishment of sagebrush and bunchgrasses; opportunities exist but have not been specifically identified at this time. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).
Success Criteria	Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success

criteria may include but are not limited to:

- Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift.
- Successful weed control through documentation of a reduction in weeds and non-native invasive plant species.
- Mitigation success will not be dependent on documentation of increased use of the mitigation site by sage-grouse or any other wildlife species.

Financial Outline

Estimated Budget for the Glasgow Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition	?	1		?
50-year Operation and Management Costs				
O&M[1]	$30.00	1,438	50	$2,157,000
Total	**-**			**$?** ($?)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The average cost per acre presented in that document was $24 in 2004 dollars, this has been adjusted to reflect 2015 dollars. In addition, one of the projects presented in the document was the 10,000 acre Sagebrush Flat Wildlife Mitigation area in Washington state which is within a similar habitat type and has a FY2015 budget of approximately $300,000 (or $30/acre).

[2] Cost per acre here includes cost of acquisition/easement and initial mitigation actions and long-term O&M for 50 years.

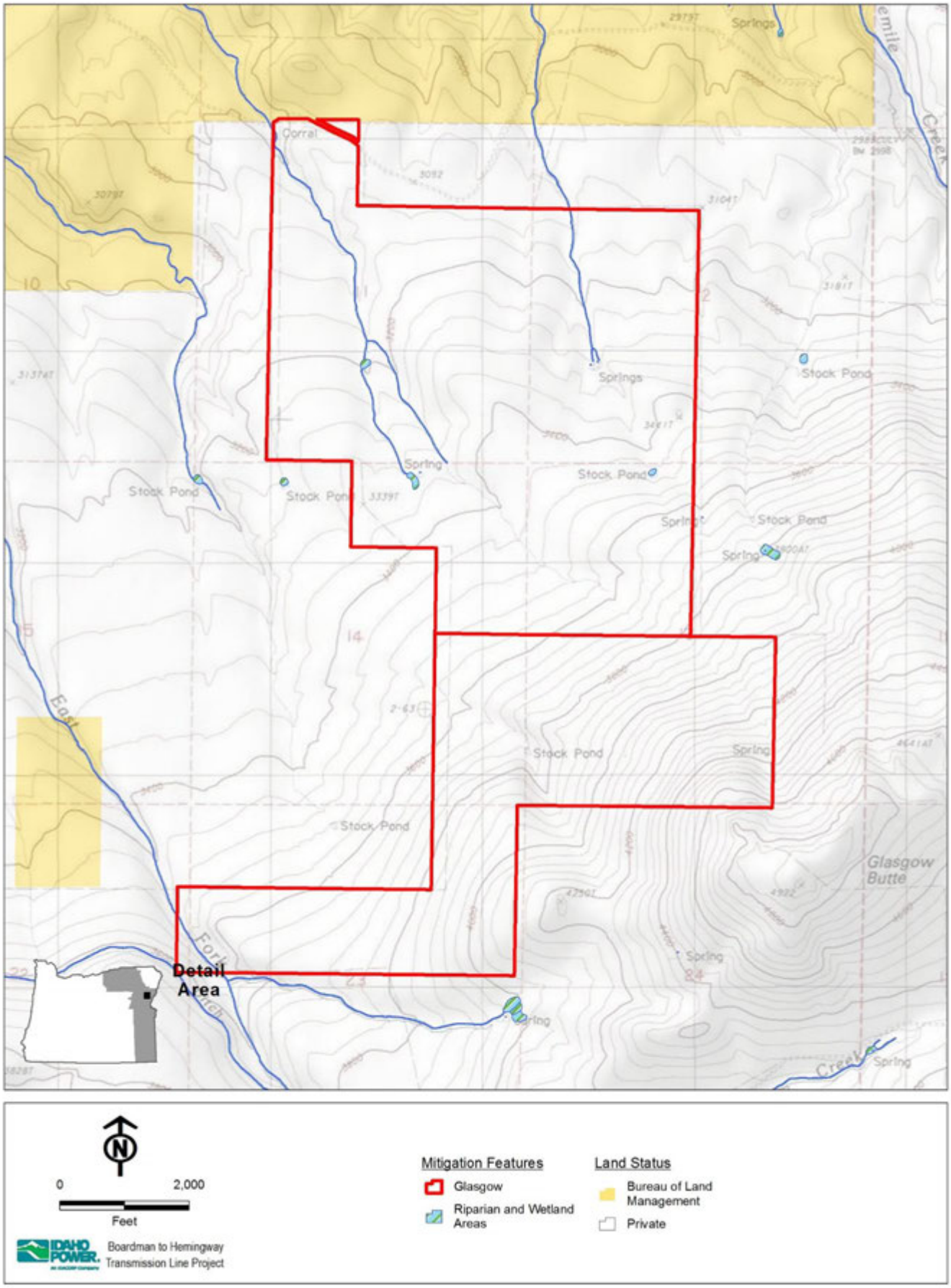

Figure 1. Glasgow Ownership and Water

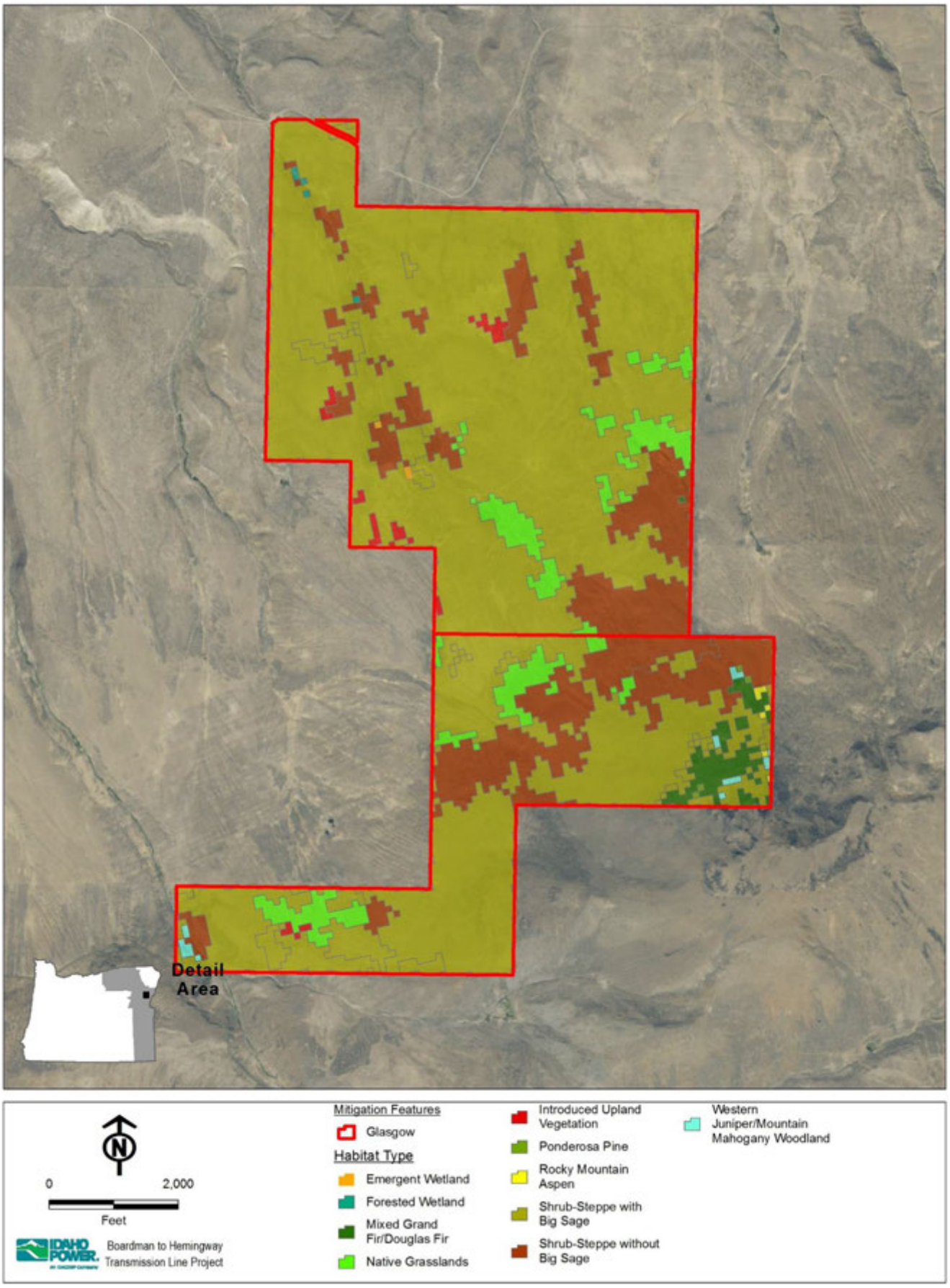

Figure 2. Glasgow Habitat Types

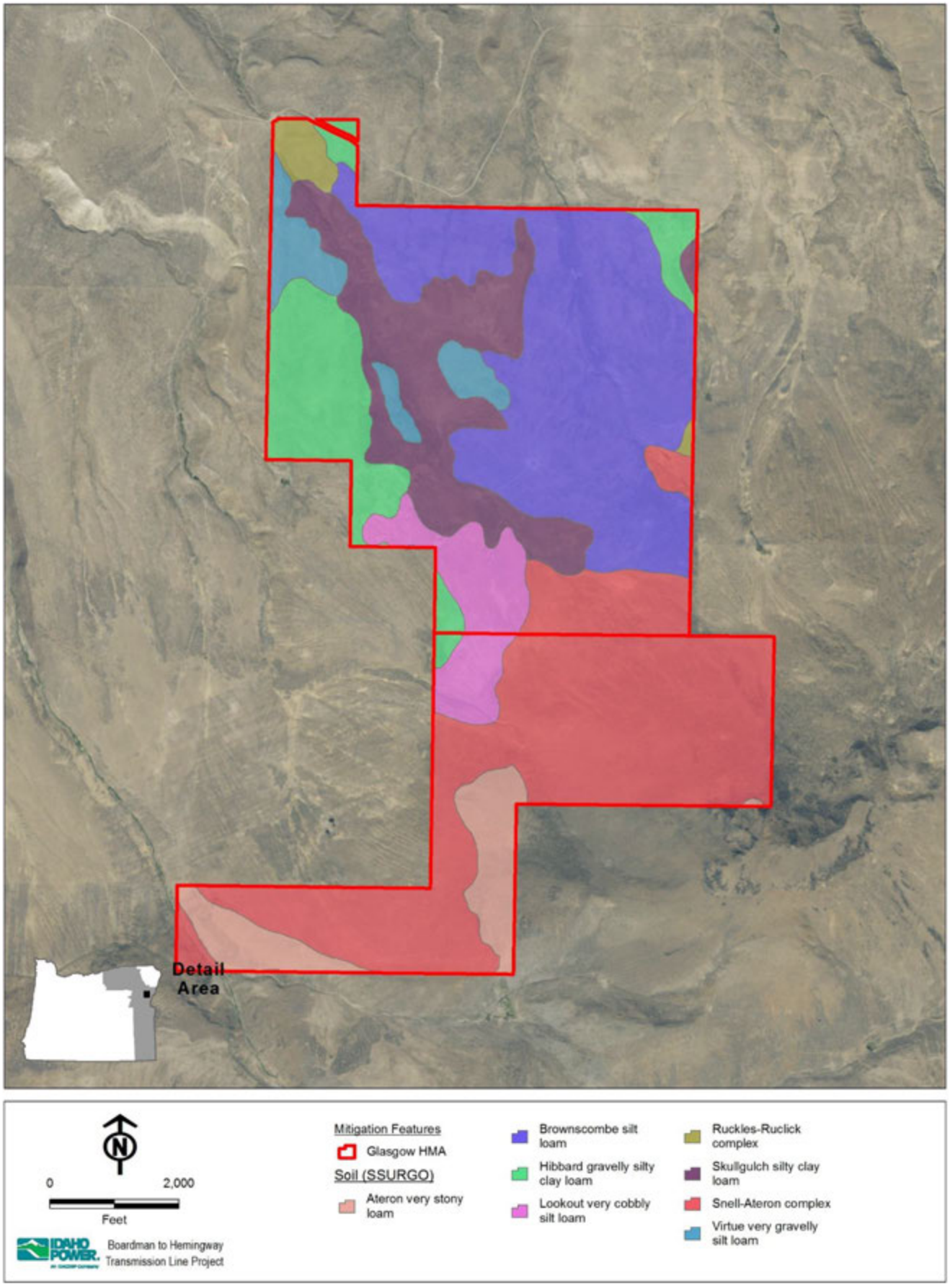

Figure 3. Glasgow Soil Types

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Trail Creek
Landowner:
Parcel Size in Acres: 624
Date of Assessment: 10/13/2014
Parcel Elevation (ft): 3,600 – 4,580
Within Mitigation Service Area?: Yes

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Baker County, approximately 5 miles northeast of Durkee.
T10S R43E Section 36, T10S R44E Section 31, T11S R43E Section 1, T11S R44E Section 6 (**Figure 1**)

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Parcel	Wildlife Habitat[3]
Category 1		**0**	**0**	-
Category 2		**624.5**	**100**	-
Shrub-Steppe with Big Sage	Shrub/Grass	490.0	78.5	RMEWR, RMESR, MDSR
Shrub-Steppe without Big Sage	Shrub/Grass	75.6	12.1	RMEWR, RMESR, MDSR
Native Grasslands	Shrub/Grass	27.1	4.3	RMEWR, RMESR, MDSR
Introduced Upland Vegetation	Shrub/Grass	8.2	1.3	RMEWR, RMESR, MDSR
Western Juniper /Mountain Mahogany Woodland	Forest/Woodland	7.6	1.2	RMEWR, RMESR, MDSR
Ponderosa Pine	Forest/Woodland	7.1	1.1	RMEWR, RMESR, MDSR
Mixed Grand Fir / Douglas Fir	Forest/Woodland	3.1	0.5	RMEWR, RMESR, MDSR
Rocky Mountain Aspen	Forest/Woodland	3.1	0.5	RMEWR, RMESR, MDSR
Bare Ground Cliffs Talus	Bare Ground	2.0	0.3	RMEWR, RMESR, MDSR
Emergent Wetland	Wetland	0.7	0.1	RMEWR, RMESR, MDSR
Category 3		**0**	**0**	-
Category 4		**0**	**0**	-
Category 5		**0**	**0**	-
Category 6		**0**	**0**	-
Total	**NA**	**624.5**[4]	**100**	**-**

[1] USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in Exhibit P1, Attachment P1-1 Habitat Categorization Matrix.
[2] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3] RMEWR = Rocky Mountain Elk Winter Range.
[4] Total acres of habitat type may not match actual parcel size due to resolution of the GAP raster dataset. Pixels of the raster dataset were not simplified or smoothed to match the exact shape of the parcel boundary. This is apparent in **Figure 2**.

Soil type

The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the following soil was identified on the property (**Figure 3**):

Durkee gravelly silt loam (**623**). Durkee soils consist of moderately deep, well drained soils on smooth rolling hills at elevation ranges from 3,600 to 6,100 feet.

Hydrologic Features Present (SteamNet, NWI, NHD)	Two intermittent streams are on the property (NHD). NWI does not indicate any additional wetland features beyond those associated with the streams identified by NHD.
Adjacent land ownership, use, and condition (if possible)	A majority of this property shares a border with a BLM parcel that is approximately 4,000 acres in size. Also adjacent to private land ownership. Dominant land use in the area is rangeland. Adjacent private lands appear to be more degraded as a result of heavier grazing practices (per 2013 site visit).
Infrastructure Density within or Near the Parcel (Qualitative Description)	The property contains some fencing and gates and some two track roads; otherwise open rangeland.
Summary	The property is completely within a sage-grouse Core Area and the Lookout Mountain Rocky Mountain elk herd's winter range. The property is completely within elk summer range and mule deer summer range as well. The property is close to the Nodine sage-grouse lek. The property provides sage-grouse breeding habitat, adequate sagebrush cover and height ensures adequate winter forage, and an abundance of forbs in the understory and a source of water in Trail Creek provides quality brood-rearing habitat. The property is able to support sage-grouse year-round and therefore provides habitat for many other sagebrush obligate species.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on Category 2 Rocky Mountain elk winter range within the shrub/grass general vegetation type. This mitigation site could also help meet the Project need for sage-grouse habitat mitigation. It also provides opportunity for shrub/grass mitigation of Category 3, 4, & 5 habitats. It contains important habitat features that could be preserved and has some uplift opportunities that could be achieved through implementation of standard mitigation actions. The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to sage-grouse and elk (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to State of Oregon, Federal Land Management Agency, approved NPO or Land Trust.
Mitigation Actions	The following are mitigation actions that IPC may consider implementing at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Juniper/Conifer Removal* –Opportunity for spot-treating single trees occurs throughout the property to prevent future encroachment. • *Modification of Livestock Grazing* –grazing on this property appears to have been managed in a manner that allows native vegetation to remain established and provide cover and forage for wildlife species. Future management would focus primarily on grazing practices that would not compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Fence Removal/Marking* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. Some areas of introduced upland vegetation were noted along Trail Creek where cattle congregate. • *Native revegetation/restoration* – focus of efforts would be to promote establishment of sagebrush and bunchgrasses; opportunities exist but have not been specifically identified at this time. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed. • *Wetland/Spring/Riparian Improvement* – opportunity exists along Trail Creek to perform riparian/watershed improvements.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).

Success Criteria

Specific success criteria will be developed once mitigation actions have been confirmed for the site. Success criteria may include but are not limited to:

- Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift.
- Successful weed control through documentation of weed reduction.
- Successful juniper removal and continued control of encroachment onto the mitigation site for the life of the project.
- Mitigation success will not be dependent on documentation of increased use of the mitigation site by sage-grouse or any other wildlife species.

Financial Outline

Estimated Budget for the Trail Creek Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition	?	1		?
50-year Operation and Management Costs				
O&M[1]	$30.00	624	50	$936,000
Total	**-**			**$?** ($?)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The average cost per acre presented in that document was $24 in 2004 dollars, this has been adjusted to reflect 2015 dollars. In addition, one of the projects presented in the document was the 10,000 acre Sagebrush Flat Wildlife Mitigation area in Washington state which is within a similar habitat type and has a FY2015 budget of approximately $300,000 (or $30/acre).

[2] Cost per acre here includes cost of acquisition/easement and initial mitigation actions and long-term O&M for 50 years.

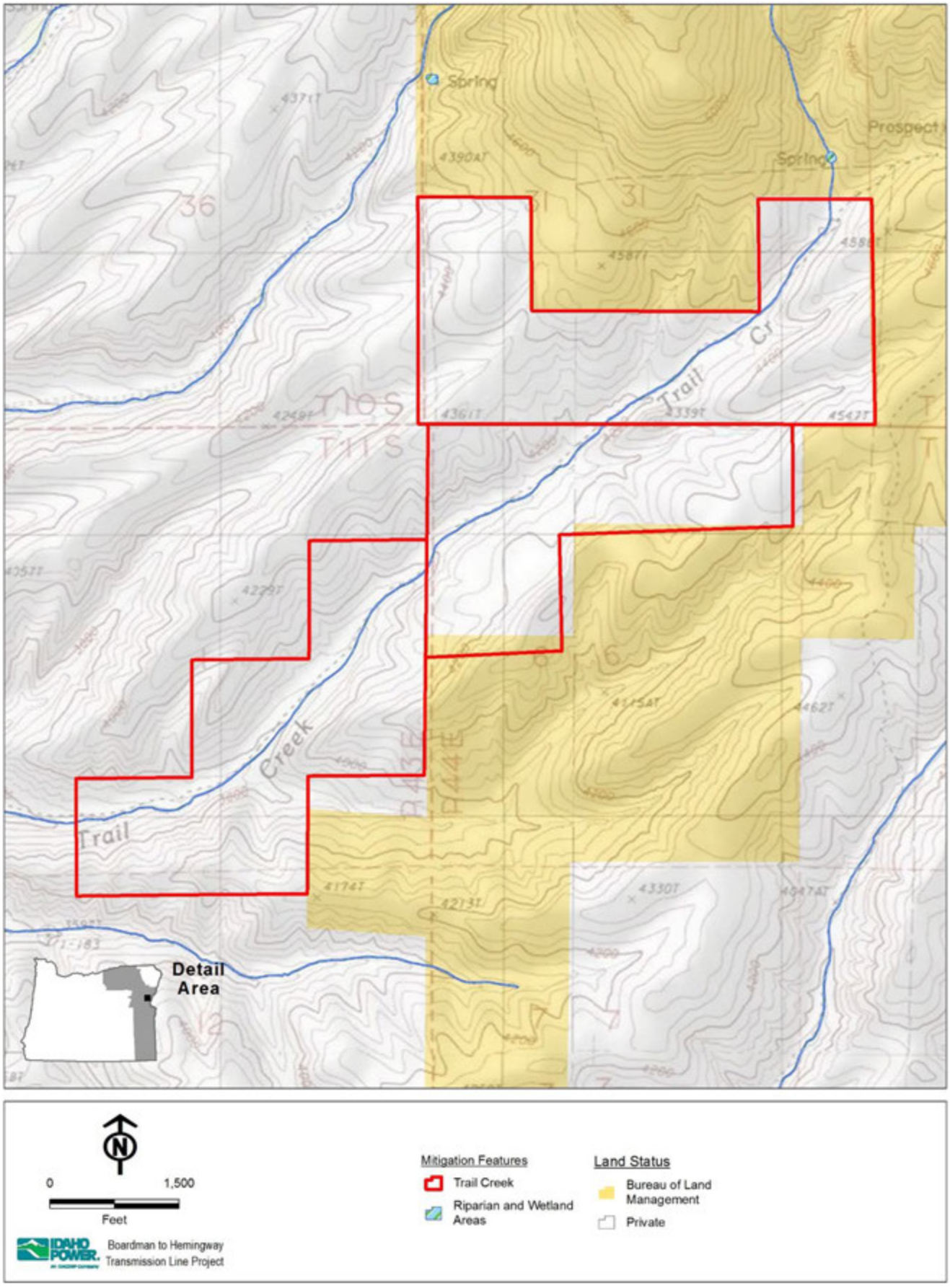

Figure 1. Trail Creek Ownership and Water

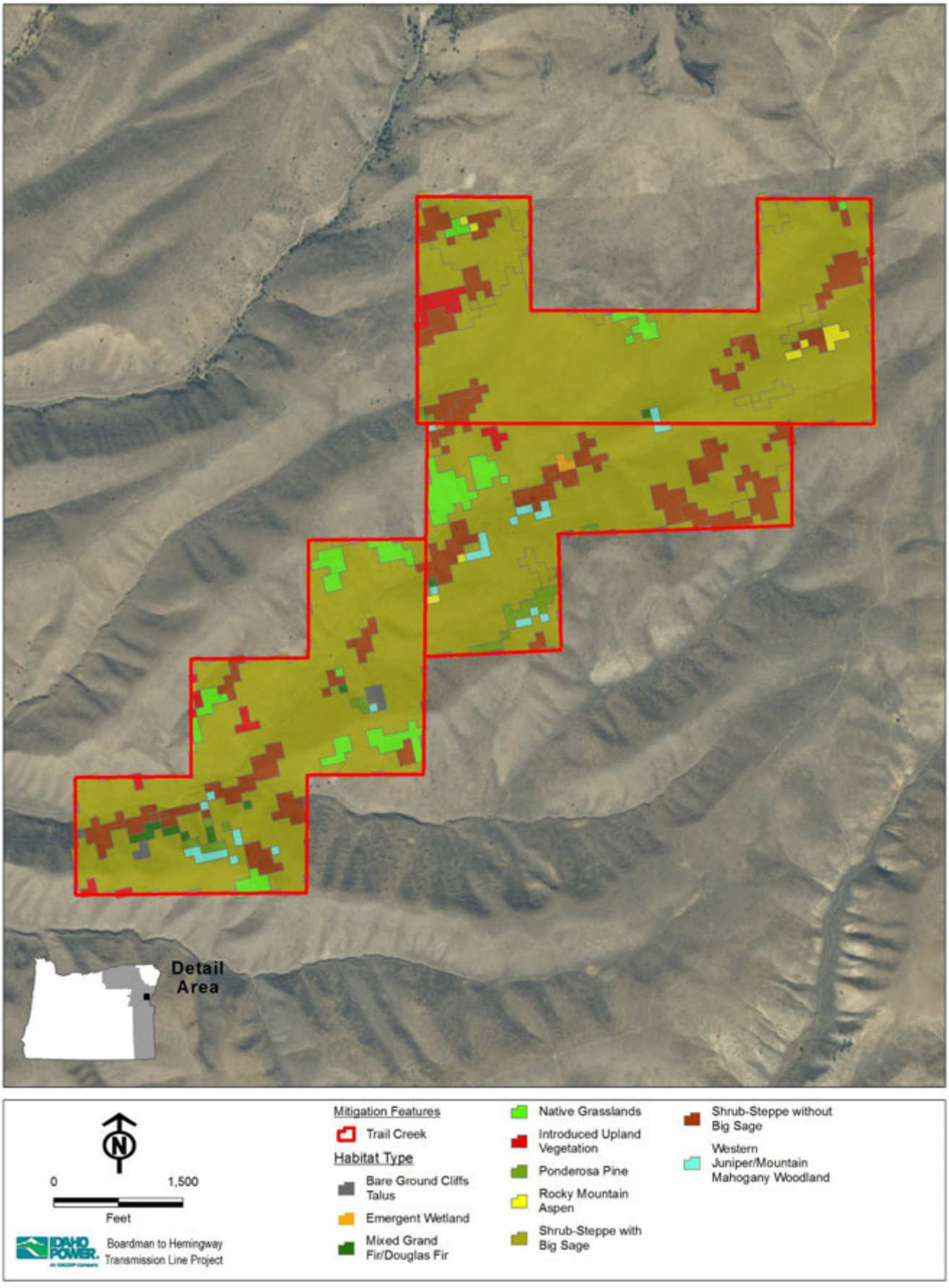

Figure 2. Trail Creek Habitat Types

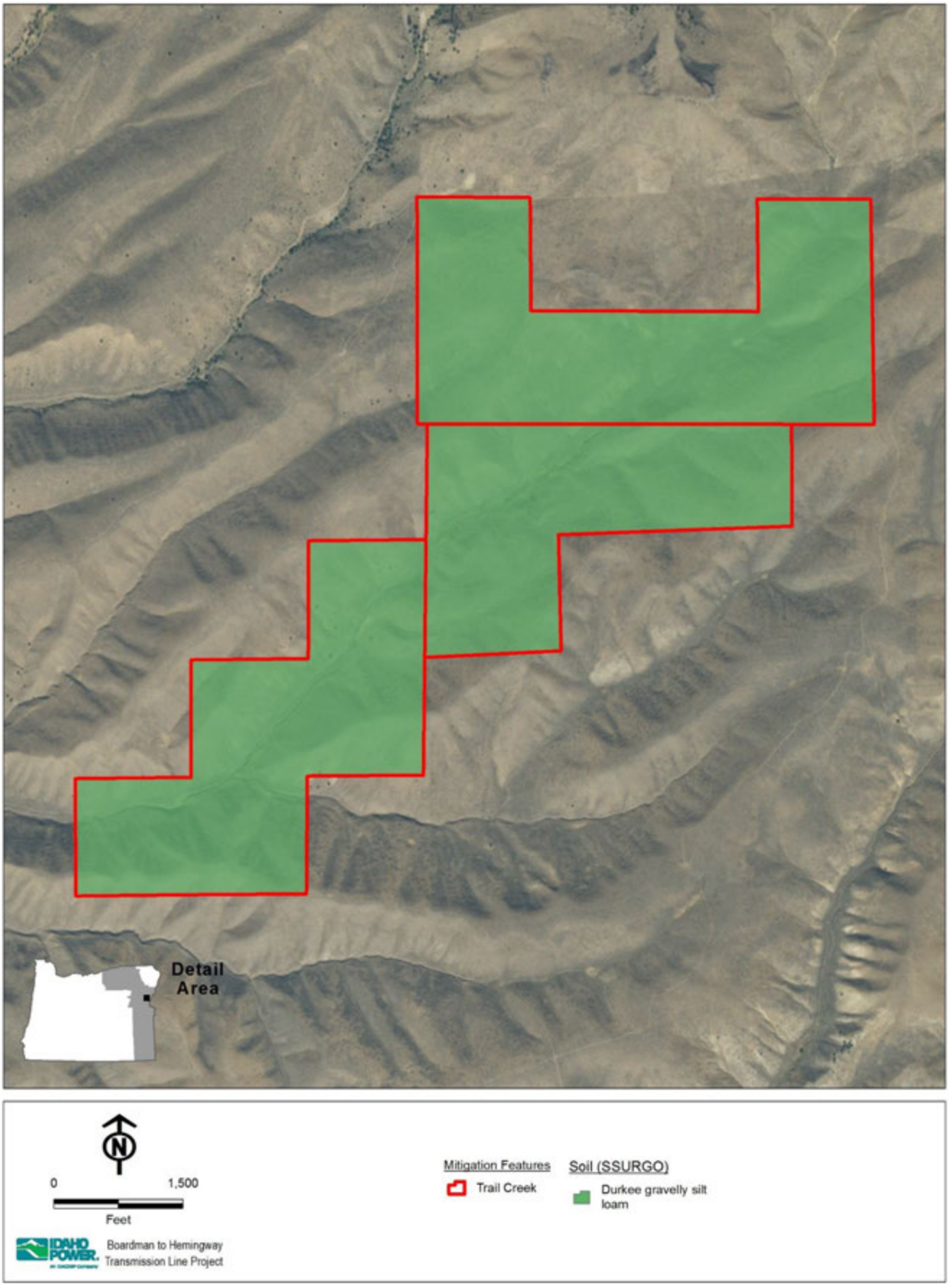

Figure 3. Trail Creek Soil Types

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Upper Timber (**Figure 1**)
Landowner:
Parcel Size in Acres: 1,577
Date of Assessment: 10/13/2014
Parcel Elevation (ft): 3,000 – 4,800
Within Mitigation Service Area?: Yes

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Baker County, 5 miles west of Richland.
T9S R44E Sections 22, 23, 26, 27, 28, 29

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Total	Wildlife Habitat[3]
Category 1		**0**	**0**	
Category 2				-
Shrub-Steppe with Big Sage	Shrub/Grass	538.1	34.2	MDWR
Shrub-Steppe with Big Sage	Shrub/Grass	407.6	25.8	MDWR, RMESR
Shrub-Steppe with Big Sage	Shrub/Grass	104.1	6.6	RMEWR, RMESR, MDWR
Shrub-Steppe without Big Sage	Shrub/Grass	79.3	5.1	MDWR
Shrub-Steppe without Big Sage	Shrub/Grass	189.7	12.0	MDWR, RMESR
Shrub-Steppe without Big Sage	Shrub/Grass	32.1	2.0	RMEWR, RMESR, MDWR
Native Grasslands	Shrub/Grass	19.5	1.2	MDWR
Native Grasslands	Shrub/Grass	80.0	5.1	MDWR, RMESR
Native Grasslands	Shrub/Grass	11.2	0.7	RMEWR, RMESR, MDWR
Introduced Upland Vegetation	Shrub/Grass	36.2	2.3	MDWR
Introduced Upland Vegetation	Shrub/Grass	52.2	3.3	MDWR, RMESR
Introduced Upland Vegetation	Shrub/Grass	6.4	0.4	RMEWR, RMESR, MDWR
Forested Wetland	Wetland	7.4	0.5	MDWR
Forested Wetland	Wetland	1.5	0.1	MDWR, RMESR
Agriculture[4]	Ag/Developed	3.3	0.3	MDWR
Agriculture[4]	Ag/Developed	3.8	0.2	MDWR, RMESR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	1.8	0.1	MDWR
Ponderosa Pine	Forest/Woodland	1.6	0.1	MDWR
Rocky Mountain Aspen	Forest/Woodland	1.1	0.1	MDWR
Category 3		**0**	**0**	-
Category 4		**0**	**0**	-
Category 5		**0**	**0**	-
Category 6		**0**	**0**	-
Total[5]		**1,576.9**	**100**	**-**

[1] USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P1-1 of Exhibit P1).
[2] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3] RMEWR = Category 2 habitat for ODFW Rocky Mountain elk winter range. MDWR = Category 2 habitat for ODFW mule deer winter range.
[4] A brief review of aerial imagery indicated that ReGAP is misclassifying areas as Agriculture. In this instance, the Agriculture appears likely to be wetlands. Therefore, Agriculture is remaining as a Category 2 habitat in this case. Reviewing of ReGAP data via aerial photo interpretation is not performed for the vast majority of habitat classifications on potential mitigation properties. On the ground knowledge of this property prompted a review of the Agriculture habitat classification.
[5] Total acres of habitat type may not match actual parcel size due to the resolution of the GAP raster dataset. Pixels of the raster dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Soil types	The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the following soils were identified on the property (**Figure 3**): *Ateron very stony loam* (**123 acres**). Ateron soils consist of shallow, well drained soils found on ridge tops and side slopes of hills and mountains at elevations from 3,600 to 5,800 feet. Ateron soils are used for livestock grazing. The native vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and Sandberg bluegrass. *Bakeoven-Ruckles complex* (**101 acres**). Bakeoven soils consist of very shallow, well drained soils found on mountains, ridgetops, hillslopes, mesas, and benches at elevations of 300 to 4,800 feet. Bakeoven soils are used for livestock grazing and wildlife habitat. Native vegetation is Sandberg bluegrass and stiff sagebrush. Ruckles soils consist of shallow, well drained soils found on hill and canyon side slopes at elevations ranging from 1,200 to 3,800 feet in Oregon. Ruckles soils are used for livestock grazing. Native vegetation dominantly is bluebunch wheatgrass, Idaho fescue on north slopes, Sandberg bluegrass and Wyoming big sagebrush. *Bouldrock complex* (**129 acres**) and *Bouldrock loam* (**118 acres**). Bouldrock soils consist of moderately deep, well drained soils found on south-facing side slopes of mountainous areas at elevations ranging from 4,000 to 6,200 feet. Bouldrock soils are used for rangeland. The native vegetation is bluebunch wheatgrass, mountain big sagebrush, arrowleaf balsamroot and gray rabbitbrush. *Greenscombe loam* (**280 acres**). Greenscombe soils consist of moderately deep, well drained soils on low hills at elevations 3,200 to 3,800 feet. Greenscombe soils are Rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, Sandberg bluegrass, Thurber needlegrass, and big sagebrush. *Hyall-Simas association* (**91 acres**). Hyall soils consist of moderately deep to consolidated old alluvium (densic material), well drained soils on side slopes of dissected terraces at elevations of 2,700 to 3,500 feet. Hyall soils are used for range, watershed and wildlife habitat. Native vegetation is bluebunch wheatgrass, Idaho fescue and arrowleaf balsamroot. Simas soils consist of very deep, well drained soils found on hills at elevations of 1,200 to 4,000 feet. Simas soils are used for livestock grazing. Native plants are bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, and Wyoming and basin big sagebrush. *Kilmerque loam* (**25 acres**). Kilmerque soils consist of moderately deep, well drained soils on gently rolling bench tops to moderately steep south aspect side slopes in forested mountains at elevations ranging from 3,500 to 6,000 feet. Kilmerque soils are used for woodland. The native vegetation is ponderosa pine, Douglas fir and pinegrass. *Ruckles-Ruclick-Snellby complex* (**50 acres**). Ruckles soils consist of shallow, well drained soils found on hill and canyon side slopes at elevations ranging from 1,200 to 3,800 feet in Oregon. Ruckles soils are used for livestock grazing. Native vegetation dominantly is bluebunch wheatgrass, Idaho fescue on north slopes, Sandberg bluegrass and Wyoming big sagebrush. Ruclick soils consist of moderately deep, well drained soils found on summits, dipslopes, and sideslopes of foothills and tablelands at elevations of 4,000 to 6,500 feet in Idaho, and as low as 1,200 feet in Oregon. Ruclick soils are used mainly for rangeland and wildlife habitat. The dominant natural vegetation is Wyoming big sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. Snellby soils consist of moderately deep, well drained soils on hills at elevations of 3,400 to 3,800 feet. Snellby soils are used for rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, and big sagebrush.

Soil types (cont.)	*Ruckles-Ruclick complex* (**336 acres**). Ruckles soils consist of shallow, well drained soils found on hill and canyon side slopes at elevations ranging from 1,200 to 3,800 feet in Oregon. Ruckles soils are used for livestock grazing. Native vegetation dominantly is bluebunch wheatgrass, Idaho fescue on north slopes, Sandberg bluegrass and Wyoming big sagebrush. Ruclick soils consist of moderately deep, well drained soils found on summits, dipslopes, and sideslopes of foothills and tablelands at elevations of 4,000 to 6,500 feet in Idaho, and as low as 1,200 feet in Oregon. Ruclick soils are used mainly for rangeland and wildlife habitat. The dominant natural vegetation is Wyoming big sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. *Ruclick very cobbly silt loam* (**135 acres**). Ruclick soils consist of moderately deep, well drained soils found on summits, dipslopes, and sideslopes of foothills and tablelands at elevations of 4,000 to 6,500 feet in Idaho, and as low as 1,200 feet in Oregon. Ruclick soils are used mainly for rangeland and wildlife habitat. The dominant natural vegetation is Wyoming big sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. *Snell-Ateron complex* (**32 acres**). Snell series consists of moderately deep, well drained soils found on hills, plateaus, mountains and on canyon walls at elevations of 2,000 to 6,800 feet. Snell soils are used for livestock grazing and wildlife habitat. Potential native vegetation is bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass. Ateron soils consist of shallow, well drained soils found on ridge tops and side slopes of hills and mountains at elevations from 3,600 to 5,800 feet. Ateron soils are used for livestock grazing. The native vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and Sandberg bluegrass. *Snellby stony silt loam* (**79 acres**). Snellby soils consist of moderately deep, well drained soils on hills at elevations of 3,400 to 3,800 feet. Snellby soils are used for rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, and big sagebrush. *Taterpa loam* (**77 acres**). Taterpa soils consist of deep, well drained soils on north-facing side slopes of mountains at elevations ranging from 4,000 to 6,200 feet. Taterpa soils are used for rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, mountain big sagebrush and green rabbitbrush.
Hydrologic Features Present (SteamNet, NWI, NHD)	The property contains four perennial streams. NWI identifies several (14) emergent wetlands, a couple of impounded ponds, and three cold springs.
Adjacent land ownership, use, and condition	A majority of the immediately adjacent lands are private ownership; however, a few small BLM parcels border the property and larger tracts of BLM land are within 1 mile of the property. Livestock rangeland is the primary land use in the area, with irrigated agriculture in the valley surrounding Richland, approximately 2 miles to the east of the property.
Infrastructure Density within or Near the Parcel (Qualitative Description)	State Route 86 is 1 mile north of the property. The property itself contains some fencing and two track trails; otherwise, the property is open range.

Summary	The property contains some high quality shrub-steppe and native grassland habitat, but is interspersed with invasive vegetation such as medusahead wildrye. The property contains numerous water sources and riparian habitat. The property is completely within a sage-grouse Core Area and mule deer winter range and also contains some elk winter range. The highest density of wintering mule deer in Baker County occurs just north of the property. Pronghorn are common in the area. The property is adjacent to multiple sage-grouse leks and is situated between known lek sites and Sheep Mountain where radio-collared birds have been located, indicating the property is likely used during seasonal migrations and/or for nesting and brood rearing. The Pevine Flat area to the east is important for both sage-grouse and wintering big game.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on Category 2 mule deer winter range and Rocky Mountain elk winter range within the shrub/grass general vegetation type. This mitigation site could also help meet the Project need for sage-grouse habitat mitigation. It also provides opportunity for shrub/grass mitigation of Category 3, 4, & 5 habitats. It contains important habitat features that could be preserved and has some uplift opportunities that could be achieved through implementation of standard mitigation actions. The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to sage-grouse, elk, and deer (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to State of Oregon, Federal Land Management Agency, approved NPO or Land Trust.
Mitigation Actions	The following are mitigation actions that may be implemented at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Modification of Livestock Grazing* –. Future management would focus primarily on grazing practices that would not compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Fence Removal/Marking* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. Some areas of introduced upland vegetation (specifically medusahead wildrye) were noted on the property. • *Native revegetation/restoration* – focus of efforts would be to promote establishment of sagebrush and bunchgrasses; opportunities exist but have not been specifically identified at this time. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed. • *Wetland/Spring/Riparian Improvement* – opportunity exists along Canyon Creek, Upper Timber Gulch, and other areas to perform riparian/watershed improvements.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).

Success Criteria

Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to:

- Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift.
- Successful weed control through documentation of a reduction in weeds and non-native invasive plant species.
- Mitigation success will not be dependent on documentation of increased use of the mitigation site by sage-grouse or any other wildlife species.

Financial Outline

Estimated Budget for the Upper Timber Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition	?	1		?
50-year Operation and Management Costs				
O&M[1]	$30.00	1,577	50	$2,365,500
Total	**-**			**$?** ($?)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The average cost per acre presented in that document was $24 in 2004 dollars, this has been adjusted to reflect 2015 dollars. In addition, one of the projects presented in the document was the 10,000 acre Sagebrush Flat Wildlife Mitigation area in Washington state which is within a similar habitat type and has a FY2015 budget of approximately $300,000 (or $30/acre).

[2] Cost per acre here includes cost of acquisition/easement and initial mitigation actions and long-term O&M for 50 years.

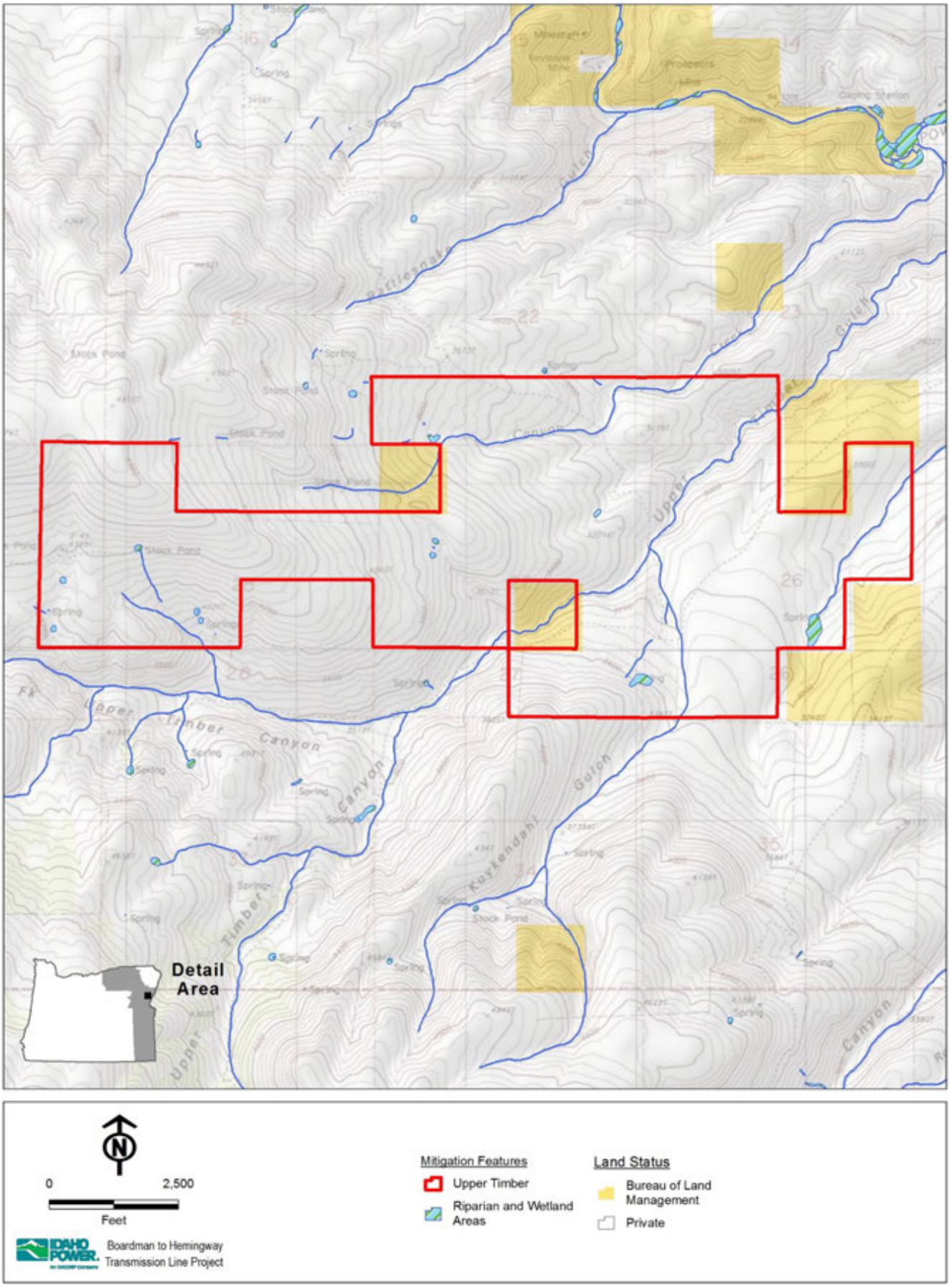

Figure 1. Upper Timber Ownership and Water

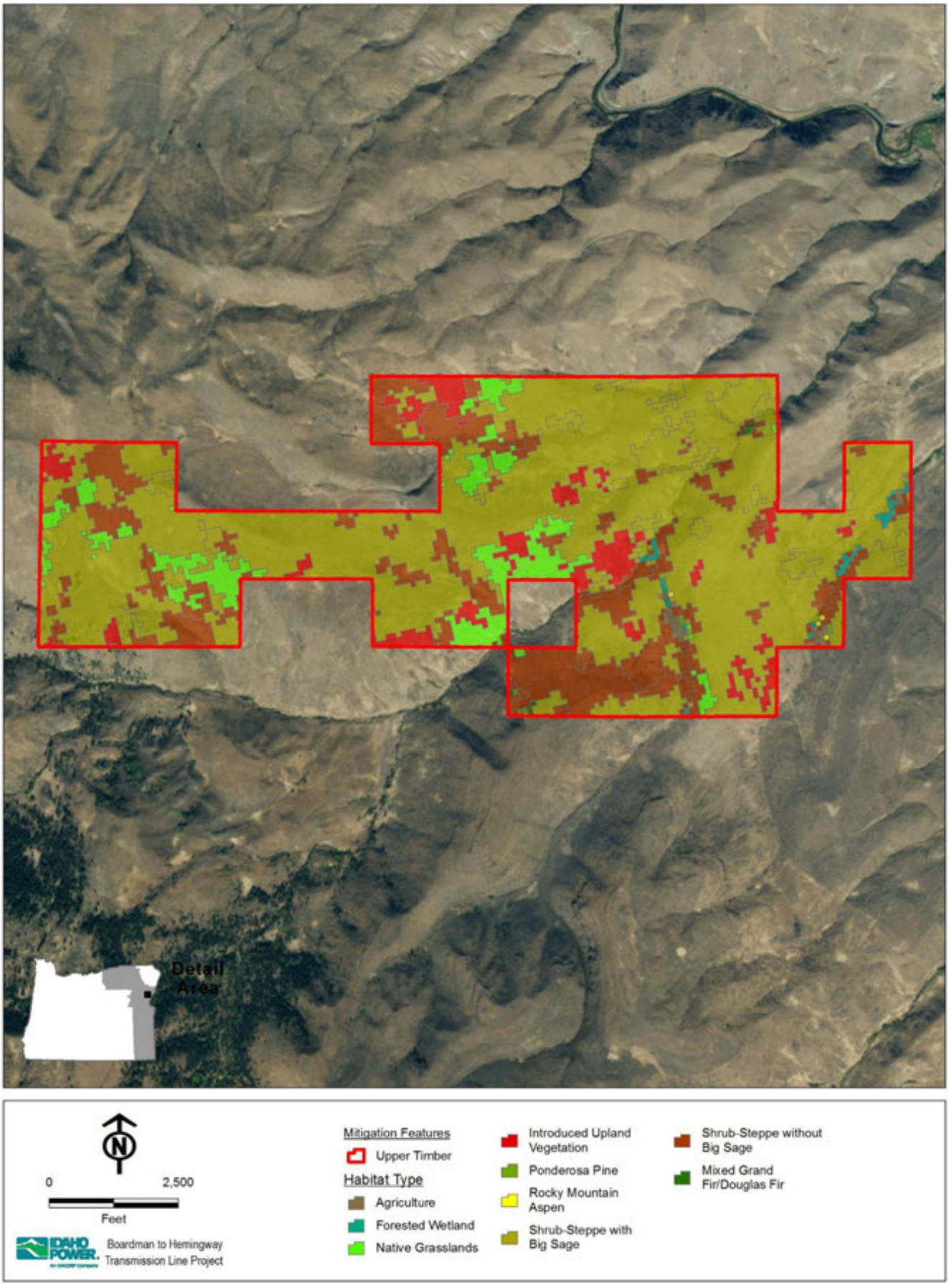

Figure 2. Upper Timber Habitat Types

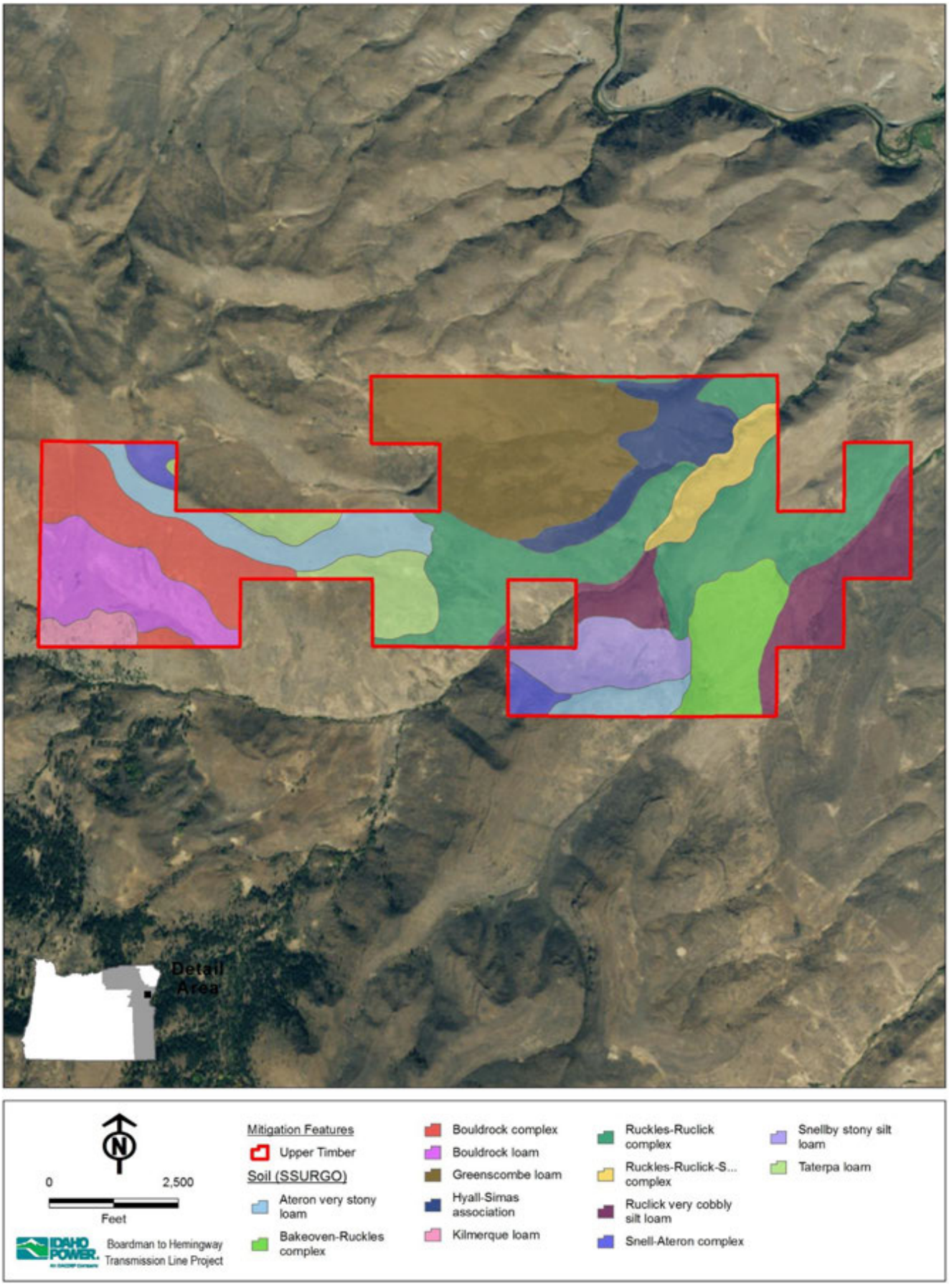

Figure 3. Upper Timber Soil Types

APPENDIX B
WOLF CREEK MITIGATION SITE EXPANDED ASSESSMENT

Boardman to Hemingway Transmission Line Project

Wolf Creek Mitigation Site

Mitigation Site Name: Wolf Creek (**Figure 1**)
Mitigation Credit: 1,775.8 acres
Parcel Elevation (ft): 3,750 – 4,650
Within Mitigation Service Area: Yes

Summary

Background

Idaho Power's Boardman to Hemingway Transmission Line Project will impact fish and wildlife habitat in Oregon. Idaho Power assigned a habitat category to each area impacted by the Project (Habitat Category 1 through 6) and identified the vegetation types within each habitat category area. Idaho Power also quantified the acres of the following species-specific habitats affected by the Project: Washington ground squirrel habitat, raptor nests, elk winter and summer range, mule deer winter and summer range, and sage-grouse habitat.

Idaho Power is required to secure compensatory mitigation sites to offset impacts to Habitat Category 1 through 5, and to offset impacts to the relevant species-specific habitats. Compensatory mitigation credits may be "stacked." That is, to the extent habitat within a mitigation site comprises Habitat Category 1 through 5 and provides relevant species-specific habitat, the relevant portion of the habitat site will be credited against both the habitat-category and species-specific mitigation requirements. For example, a mitigation site with 20 acres of Habitat Category 2 forest/woodland habitat, all of which occurs within elk winter range and half of which occurs within mule deer winter range, may be used to offset impacts to 20 acres of Habitat Category 2 forest/woodland habitat, 20 acres of elk winter range, and 10 acres of mule deer winter range.

Mitigation Site Description

The Wolf Creek Mitigation Site comprises approximately 1,781 acres and is located adjacent to Wolf Creek Reservoir and Forest Service-administered lands. The site is mostly timberland, providing winter and summer range for elk and mule deer. Wolf Creek runs through the site and is considered bull trout designated critical habitat. The site is very close to Oregon Department of Wildlife's (ODFW) Elkhorn–North Powder Wildlife Management Area. The site is partially within the Baker Valley Conservation Opportunity Area identified in the Oregon Conservation Strategy.

Mitigation Actions

Idaho Power would secure control over this mitigation site by obtaining a conservation easement or through acquisition for the life of the Project. Idaho Power would conduct the following mitigation actions on the site, which would benefit the entirety of the mitigation site and the fish and wildlife that use the mitigation site:

- Install or repair wildlife-friendly fence along the entirety of mitigation site boundary.
- Redistribute, burn, or otherwise dispose of approximately 200 slash piles, and revegetate and provide weed control at the slash pile sites.
- Decommission up to 12 miles of unnecessary roads, and close or limit access to other roads as directed by ODFW.

Mitigation Site Credits

This mitigation site has been identified by Idaho Power as a potential site for in-kind compensatory mitigation to offset the following Habitat Category and species-specific habitat impacts related to the Project:

Habitat Category and Vegetation Types	Mitigation Credit Acres
Category 2	**1,775.8**
Forest/Woodland	1,361.3
Shrub/Grass	344.3
Open Water/Wetlands	70.2

Species-Specific Habitat	Mitigation Credit Acres
Elk Winter Range	1,775.8
Mule Deer Winter Range	1,266.0
Elk Summer Range	1,775.8
Mule Deer Summer Range	1,775.8

Location Description (County, miles and direction from known location, TRS)	Union County, 5 miles northwest of North Powder. T5S R38E Sections 27, 33, 34; T6S R38E Sections 3, 4, 10, 11.
Hydrologic Features Present (StreamNet, NWI, NHD)	Property contains two intermittent streams and two perennial streams (Clear Creek and Wolf Creek) per the NHD. Wetland features outside of those associated with the riparian corridors of the NHD streams includes an emergent wetland and an impoundment. The property borders the west side of Wolf Creek Reservoir.

Adjacent Ownership and Land Use	Majority of adjacent land ownership is private; however, the property does border a large tract of USFS lands and is within 0.5 mile of ODFW's Elkhorn WMA. Adjacent land use is open range, timbered range, timber harvest, and agricultural development.

Infrastructure Density within or Near the Parcel	Parcel has some residential buildings/shops in the southeast corner and some dirt/gravel roads; otherwise, the property is open timber/recently harvested timber. Wolf Creek Reservoir is adjacent to the property; the valley floor 1 mile to the east contains developed agricultural areas and associated infrastructure. I84 is over 4 miles away.

Table 1. Mitigation Credits by ODFW Habitat Category and General Vegetation Type[1]

Habitat Category and General Vegetation Type	Mitigation Credits
Category 2	**1,775.8**
Forest/Woodland	1,361.3
Shrub/Grass	344.3
Open Water/Wetlands	70.2

[1] USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP General Vegetation Type (**Figure 2**) as shown in the Habitat Categorization Matrix (Attachment P1-1 of Exhibit P1).

Table 2. Mitigation Credits by Wildlife Habitat Layers[1]

Species-Specific Habitat	Mitigation Credits
Category 2 Elk Winter Range[2]	1,775.8
Category 3 Elk Summer Range[3]	1,266.0
Category 2 Mule Deer Winter Range[2]	1,775.8
Category 3 Mule Deer Summer Range[4]	1,775.8

[1] Wildlife habitat layers are not spatially discreet; there is abundant spatial overlap between the layers. In this mitigation site, the entire property is within elk winter range, mule deer summer range, and mule deer winter range. Elk summer range covers over half of the property.
[2] ODFW. 2013. ODFW Winter Range for Eastern Oregon. GIS data files (2). Available online at: https://nrimp.dfw.state.or.us/DataClearinghouse/default.aspx?p=202&XMLname=885.xml
[3] Rocky Mountain Elk Foundation. 1999. M.A.P. Elk Habitat Project. GIS data.
[4] WAFWA (Western Association of Fish and Wildlife Agencies). 2002. Mule Deer Habitat of the Western United States. GIS Dataset. Remote Sensing/Geographic Information Systems Laboratory, Utah State University. Logan, UT.

Soil types	The NRCS Soil Survey Geographic Database (SSURGO) data were reviewed and the following soils were identified on the property (**Figure 3**): *Anatone-Klicker complex* (**168 acres**). Anatone soils consist of shallow, well drained soils found on mountain side slopes, ridgetops, hills, and and plateaus at elevations of 2,000 to 6,200 feet. Anatone soils are mostly used for livestock grazing, wildlife habitat, and recreation. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, mossy stonecrop, curlleaf mountain mahogany and stiff sagebrush. Klicker soils consist of moderately deep, well drained soils on mountains, plateaus, and benches at elevations from 2,500 to 6,200 feet. Klicker soils are used mainly for timber production and wildlife habitat. Native vegetation is an open stand of ponderosa pine and Douglas-fir with an understory of bluebunch wheatgrass, slender wheatgrass, brome grass, elk sedge, Oregon-grape, common snowberry, Saskatoon serviceberry, creambush oceanspray, mallow ninebark, and wild rose.

Soil types (cont.)	*Encina silt loam* (**57 acres**). Encina silt loam soils consist of deep, well drained soils found on dissected slopes of terrace fronts, usually with southern aspects, at elevations from 2,000 to 4,000 feet. Used for rangeland, small grains, hay pasture, wildlife habitat, and water supply. Native vegetation dominantly is bluebunch wheatgrasss, Sandberg bluegrass, Idaho fescue, rabbitbrush, big sagebrush, and squaw apple. *Gwinly-Rockly complex* (**20 acres**). The Gwinly soils consist of shallow, well drained soils found on hills, plateaus, structural benches, mountains, and canyons at elevations from 1,400 to 4,600 feet. Used for livestock grazing and wildlife habitat. Potential native vegetation is dominantly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass and low sagebrush. The Rockly soils consist of shallow and very shallow, well drained soils on mesas, ridges, plateaus, structural benches, canyon walls, and nearly level to very steep south and west slopes on uplands at elevations of 300 to 5,000 feet. These soils are used for livestock grazing, wildlife habitat, and water supply purposes. Native vegetation is mostly stiff sagebrush, lomatium, bluebunch wheatgrass, and Sandberg bluegrass. *Gwinly very cobbly silt loam* (**67 acres**). The Gwinly soils consist of shallow, well drained soils found on hills, plateaus, structural benches, mountains, and canyons at elevations from 1,400 to 4,600 feet. Used for livestock grazing and wildlife habitat. Potential native vegetation is dominantly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, and low sagebrush. *Klicker-Anatone complex* (**157 acres**). Klicker soils consist of moderately deep, well drained soils on mountains, plateaus, and benches at elevations from 2,500 to 6,200 feet. Klicker soils are used mainly for timber production and wildlife habitat. Native vegetation is an open stand of ponderosa pine and Douglas-fir with an understory of bluebunch wheatgrass, slender wheatgrass, brome grass, elk sedge, Oregon-grape, common snowberry, Saskatoon serviceberry, creambush oceanspray, mallow ninebark, and wild rose. Anatone soils consist of shallow, well drained soils found on mountain side slopes, ridgetops, hills, and and plateaus at elevations of 2,000 to 6,200 feet. Anatone soils are mostly used for livestock grazing, wildlife habitat, and recreation. Native vegetation is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, mossy stonecrop, curlleaf mountain mahogany, and stiff sagebrush. *Klicker stony silt loam* (**765 acres**). Klicker soils consist of moderately deep, well drained soils on mountains, plateaus, and benches at elevations from 2,500 to 6,200 feet. Klicker soils are used mainly for timber production and wildlife habitat. Native vegetation is an open stand of ponderosa pine and Douglas-fir with an understory of bluebunch wheatgrass, slender wheatgrass, brome grass, elk sedge, Oregon-grape, common snowberry, Saskatoon serviceberry, creambush oceanspray, mallow ninebark and wild rose. *Lookingglass very stony silt loam* (**45 acres**). Lookingglass soils consist of very deep, moderately well drained soils found on uplands at elevations of 1,800 to 4,000 feet. Lookingglass soils are used mainly for timber production. Cleared areas are cropped to small grains, hay, pasture, and peas. The native vegetation is ponderosa pine and Douglas-fir with an understory of spirea, oceanspray, Idaho fescue, pinegrass, and elksedge.

Soil types (cont.)	*Olot stony silt loam* (**4 acres**). Olot soils consist of moderately deep, well drained soils found on plateaus, canyons, mountains and structural benches at elevations typically between 2,800 to 5,000 feet. Olot soils are used mainly for timber production. Also used for wildlife habitat. Vegetation is western larch, Douglas fir, willow, mountain alder, common snowberry, elk sedge, and pinegrass. *Starkey very stony silt loam* (**2 acres**). Starkey soils consist of shallow, well drained soils found on mountains and hills at elevations of 2,400 to 4,000 feet. Starkey soils used for rangeland. Native vegetation is mainly Idaho fescue, bluebunch wheatgrass and Sandberg bluegrass. *Tolo silt loam* (**289 acres**). Tolo soils consist of deep and very deep, well drained soils found on nearly level upland plateaus and steep north and east-facing mountain side slopes at elevations of 2,800 to 5,400 feet. Tolo soils used for timber production and livestock grazing with small areas at lower elevations cleared for cultivation. Principal trees include Douglas fir, grand fir, larch, ponderosa pine, and lodgepole pine. *Ukiah-Starkey complex* (**166 acres**). Ukiah soils consist of moderately deep, well drained soils found on hills with an elevation of 2,400 to 4,600 feet. Ukiah soils are mainly used for range. Some areas are cultivated for dryland hay and small grains. Native vegetation is mainly Idaho fescue, bluebunch wheatgrass and Sandberg bluegrass. Starkey soils consist of shallow, well drained soils found on mountains and hills at elevations of 2,400 to 4,000 feet. Starkey soils used for rangeland. Native vegetation is mainly Idaho fescue, bluebunch wheatgrass and Sandberg bluegrass. *Ukiah silty clay loam* (**8 acres**). Ukiah soils consist of moderately deep, well drained soils found on hills with an elevation of 2,400 to 4,600 feet. Ukiah soils are mainly used for range. Some areas are cultivated for dryland hay and small grains. Native vegetation is mainly Idaho fescue, bluebunch wheatgrass and Sandberg bluegrass. *Veazie-Voats complex* (**32 acres**). Veazie soils consist of very deep, well drained soils found on flood plains broken by old stream channels at elevations of 750 to 4,000 feet. Veazie soils are used mainly for irrigated hay and pasture. Other uses are livestock grazing and wildlife. Native vegetation is bluebunch wheatgrass, basin wildrye, sedges, rushes and willows. Voats soils consist of very deep, well drained soils found on flood plains broken by old stream channels and occur at elevations of 1,600 to 4,000 feet. Voats soils are used mainly for pasture. Other uses are livestock grazing and wildlife habitat. Potential native vegetation is bluebunch wheatgrass, basin wildrye, timothy, Kentucky bluegrass, sedges, rushes, and scattered willow, alder, hawthorne, and rose.

Mitigation Site Manager	Fee title acquisition with transfer of ownership to the State of Oregon to be managed as part of ODFW's Elkhorn WMA.

Mitigation Actions	The following mitigation actions are proposed in order to earn 1, 75.8 acres of mitigation credit at this mitigation site. • *Fence Installation/Repair* – Boundary fencing will be installed and/or repaired/replaced on approximately 15 miles. This will include the use of wildlife friendly fence designs. • *Slash Pile Treatment* (**Figure 4**) – Extensive logging has taken place on the property resulting in nearly 200 slash piles that are visible on satellite imagery. Slash piles will be treated (re-distribution, burning, or other method) and revegetation and weed control will occur at the slash pile scars. • *Road Closure and/or Decommissioning* (**Figure 4**) – Several miles of logging roads, landing areas, and skid trails exist within the mitigation site. Mitigation actions will include any activity that results in the stabilization and restoration of unneeded roads to a more natural state. Actions may include scarifying and spreading slash at landing areas and skid trails, denying access (eliminate traffic), and ripping, waterbarring, and seeding of roads. IPC has preliminarily identified roads to maintain and roads to decommission. Roads that are proposed for decommissioning are symbolized by a black line in **Figure 4**, and roads that will be maintained on the property are symbolized by a white line. Existing easements for other parties are unknown at this time, but will not be affected. Access to maintained roads will be limited to ODFW use. Up to 12 miles of roads and trails will be closed or decommissioned.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through establishment of photo locations and vegetation monitoring. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. Long-term monitoring will be developed with reporting that will occur at larger time intervals (i.e., 5 years, 10 years).
Success Criteria	Specific success criteria will be developed once mitigation actions have been confirmed for the site. Success criteria may include but are not limited to: • Completion of fence improvement and/or removal projects. • Completion of slash pile treatments. • Completion of road closure and/or decommissioning.

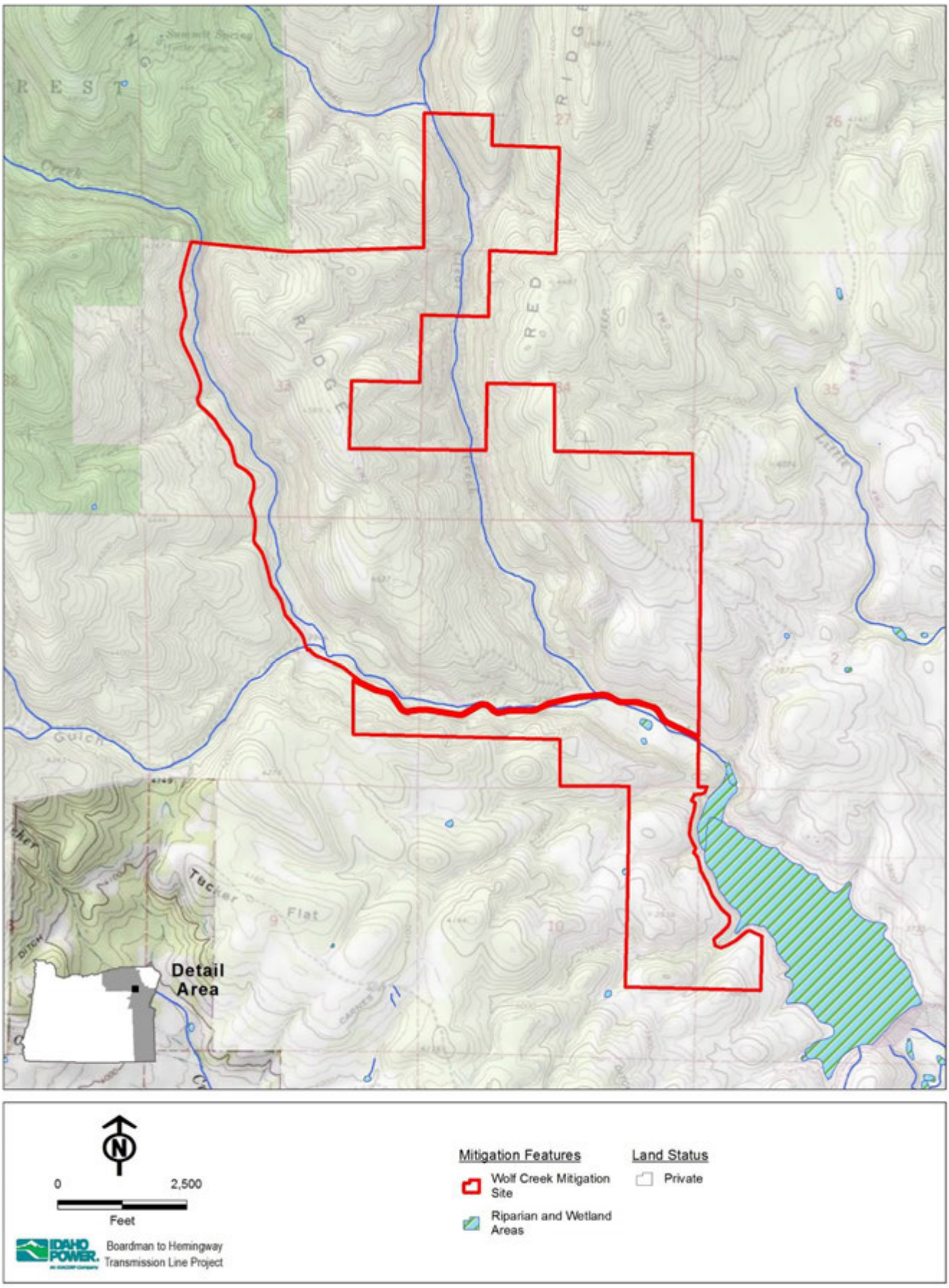

Figure 1. Wolf Creek Mitigation Site Ownership and Water

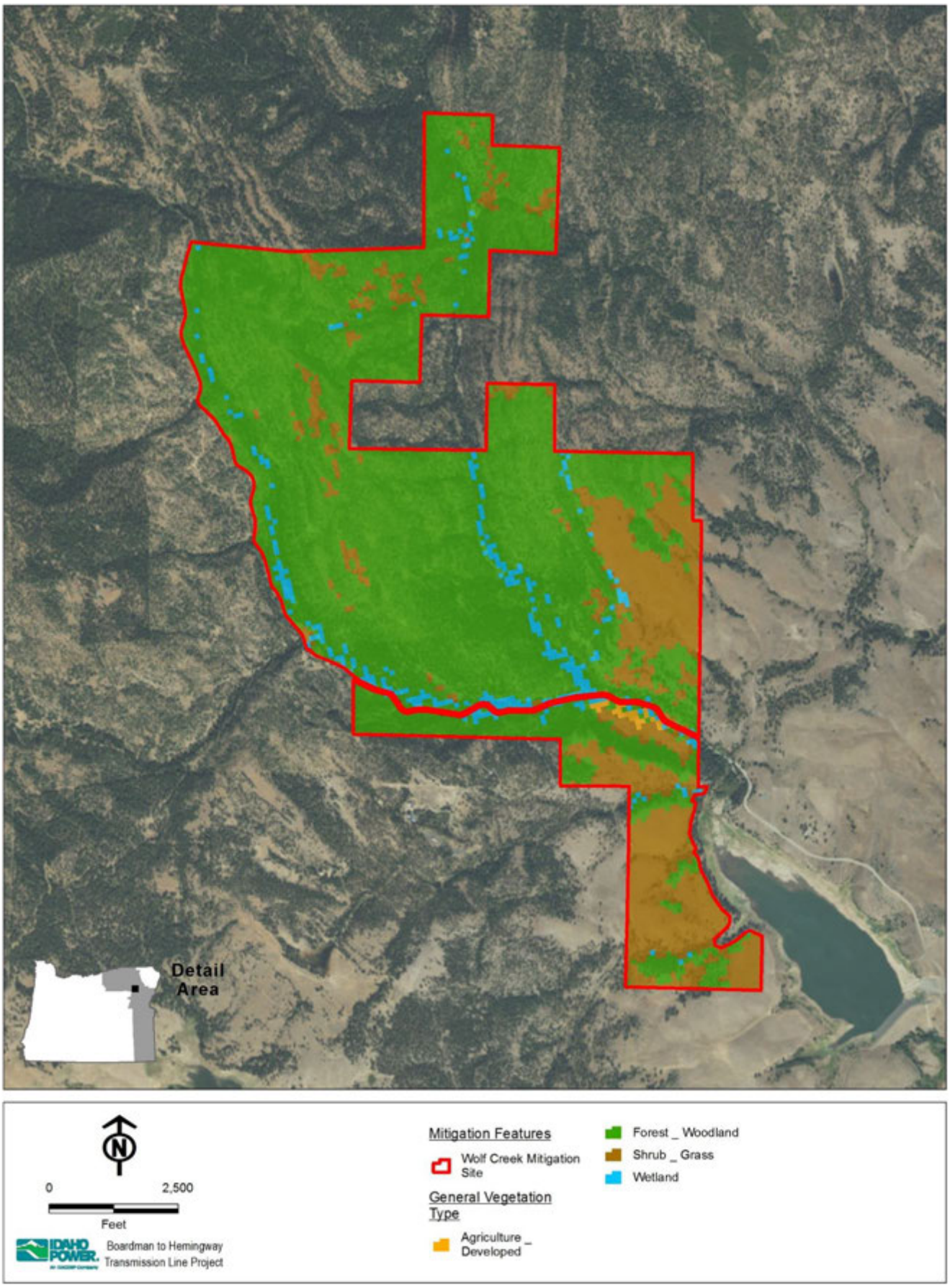

Figure 2. Wolf Creek Mitigation Site General Vegetation Types

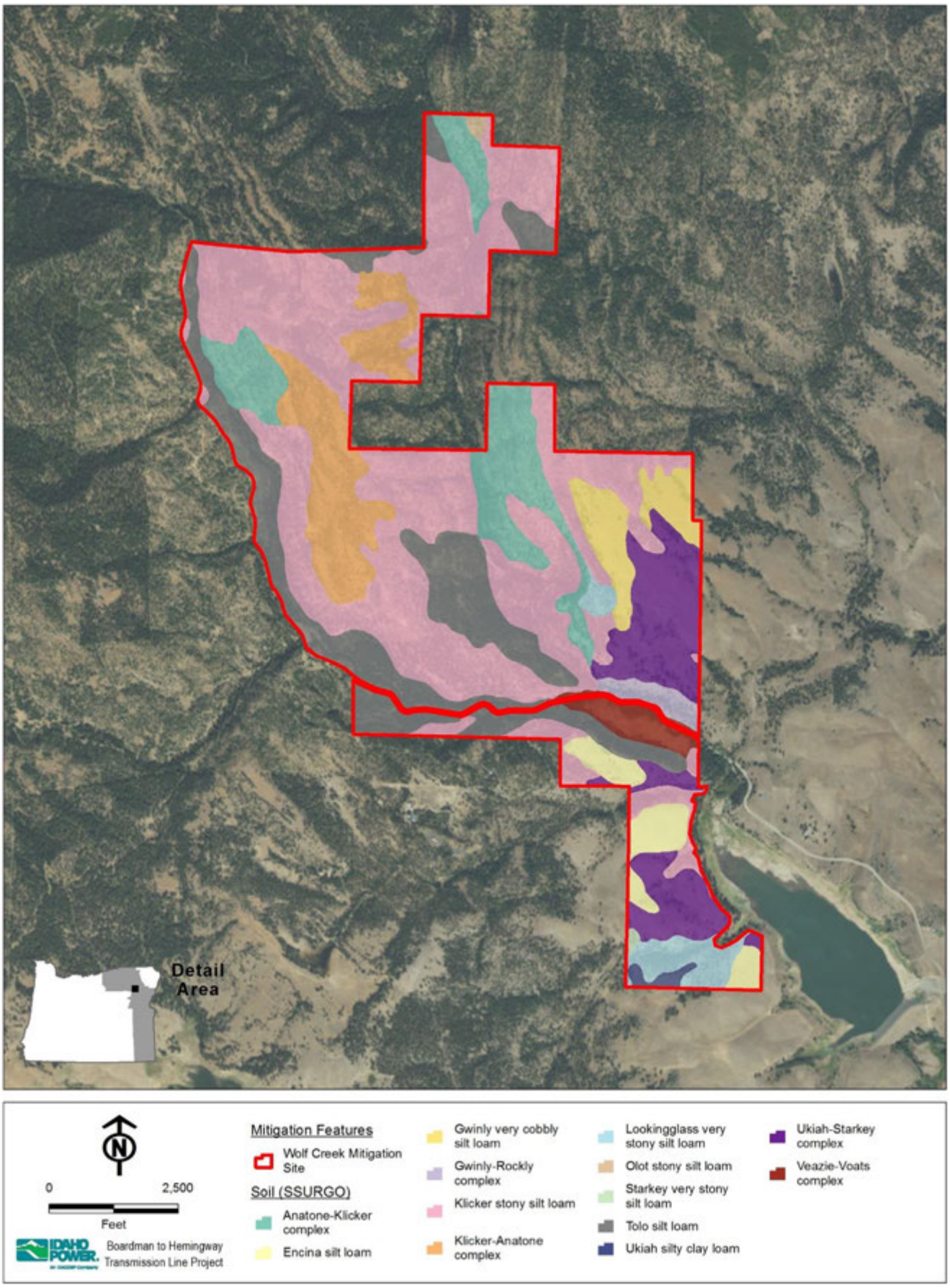

Figure 3. Wolf Creek Mitigation Site Soil Types

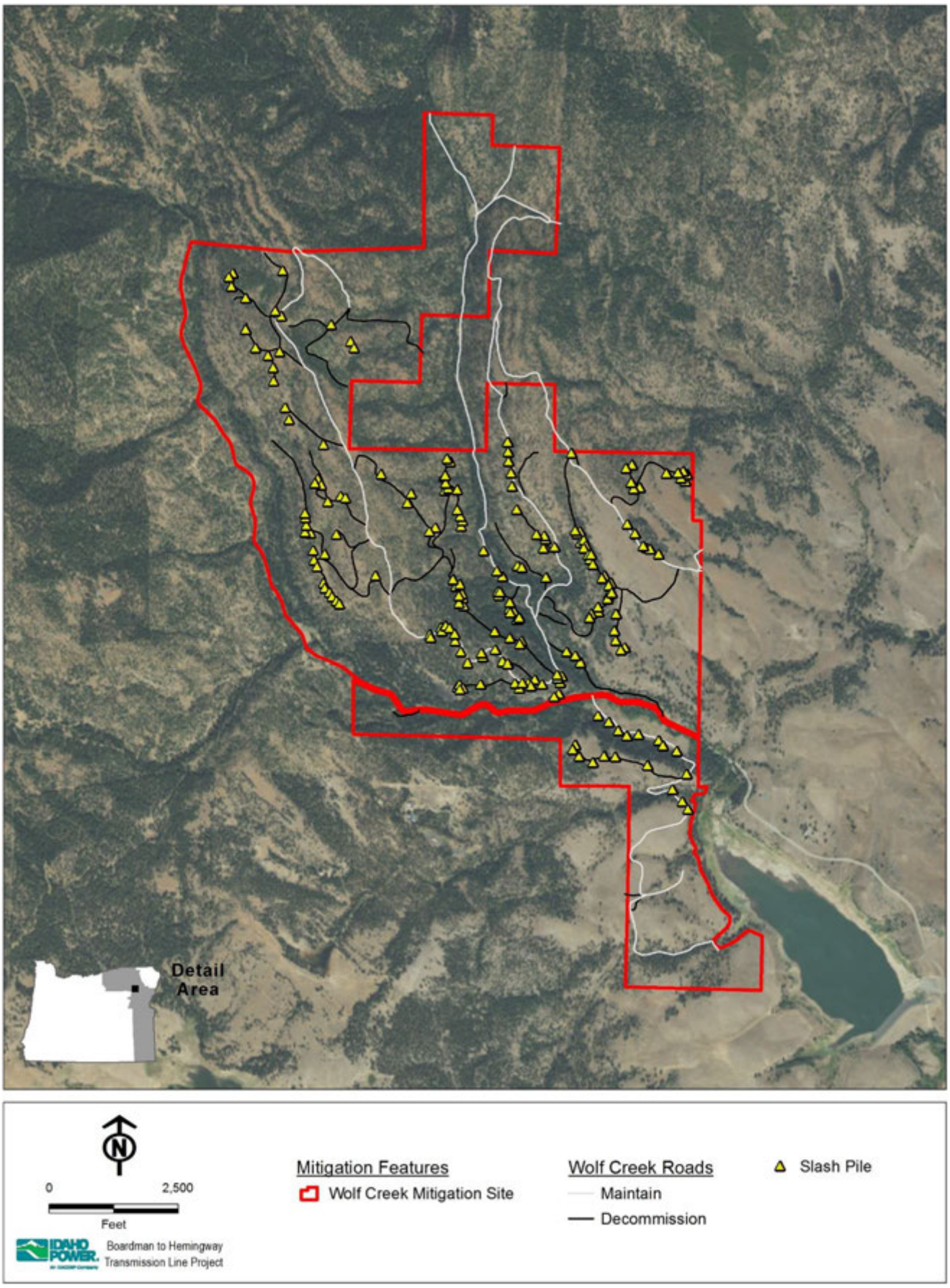

Figure 4. Wolf Creek Mitigation Site Slash Piles and Roads

Attachment P1-9

Avian Protection Plan

ATTACHMENT P1-9
AVIAN PROTECTION PLAN

Avian Protection Plan

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Wildlife Biologist

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March 2015

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INTRODUCTION

Legal and Regulatory Requirements

Policies

This compliance plan conforms to the IDACORP, Inc., *Code of Business Conduct*, *Federal Energy Regulatory Commission* (FERC) *Compliance Policy*, and *Avian Protection Standard*.

Purpose

Since 1972, Idaho Power Company (IPC) has been actively working to reduce avian electrocutions and collisions. Through partnerships with Morley Nelson and the Avian Powerline Interaction Committee (APLIC), IPC helped develop industry guidelines and the manual *Suggested Practices for Raptor Protection on Powerlines: The State of the Art in 1996* (including earlier editions) (Olendorff et al. 1981; Miller et al. 1975). IPC is a member of the APLIC, an organization that works in partnership with utilities, resource agencies, and the public to develop and provide educational resources; identify and fund research; develop and provide cost-effective management options; and serve as the focal point for avian interaction utility issues.

This *Avian Protection Plan* (APP) provides the guidance by which IPC manages and implements actions necessary to be compliant with applicable laws and internal environmental stewardship policies.

Several laws, including the *Migratory Bird Treaty Act of 1918* (MBTA), the *Bald and Golden Eagle Protection Act of 1940* (BGEPA), and the *Endangered Species Act of 1973* (ESA), protect migratory bird species. These laws prohibit killing or otherwise harming all birds native to North America, with the exception of introduced house sparrows (*Passer domesticus*), European starlings (*Sturnus vulgaris*), rock doves (*Columba livia*), mute swans (*Cygnus olor*), monk parakeets (*Myiopsitta monachus*), and non migratory upland game birds. Violation of the acts can result in misdemeanor or felony charges.

IPC's APP focuses on 3 types of bird/powerline interactions: 1) electrocution, 2) collision, and 3) nesting birds. Training is provided to employees to make them aware of federal regulations and permits and IPC procedures for each type of bird/powerline interaction.

Developing and implementing an effective APP helps IPC meet its regulatory requirements, maintain good standing with regulatory agencies and IPC customers, reduce bird-related outages, and efficiently and effectively manage avian interactions with IPC electrical facilities.

Scope

This APP integrates IPC's avian protection policies in a comprehensive document intended to assist field personnel in managing bird/powerline interactions and documenting the incidence of mortalities and problem nests of raptors and other large birds. This APP references the

Avian Protection Standard; *Avian Protection Procedures*; and sections of IPC's *Overhead Manual*, *Distribution Manual*, *Transmission Manual*, and *Materials Manual* for procedures, detailed specifications on design guidelines, and wildlife protection products. Avian protection procedures are outlined in both this APP and delivery manuals and documents.

ENVIRONMENTAL LEGISLATION AND PERMITS

Federal Laws

The following 3 federal laws protect and prohibit killing of most bird species:

- MBTA
- BGEPA
- ESA

MBTA

The MBTA (16 United States [U.S.] Code [USC] 703–712) protects migratory birds, their body parts, nests, and eggs. This act states the following shall be unlawful:

> … to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage or export, any migratory bird, or any body part, nest, or egg of any such bird unless and except as permitted by regulation.

The MBTA protects all birds native to North America, excluding house sparrows, European starlings, mute swans, rock doves, monk parakeets, and non-migratory upland game birds. Violations of the MBTA can result in a misdemeanor or felony charge.

BGEPA

Under the authority of the BGEPA, bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are given additional legal protection. Under the BGEPA, "take" is defined as "to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Violators of the BGEPA's take provision may be fined up to $100,000 and/or imprisoned for up to 1 year. The BGEPA has additional provisions where, in the case of a second or subsequent conviction, penalties of up to $250,000 and/or 2 years imprisonment may be imposed.

ESA

The ESA was passed by Congress to protect and conserve the U.S.' native plants and animals and their habitats that are in danger of becoming extinct. Section 9 of the ESA makes it unlawful for a person to take a listed species. Under the ESA, "take" is defined as follows:

> … to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Section 10 of the ESA allows for a habitat conservation plan for endangered species on private lands or for the maintenance of facilities on private lands. Private landowners who develop and implement approved habitat conservation plans can receive incidental take permits that allow their development to proceed.

While the MBTA has no provisions for allowing take, the U.S. Fish and Wildlife Service (FWS) realizes some birds will be killed even if all reasonable measures to avoid it are implemented. The FWS Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement and by fostering relationships with individuals, companies, and industries that have programs to minimize their impacts on migratory birds. Since a take cannot be authorized, it is not possible to absolve companies from liability even if they implement avian mortality avoidance measures. However, the Office of Law Enforcement does have enforcement discretion and focuses on those individuals, companies, or agencies that take migratory birds without regard for their actions and the law, especially when conservation measures have been developed but are not implemented.

Required Permits

IPC applies for and maintains permits, as required by law, for the possession and transport of protected avian species. Permits are required from the FWS, Idaho Department of Fish and Game (IDFG), the Oregon Department of Fish and Wildlife (ODFW), and the Nevada Department of Wildlife (NDW). Permits are valid for permittee and authorized subpermittees and any person who is employed by, or under contract to, IPC for the activities specified in this permit.

Conditions and authorizations of these permits include the following:

1. Compliance with all federal and state laws.

2. The permit must be carried and displayed, upon request, when conducting any authorized activity.

3. Authorization to take, transport, and relocate nests (containing eggs or chicks) of migratory birds from transformers and conductors when the threat of fire hazard and power outages is present and imminent at the current nest location. The FWS non-migratory bird office shall be notified within 72 hours of an active nest relocation, giving the location and details on relocation. This does not include the relocation of bald and golden eagle nests, nests of species listed as threatened or endangered under the ESA, or nests relocated for reasons other than imminent fire hazard or power outage.

4. Authorization to pick up and bury carcasses and partial remains of migratory birds. Authorization to pick up dead bald or golden eagles and turn them over to the state fish and game department or FWS Law Enforcement Office so they can be forwarded to the National Eagle Repository in Colorado. Authorized to transport eagle to a freezer or temporary storage until it can be turned over to state or federal personnel.

Injured birds must be picked up and transferred to a federally permitted wildlife rehabilitation center. Each permit includes a comprehensive list of stipulations and authorizations. The removal or relocation of an active or inactive eagle nest is not allowed. A special permit is required from the FWS prior to any action being taken. IPC submits an annual report to the FWS, IDFG, ODFW, and NDW documenting all birds collected by IPC as part of IPC's reporting requirements for special-use (salvage) permits. IPC works closely with the FWS, including their Office of Law Enforcement in Boise and the Alternative Energy Program lead in the Boise office, and the Region 1 FWS Migratory Bird Permit Office, in Portland, Oregon, to report raptor mortalities, turn over carcasses, communicate about retrofits performed in response to those mortalities, document proactive actions to prevent electrocutions and collisions, and discuss ongoing avian protection activities and resolve issues as they arise.

ELECTROCUTION

Biological Aspects

Birds are electrocuted when they make contact between 2 energized conductors or between an energized conductor and grounded hardware, thereby providing a pathway for electricity to flow between 2 points of contact. Many factors influence electrocution risk including 1) body size, 2) habitat, 3) age, 4) weather, and 5) powerline configurations with inadequately spaced conductors and/or ground wires.

Birds with large wingspans, such as eagles, are more susceptible to electrocution than smaller birds. However, small birds can be electrocuted on transformers or other poles with tightly spaced hardware. Power poles located in open habitats lacking natural perches provide sites for hunting, feeding, resting, roosting, and nesting. Birds using these structures have a greater electrocution risk. Habitats with a large prey base are attractive to raptors. Powerline structures located in these areas have increased use and, therefore, increased electrocution risk.
Young birds are less adept at taking off and landing on power poles and may choose more dangerous locations on a pole, increasing their risk. Wet weather can increase electrocution risk, since wet feathers are electrically more conductive than dry feathers and can elicit wing spreading behavior.

Construction Design Guidelines

New and Rebuild

IPC requires that new or rebuilt lines are built according to avian-safe guidelines. IPC has developed a map delineating 3 zones with differing, raptor-safe construction guidelines (Figure 1):

- **Zone 1**: No raptor restrictions (city limits)

- **Zone 2**: A 40-inch separation between conductors or between conductors and grounded parts where hawks and owls are potentially present (large agricultural areas)

- **Zone 3**: A 60-inch separation between conductors or between conductors and grounded parts where eagles are likely to be present (i.e., rangeland, agricultural land surrounded by rangeland or shrub steppe vegetation, federal land, and 0.25 miles from all rivers and major bodies of water [based on a modeled golden and bald eagle distribution]).

The 60-inch separation between energized and/or grounded parts is intended to allow sufficient clearance to accommodate an eagle's wrist-to-wrist span (APLIC 2006). APLIC (2006) noted that, in areas where eagles do not occur, 40 inches provides adequate separation for raptors other than eagles.

Any new line extensions or rebuilds in Zone 3 or eagle-use areas, such as rangeland or on federal land, shall use construction with at least 60 inches of spacing between conductors or between conductors and grounded hardware. If such spacing is not possible, energized parts and hardware must be covered to prevent bird electrocutions.

Areas where eagles are not found but other raptors, such as hawks and owls, are present require at least 40 inches of spacing between conductors or between conductors and grounded hardware. This area includes large blocks of agricultural land outside the city limits. The major difference between the 2 areas relates to tangent structures. The 40 inches of separation allows the use of 8-foot-wide crossarms. For exceptions to the 60-inch standard, see Appendix 1.

IPC has an established set of construction design guidelines for raptor-use areas (see the *Overhead Manual* and the *Transmission Manual*). Engineering diagrams for each type of distribution structure used at IPC are classified as either Zone 1—Not Avian Protected, Zone 2—40-inch Guideline, or Zone 3—60-inch Guideline. If a structure is not considered raptor safe modifications must be made to make the structure raptor-safe in raptor-use areas.

Retrofitting Existing Lines for Raptors

Structure modification may be necessary when dead and/or injured protected birds are found under powerline structures. Retrofitting to prevent electrocutions can include the following:

1. Reframing (lowering the crossarm, changing to a 10-foot-wide arm, or adding a pole top extension)

2. Covering jumper wires, conductors, and equipment

3. Discouraging perching in unsafe locations

4. Modifying ground wires (moving/removing grounds, adding a down-guy insulator)

5. Replacing a structure or equipment

6. Providing a perch above energized wires (recommended in combination with diverters)

In some cases, bird mortalities are found under or near IPC's powerline structures, but no retrofit is required due to the identified cause of death. Examples include gunshot mortality, single-incident collision mid-span, and carcasses (resulting from collisions with vehicles) landing near IPC's poles. The cause of death can be difficult to determine. In a study conducted in southwestern Idaho, 44 birds found under powerline structures were necropsied, and no cause of death could be determined for 45% of these birds (B. Lehman, U.S. Geological Survey [USGS], unpubl. data). When no cause of death can be determined, IPC may retrofit the pole if it does not meet raptor-safe standards.

Tracking Avian Protection Costs

IPC has been asked by the FWS to provide an accounting of annual expenditures for raptor and bird protection activities across its service area. To provide accurate accounting, all operation and maintenance (O&M) retrofits of distribution feeders and transmission lines are tracked separately.

Examples of work that shall be tracked by the avian protection program include the following:

1. Installation of osprey (*Pandion haliaetus*) platforms
2. Modification of poles associated with a raptor mortality
3. Installation of bird flight diverters/markers to prevent bird collisions
4. Proactive installation of bird guards to prevent squirrel/bird outages
5. Proactive modification of existing poles considered to have a high risk of electrocution.

Evaluation of Avian Protection Equipment

The wildlife protection equipment industry is a developing industry. Therefore, some products have not been tested thoroughly enough to ensure durability, effectiveness, and ease of installation. The Manual Review Committee meets semi-annually to discuss and evaluate changes to construction manuals and provide feedback on new and existing materials. The committee is composed of a cross-section of IPC Delivery employees, including linemen, line crew foremen, Methods and Materials (M&M) engineers, distribution designers, and skills instructors. This committee also provides feedback on wildlife protection equipment, such as conductor covers, cutout covers, triangle diverters with different attachment types, and collision markers, such as the Firefly™ Bird Flapper.

Feedback is also solicited on the effectiveness of avian protection equipment and any problems associated with the equipment during avian protection training. This feedback is used to refine installation protocols, identify problem products, replace problem products with products that have increased durability and ease of application, and compile information to evaluate the effectiveness of various retrofit measures.

POWERLINE COLLISIONS

Biological Aspects

Many factors influence the incidence of bird collisions with powerlines. Large, less maneuverable birds, such as pelicans (*Pelecanus erythrorhynchos*), Canada geese (*Branta canadensis*), and species that fly at high speeds and low altitudes, are frequently involved in collisions. Powerlines located in areas with high concentrations of birds due to ponds, reservoirs, and rivers show an increased risk of collision incidence. A primary factor in collision is whether and how often birds in flight must cross a powerline within their daily use area.

Procedures

All birds suspected of having collided with a powerline and causing an outage should be recorded in the Outage Management System (OMS) as a bird-caused outage, identifying collision as the cause. If the collision involved a raptor, it should be reported to IPC's Environmental Affairs department using the *Bird Mortality Report* form (Appendix 2) within 5 business days of discovery of the incident.

When siting a new line, planners shall consider the proximity of the line to high bird-use areas, vegetation that may attract birds, and topographical features that affect local and migratory movements. If a line is identified as having significant collision risk, remedial solutions shall be evaluated. The risk of collision may be reduced or eliminated by burying the line, relocating or reconfiguring the line, removing the overhead shield wire, or by marking the line to increase its visibility. Burying, relocating, or reconfiguring the line can be costly, but these solutions may be appropriate in some circumstances. Removing the shield wire may not be feasible for multiple spans due to operational or safety concerns but may be an option (subject to engineering constraints) when only a single span is involved. Research has shown that marking a line to increase its visibility can significantly reduce collision incidences. A variety of devices (i.e., marker balls, bird flight diverters, and/or Firefly Bird Flappers) are available to increase the visibility of both conductors and shield wires. For recommendations regarding the use of marking devices and remedial actions, contact IPC's Environmental Affairs department. Specific procedures are documented in internal IPC design manuals for approved marking products.

Site-Specific Evaluations

Collision sites may be identified through reports from line personnel, biologists, federal or state agencies, or the public. When a site is identified as having reoccurring collisions, a biologist will interview the person reporting the incident to collect information about the scope and magnitude of the collision problem. Depending on the nature of the collision problem, the site will be visited to determine the spans involved in the collisions, what species are using the site, and the species involved in the collisions. The biologist will evaluate topography that may affect local and migratory bird movements, distance to rivers or other bodies of water, and vegetation that may attract the birds. The biologist will also walk the line looking for additional carcasses or

signs of past carcasses. Outage reports will be evaluated to find any past outages attributed to collision.

After the initial evaluation, the biologist will make recommendations for further action, if necessary. Potential recommendations could include, but are not limited to, marking the conducting or static wires with markers (such as bird flight diverters or Firefly Bird Flappers); removing static wire; or recommending additional studies.

NEST MANAGEMENT

Nesting Platforms

Nesting platforms have proven to be valuable tools—in terms of reducing outages, protecting nesting birds, and increasing positive publicity—in dealing with problem raptor nests on power poles.

The osprey is the most common raptor using power poles for nesting; however, red-tailed hawk (*Buteo jamaicensis*), golden eagle, and ferruginous hawk nests are also occasionally found. Locating a vacant raptor nest during the non-breeding season provides an ideal opportunity to take preventive action before a problem develops; it is relatively simple to relocate a nest when birds are not present. A nest should be relocated, preferably on a nesting platform at a non-energized pole, near the pole on which the nest was originally situated. The new nest platform should be as tall as, or taller than, the existing pole. In some cases, a new pole cannot be installed, so a nest platform is placed above the crossarm. Securing a nest above energized equipment is not encouraged because birds are likely to drop nesting materials that could cause a fire or outage. Nest discouragers may need to be installed on the original nest pole to prevent birds from rebuilding.

Eagles and Endangered/Threatened Species' Nests

All eagles or endangered/threatened species' nests are protected by federal laws, regardless of whether the nest is active or inactive. Although an eagle nest on a powerline structure is uncommon, if a problem nest is suspected to be that of an eagle, IPC's Environmental Affairs department must be contacted prior to taking any action.

Inactive Nests

If a raptor pair is merely building a nest, or if a nest is unoccupied, the nest is considered inactive. It is then permissible to dismantle the nest and install a nesting platform or other necessary devices to prevent unwanted interactions between the birds and the electrical structure.

Active Nests

If a nest is occupied and contains eggs or chicks, it is considered active, and **disturbance is only permitted** when the threat of fire hazard and power outages is present and imminent at the current nest location. When an active nest must be moved, IPC's Environmental Affairs department (208-388-2979) should be notified immediately. All nests that are moved or

removed must be reported to Environmental Affairs and the FWS within 72 hours of the action being taken.

Line Maintenance Activities

Maintenance work at transmission structures conducted during the bird breeding season may require additional evaluation and operations to reduce impacts to migratory bird species. The breeding season for birds can range from February 1 through September 1, but most species nest between March 15 and July 31. Maintenance must be conducted regularly to ensure reliable power delivery and that powerlines meet North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC) mandatory requirements. Because the bird breeding season extends for much of the year, maintenance must occasionally occur when birds are nesting due to outage constraints, crew availability, and winter access constraints. To minimize impacts to migratory bird species protected by the MBTA and challenges surveying for their nests, IPC will implement best-management practices (BMP) to reduce potential impacts to migratory birds. For raptors, IPC will survey nests prior to maintenance activities and/or implement BMPs depending on the situation and level of maintenance occurring.

Line Maintenance and Raptors

IPC reviews each maintenance project to determine if it can be scheduled outside raptor breeding season. When maintenance work must be conducted during the breeding season, biologists conduct surveys as close as possible to the start of O&M activities, but no more than 3 weeks prior to the start of work, to identify locations of raptor nests on IPC structures or in surrounding vegetation, trees, or cliffs. For raptors nesting on IPC facilities, activities causing the adults to flush from the nest will be delayed until after young have fledged, except in emergency situations. For raptors nesting in surrounding trees, cliffs, or on IPC structures near work being conducted, spatial buffers will be used to avoid disturbance at the nest. If a nest falls within the spatial buffer, work causing the adults to flush will be delayed until after the young fledge. The distance may be reduced on a case-by-case basis if site-specific conditions, such as topography, prevent the maintenance work from being visible from the nest or if a major disturbance, such as a freeway, is located between, or adjacent to, the maintenance work and the nest. Spatial buffers are defined in Table 1 by species. No buffers are required outside the breeding season (i.e., when the nest is inactive).

Line Maintenance and Migratory Birds

BMPs will be implemented to reduce impacts to nesting migratory birds, including 1) driving on established roads and trails within the ROW boundary, 2) minimizing vegetation clearing or disturbance, and 3) being alert to nesting birds to avoid destroying nests. While accessing sites to conduct routine O&M[1], IPC will travel on established access and service roads, 2-track or

[1] Routine O&M is defined in BLM Master Agreement BLM-MA-ID-001.

off-highway vehicle (OHV) trails, and maintenance routes while using an OHV or a pick-up truck. If the site cannot be accessed by these means, crews will walk to the site. The defined routine O&M activities may occur on a regular or infrequent basis; may be completed in 1 day or span multiple days; and may damage vegetation and soil within previously disturbed areas (i.e., roads, trails, maintenance routes, structure pads) within the ROW boundary (see BLM Master Agreement, 2012, for additional information on routine maintenance). For maintenance that requires equipment to be driven off established roads or trails to gain access to a structure, the area will be walked to determine the path the equipment will follow, and if a bird is flushed in the area, the proposed access path will either be avoided or searched to determine if a nest is present. If a nest is found, a different route will be chosen.

Table 1
Nesting period and spatial buffers of selected raptor species

Species	Nesting Period Range	Average Nesting Period	Spatial Buffer (miles)
Golden eagle (*Aquila chrysaetos*)	8 Feb–10 Jul	2 Mar–16 Jun	0.50
Bald eagle (*Haliaeetus leucocephalus*)	1 Feb–15 Aug	2 Mar–15 Jul	0.50
Ferruginous hawk (*Buteo regalis*)	22 Mar–16 Jul	13 Apr–28 Jun	0.50
Great-horned owl (*Bubo virginianus*)	15 Jan–7 Jun	20 Feb–11 May	0.25
Burrowing Owl (*Athene cunicularia*)	10 Apr–5 Aug	30 Apr–12 Jul	0.25
Swainson's hawk (*Buteo swainsoni*)	20 Apr–14 Aug	8 May–21 Jul	0.25
Prairie falcon (*Falco mexicanus*)	1 Apr–16 Jul	14 Apr–24 Jul	0.50
Peregrine falcon (*Falco peregrinus*)	15 Mar–14 Jul	15 Apr–28 Jul	0.50
Northern goshawk (*Accipter gentilis*)	15 Apr–17 Jul	1 May–7 Jul	0.50
Osprey (*Pandion haliaetus*)	1 Apr–15 Aug	15 Apr–30 Jul	0.25
Red-tailed hawk (*Buteo jamicensis*)	18 Mar–20 Jul	11 Apr–25 Jun	0.25

Training

IPC will provide training once every other year to project line crews, project managers, and construction inspectors outlining BMPs when working during the migratory bird breeding season. Training will focus on reasons for the program (i.e., why this work is important for migratory birds, compliance with existing laws, and IPC's environmental stewardship policy). Training will instruct on BMPs for protecting migratory birds including 1) driving on established roads and trails within the ROW boundary, 2) minimizing vegetation clearing or disturbance, 3) following temporal or spatial buffer guidelines for raptor nests, and 4) being alert to nesting birds in order to avoid destroying nests. Training will also provide information on 1) detecting bird nests (looking for whitewash, flushing birds), 2) types of nests that may be encountered, 3) habitats where nests are most likely to occur, and 4) typical nesting periods for bird species that may be encountered. In addition, environmental stipulations for a project will be provided to each crew prior to initiation of work.

If IPC uses a contractor to perform routine O&M activities, the project manager and/or construction inspector will be responsible for ensuring the contractor understands and is implementing the requirements. IPC biologists may conduct on-site inspections and training to ensure contractors are following these requirements.

Vegetation Management

IPC employees annually inspect the company's powerline corridors across IPC's service area to determine what vegetation management is needed. Vegetation management is conducted regularly to ensure powerlines meet NERC and WECC mandatory requirements; provide safe access for crews when they conduct inspection and maintenance activities; and minimize the potential for wild land fires. Crews remove vegetation within the right-of-way (ROW) that currently, or could potentially, interfere with safe operation of the line. Crews also remove hazard trees—trees that occur outside the ROW but pose an imminent risk of falling into lines or structures—that could result in an outage and/or ignition source.

Line-Clearing Procedures Addressing the MBTA

Line-clearing crews will inspect shrubs, trees, and hazard trees to be trimmed or removed for active bird nests prior to cutting. If a cavity is found, a flash photo will be taken inside the cavity to determine if the cavity is occupied. If an active nest is found, the location will be noted and provided to the IPC arborist in charge. If the vegetation is an imminent threat to public health and safety, the arborist will contact the avian protection coordinator, who will contact the FWS for appropriate permits allowing the nest to be moved or destroyed. If there is not an imminent threat and the vegetation must be trimmed prior to the next vegetation management cycle, the arborist will schedule it to be treated after the nesting season. If ROW clearing is to be expanded into previously untreated vegetation, a nesting survey would be coordinated by Environmental Affairs prior to clearing. Based on the results of the survey, a treatment plan would be developed to protect active nests.

Training

IPC will provide annual training to foresters/arborists and contract line-clearing crews to identify and protect nests consistent with the MBTA. Training will focus on reasons for the program (i.e., why this work is important for migratory birds, compliance with existing laws, and IPC's environmental stewardship policy). Training will include what to look for when inspecting trees prior to trimming: 1) whitewash (concentrations of white-colored droppings, 2) types of nests that may be encountered, 3) habitats where nests are most likely to occur, and 4) typical nesting periods for bird species that may be encountered. Training will also outline procedures to follow if a nest is found.

INJURED BIRDS

When a customer contacts IPC regarding a live bird caught in IPC's hardware, one of the rehabilitators in the Contact Lists section of this document should be contacted. In addition, the local IDFG or ODFW office and IPC's Environmental Affairs department (208-388-2979,

cell 208-861-4605) should be notified of the situation. Most often, the rehabilitators can meet a line crew at the site to examine the bird. If the bird is not injured, it will be put back into the nest or released immediately. If the bird is injured, the rehabilitator can take possession of the bird and care for it until it can be released. If a rehabilitator cannot be located, the local IDFG or ODFW office should be contacted for further information.

If the bird is dead, IPC Lines personnel should remove it from the hardware. A *Bird Mortality Report* form should be filled out and IPC's Environmental Affairs department contacted. Non-eagle specimens found near IPC transmission and distribution lines may be buried on-site or transported to a landfill. All eagle specimens must be collected by the Environmental Affairs department and turned over quarterly to the FWS special agent. At remote areas within the IPC service area, eagles may be turned over to the local IDFG or ODFW office.

Contact Lists

Tables 2 through 4 contain contact information for local wildlife agencies and raptor rehabilitators licensed through the state and federal governments to handle and care for injured hawks, eagles, owls, and osprey (raptors). The following contact lists are included:

- Licensed rehabilitators
- IDFG
- ODFW

Table 2
Licensed rehabilitators

Name	Contact Number	Address
Boise		
Cathie Havlina[1]	208-336-1218 719-251-6776	
Toni Bastidia-Hicks	208-345-0559	1602 Jefferson, Boise, ID 83712
Animals in Distress	208-338-0897	
Mady Rothchild	208-344-0468	2201 W. Boise Ave., Boise, ID 83706
Burley		
Tim Ferguson	208-677-2116	88 E. 500 S., Burley, ID 83318
Eagle		
Diana Siterides	208-939-5485	105 W. Rush Court, Eagle, ID 83616
Fruitland		
Keith Schuller[1]	208-452-3377	
Garden Valley		
Janelle Morosco-Leezer	208-462-3588 (w) 208-384-3421	HC 76, Box 2546, Garden Valley, ID 83622

Table 2 (cont.)

Name	Contact Number	Address
Idaho City		
Joan Marston	208-392-4976	2517 Centerville Rd., Centerville, ID 83622
Idaho Falls		
Jim Porter	208-589-1504	
Kimberly		
Julie Randell[1]	208-423-4268	3952 N. 3600 E., Kimberly, ID 83341
Kuna		
Morgan Peters	812-219-8866	
McCall		
Janet Star		
Long Valley Vet Clinic	208-634-2660	P.O. Box 885, McCall, ID 83638
Snowden Wildlife Sanctuary[1]	208-634-8050	P.O. Box 1731, McCall, ID 83638
Middleton		
James McKinley	208-585-2203	24979 Hartley Lane, Middleton, ID 83644
Lucy Nickerson	208-585-6160	27497 Middleton Rd., Middleton, ID 83644
Nampa		
Monte Tish[1]	208-697-3910	407 5th Ave., Nampa, ID 83651
Daniel and Stephanie Gossett	208-465-8059 208-385-4137 (w) 208-385-3329 (w)	4910 Health Way, Nampa, ID 83687
Oakley		
Miriam Austin	208-436-1562	P.O. Box 65, Oakley, ID 83346
Salmon		
Linda Cohen	208-894-2478	
Wendell		
Debra Nichols	208-536-5670	3577 S. 1500 E., Wendell, ID 83355

[1] Holds Federal Rehabilitation Permit

Table 3
IDFG contact list

Location	Address	Contact Number	Fax
Headquarters/Boise	600 S. Walnut P.O. Box 25 Boise, ID 83707	208-334-3700	208-334-2114 or 208 334-2148
Southwest Region/Nampa	3101 S. Powerline Road Nampa, ID 83686	208-465-8465	208-465-8467
McCall	555 Deinhard Lane McCall, ID 83638	208-634-8137	208-634-4320
Magic Valley Region/Jerome	868 East Main Street P.O. Box 428 Jerome, ID 83338	208-324-4350	208-324-1160
Southeast Region/Pocatello	1345 Barton Road Pocatello, ID 83204	208-232-4703	208-233-6430
Upper Snake Region/Idaho Falls	1515 Lincoln Road Idaho Falls, ID 83401	208-525-7290	208-523-7604
Salmon Region	1214 Hwy 93 N. P.O. Box 1336 Salmon, ID 83467	208-756-2271	208-756-6274

Table 4
ODFW contact list

Location	Contact Number
Ontario	541-889-6975
LaGrande	541-963-2138
Baker City	541-523-5832

TRAINING

Training Requirements

Training procedures are identified in the *Avian Protection Procedures*. Training IPC employees is a key element for effective implementation of this APP. All appropriate IPC employees, including managers, supervisors, line crews, dispatch, engineering, and design personnel shall receive training to implement this APP. Training is documented through IPC's Performance Management System, which documents attendance, scheduling, and course content through lesson plans.

Training will be conducted at operations centers with appropriate employees. This training will consist of an overview of the reasons for the program; the procedure for reporting raptor mortalities, including communication of 5-day reporting period and 90-day retrofit period;

avian safe guidelines for new construction and retrofitting; procedures for nest management and collision; and current wildlife protection products used by IPC. Computer-based training will be available to non-field employees and those unable to attend training at the operations centers. Training will be conducted once every 2 years.

Training Plan

Training requirements identified previously will be tracked through the Performance Management System.

Ongoing Communication and Awareness

Communication and awareness of existing compliance requirements is achieved by the aforementioned training. Any new requirements will be delivered by management and incorporated into the existing training programs and LMS as required.

MORTALITY DATABASE

IPC's Raptor Mortality Database was initiated in 1972. In earlier years, reports were primarily from federal or state agencies. Since then, the majority of reports have come from internal sources. The mortality database is managed to track bird mortalities and allows query and analyses of these records to help identify problem lines or regions.

IPC patrolmen typically visit all transmission lines biannually and all distribution lines at least once every 3 years to identify repairs needed and report raptor mortalities found. When outages are identified, lineman that are on-call to restore power identify the cause of the outage and report mortalities found. Upon discovery of a powerline-related mortality, a completed *Bird Mortality Report* must be sent to IPC's Environmental Affairs department within 5 business days. Subsequent structural retrofits must be completed within 90 days for distribution and 180 days for transmission of receipt of the *Bird Mortality Report* by Environmental Affairs unless an extension is granted by the avian protection coordinator.

Mortality records are entered into an Excel spreadsheet and reported annually to the FWS, IDFG, NDW, and ODFW. Information collected on this form includes the following:

1. Location of the mortality
2. Identification of the bird
3. Habitat associated with the mortality
4. Cause of death
5. Pole type, configuration, and hardware present on the pole
6. Modifications made

OUTAGE REPORTING

Animal- and bird-caused outages are costly. Bird-related outages have been reported to cause 1 to 25% of all outages (APLIC 2006). Bird-related outages can impact power reliability and increase utility costs. Costs associated with outages include 1) lost sales of electric power during outages, 2) restoration of power outages and repair of equipment damaged during outages, 3) labor for removing nests and other mitigation measures, 4) indirect costs for utility management of outages and bird protection, and 5) customer loss of service resulting in inconvenience or possible serious risk to their safety or health.

Bird-related outages may occur due to an avian electrocution or collision. However, there are several causes of bird-related outages that do not result in the death of a bird. For example, bird nest debris may cause outages without harming nesting birds; large flocks of birds sitting on a conductor can weigh the conductor down, causing it to gallop when the flock flushes; birds dropping prey or nesting material on energized lines can complete a circuit; or bird streamers or contamination of equipment due to accumulated feces may create an arc.

A number of bird-related outages may involve unprotected species (i.e., starling, house sparrow, and rock dove), but raptors and other protected species also are involved in outages. According to an assessment of 2,174 bird-related outages in the western U.S., 60% were due to non-protected birds; 21% were attributed to protected bird deaths; 12% were suspected as bird-caused, although no carcasses were found (e.g., flocks flushing lines); and 7% were due to bird nests not associated with a mortality (PacifiCorp, unpubl. data, taken from APLIC 2006).

When a bird-related outage occurs, dispatchers and linemen shall record as much detail as possible in the outage reports. When known, the species shall be recorded (if the species is unknown, the identity shall be noted as small bird, hawk, waterfowl, etc.) along with the cause of outage (bird electrocution, bird collision, nesting material, excrement, flock flushing, etc.). This information is useful in identifying outage trends, such as equipment or pole types commonly involved in bird-related outages, species frequently involved, and specific areas or feeders with high outage incidence due to bird activity. Analyses of these trends will help reduce outages in the future.

All large birds (e.g., raptors, pelicans, ravens) shall be recorded in the outage reporting system, and a raptor mortality report form shall be sent to IPC's Environmental Affairs department. Small bird species (e.g., starlings) need to be reported only in the outage reporting system. Individual feeders will be evaluated to determine necessary retrofits.

RISK ASSESSMENT

Avian Protection Risk Assessment

IPC will annually evaluate a targeted subset of poles for the risk of avian electrocution. Surveys will be conducted to evaluate structure configuration, evidence of avian activity, and the presence of dead birds or nests.

Risk assessment procedures can be useful aids when deciding where to allocate limited dollars over large geographic areas. Risk assessments will be targeted in areas with recent raptor mortalities to quickly address issues as they arise.

Trained observers walk the ROWs recording data on structure configuration, evidence of avian activity (whitewash, pellets, prey remains, raptor observed using pole) and the presence of dead birds. Observers will search a radius of 15 feet around each pole for carcasses and evidence of bird activity and walk under the line between poles to search for potential victims of collision. At each pole, the observer will record the GISO number, habitat type, pole configuration, mortality (a separate *Bird Mortality Report* form will be recorded for each mortality), live species observed and the presence of nests and will assess whether the structure is avian-safe. Notes may be recorded in the comments field about topographical features (pole at the highest point), ground squirrel colonies, nearby nests, and other notable features. Scores will be assigned to each non-avian safe pole based on evidence of raptor use, presence of raptor nests, and structure configuration.

After the completion of the feeder risk assessment survey, structures with mortalities will be retrofitted within the prescribed timeframe, while structures with high risk scores will be prioritized for retrofitting based on their relative risk. Additional risk assessment procedures are identified in the *Avian Protection Procedures*.

IPC is developing a model using a geographic information system (GIS) to identify highest priority areas for conducting surveys and retrofits. The model uses habitat layers, historic and recent raptor mortalities, known nest locations, and draft IDFG modeled golden eagle potential nesting sites to rank poles and areas of highest risk. The model will be validated and refined using collected risk assessment data.

COMMUNITY EDUCATION

IPC provides information to the public through presentations at service clubs, schools, and community organizations. During the 2005 to 2006 school year, community education representatives made presentations to nearly 66,500 people. IPC developed a new presentation specifically on raptors and raptor protection that was rolled out during the 2007 to 2008 school year. These presentations may encourage the public to report bird mortalities and may also encourage them to seek assistance for birds injured in powerline-related accidents.

IPC developed a new avian protection brochure in 2010 to educate the public about our raptor protection efforts. This booklet is available on our website at http://www.idahopower.com/pdfs/ourEnvironment/brochures/BirdBook.pdf.

ACKNOWLEDGEMENTS

Thanks to Brian Liberty of IPC's GIS department for developing the GIS map for avian protection zones. Thanks also to Rich Canderan, Jun Golo, Ben Hendry, Chris Potter, and Tim Phillips of IPC's Methods and Materials department for their efforts in developing the construction design guidelines and to operations center personnel for their input and feedback that went into the development of this plan.

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Miller, A. D., E. L. Boeker, R. S. Thorsell, and R. R. Olendorff. 1975. Suggested practices for raptor protection on powerlines. Washington, DC: Edison Electric Institute, and Provo, UT: Raptor Research Foundation, Inc.

Olendorff, R. R., A. D. Miller, and R. N. Lehman. 1981. Suggested practices for raptor protection on powerlines—the state-of-the-art in 1981. St. Paul, MN: Raptor Research Report No. 4. Raptor Research Foundation.

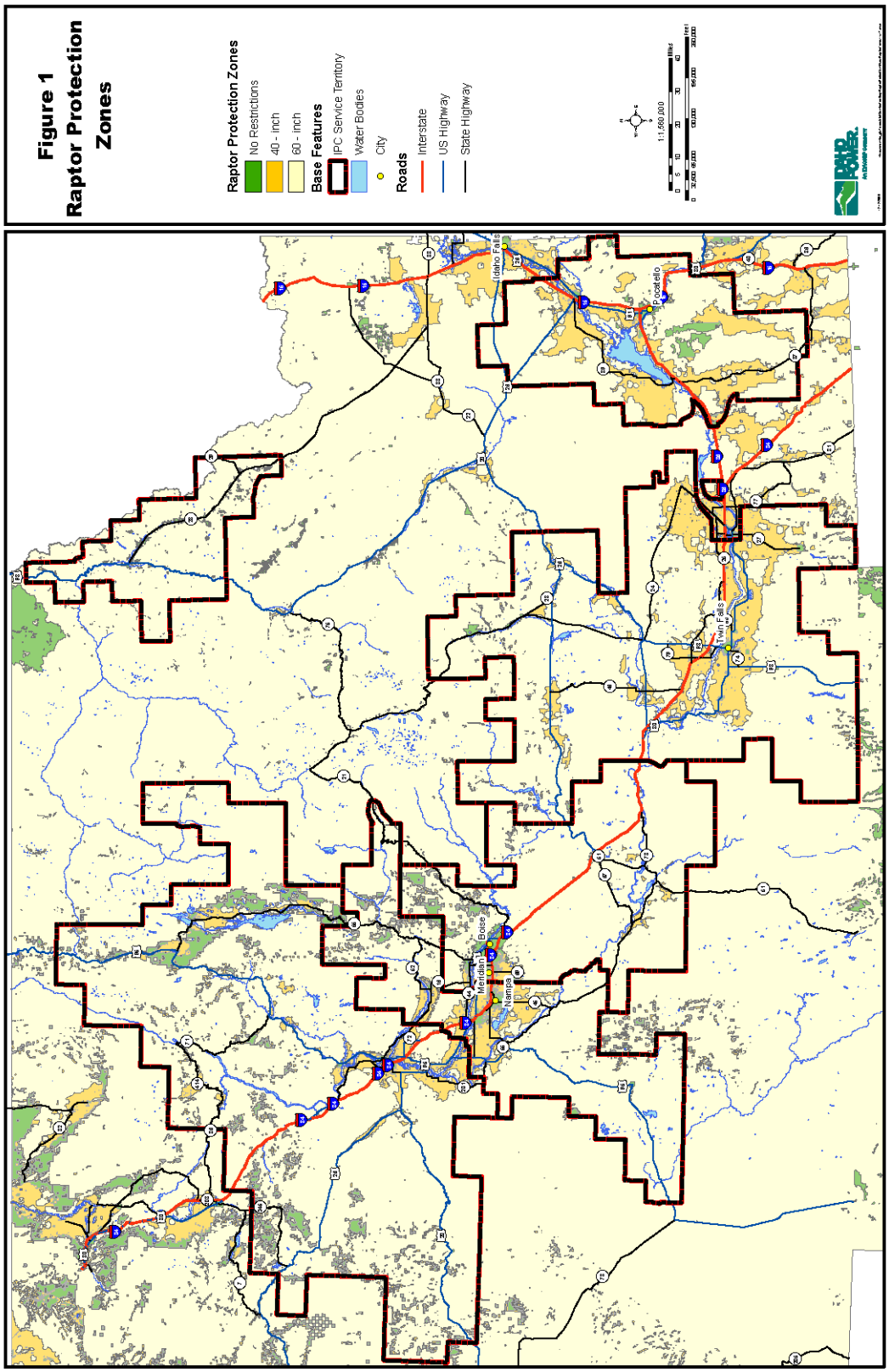

Figure 1
Map showing raptor-use areas

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Appendix 1
Exceptions to the 60-inch design guidelines

EXCEPTIONS TO THE 60-INCH DESIGN GUIDELINES

In the 1970s, Morley Nelson evaluated the electrocution risk of eagles to identify configurations and voltages that could electrocute birds. Because bird feathers provide insulation when dry, contact must typically be made with fleshy parts, such as the skin, feet, or bill. Nelson determined that 60 inches of spacing is necessary to accommodate the wrist-to-wrist distance of an eagle. As a result, a 60-inch separation has been widely accepted as the standard for eagle protection since the 1975 edition of *Suggested Practices for Raptor Protection*.
Although wingspans can measure up to 7.5 feet for golden eagles and 8 feet for bald eagles, the distance between fleshy parts (wrist to wrist) is less than 60 inches. Wrist-to-wrist measurements are available in APLIC (2006); the maximum wrist to-wrist distance for golden eagles was 42 inches and the largest wrist-to-wrist distance for bald eagles was 34 inches.
The maximum wingspans for common hawks and owls in Idaho Power Company's (IPC) service area as reported in APLIC (2006) were 56 inches for red-tailed hawk, 54 inches for Swainson's hawk, 56 inches for the rough legged hawk, and 51 inches for the great-horned owl.

IPC's design guidelines use the 60-inch separation standard as the basis for its eagle-safe designs. However, in a limited set of circumstances, IPC makes an exception to the 60-inch spacing standard.

Triangular–Hi-Lite Structure

The triangular–Hi-Lite (TR–HL) structure is the preferred method to build a 138-kilovolt (kV) triangular configuration with polymer Hi-Lite insulators. This structure is also used for new 69-kV lines in raptor areas. It is used for tangent construction where no angles are involved and where a shield wire is not required. Although the horizontal post insulator is 60 inches long, the 60 inches includes the mounting base—which is grounded—and suspension clamp—which is energized. The spacing from energized conductor to grounded base is only 49 inches.

While the TR–HL does not meet the 60-inch standard, IPC believes it meets the intent of the 60 inches of spacing recommended by APLIC (2006). The 49 inches is much greater than the maximum wrist-to-wrist distance found for eagles (42 inches). In addition, IPC has never had a mortality reported on this type of construction and is not aware of other utilities having electrocutions on this type of construction (Sherry Ligouri, PacifiCorp, pers. comm.; Mike Best, Pacific Gas and Electric Company [PG&E], pers. comm.). Therefore, IPC believes the 49 inches of spacing affords birds adequate protection.

Distribution Rebuilds with Inadequate Pole Height

IPC is replacing insulator pins on distribution poles throughout its service area. As part of this work, the 7-foot, 8-inch crossarm is being replaced with a 10-foot arm. Most existing construction has the crossarm lowered 12 inches from the top of the pole. To achieve 60 inches of spacing with a 10-foot crossarm, the crossarm must be lowered 24 inches from the top of the pole. In some cases the pole is not tall enough or equipment is present that precludes lowering

the crossarm an additional 12 inches. A 10-foot crossarm lowered 12 inches provides a separation of 56 inches between conductors. IPC believes that, in the specific situation of existing poles where lowering the crossarm is precluded, 56 inches provides sufficient clearance for hawks and eagles and provides protection similar to a 60-inch clearance. The alternatives to attain the 60 inches of spacing would be to replace with a 7-foot, 8-inch crossarm and add an insulator cover. IPC believes the birds are better served by increasing the spacing between conductors rather than by adding a conductor cover.

Appendix 2
Bird mortality report

Office Use
Report # _____

Bird Mortality Report

Location

State	County	Report Date	Approx. Mortality Date	Date of Discovery
Legal Description *(Township Range Section or UTM)*			How was it found? ☐ Incidental ☐ Outage ☐ Carcass search ☐ Other	

Identification

Species *(Describe if necessary.)*	Number *(of carcasses)*	Age	Sex
		☐ Adult ☐ Juv ☐ SubAd ☐ Unkn	☐ M ☐ F ☐ Unkn

Vegetation at Site
- ☐ Shrub/Grass
- ☐ Stream/River
- ☐ Forest
- ☐ AG/Farm
- ☐ Pasture
- ☐ Grassland
- ☐ Developed

Topography
- ☐ Hilly
- ☐ Flat
- ☐ Steep
- ☐ Cliff

Mort Source
- ☐ Electrocution
- ☐ Unknown
- ☐ Poss. Electro
- ☐ Gunshot
- ☐ Collision
- ☐ Predator
- ☐ Poss. Collision
- ☐ Entangled
- ☐ Other: _____

Body Condition
- ☐ Fresh Dead
- ☐ Dead (older than 1 day)
- ☐ Decomposed
- ☐ Desiccated

Body Description
- ☐ Carcass
- ☐ Parts
- ☐ Alive Sick
- ☐ Alive injured
- ☐ Art. Skeleton
- ☐ Feather spot
- ☐ Bones

Distance Carcass Located From… **Pole *(ft)*** _____ **… Nearest Road *(ft)*** _____

Line Type

☐ Distribution ☐ Transmission	Feeder or Line Number	Structure Number / GISO Number	Line Voltage

Pole Type
- ☐ Armless *(no crossarm)*
- ☐ Armless *(with apparatus)*
- ☐ Crossarm : Tangent
- ☐ Crossarm *(with additional apparatus)*
- ☐ Crossarm *(with guys or other hardware)*
- ☐ Corner, Angle, Dead end *(w/ jumpers)*
- ☐ Underbuilt
- ☐ Other *(describe below)*

Configuration
- ☐ Single Phase *(neutral up)*
- ☐ Single Phase *(neutral down)*
- ☐ Two Phase *(neutral up)*
- ☐ Two Phase *(neutral down)*
- ☐ Three Phase *(neutral up)*
- ☐ Three Phase *(neutral down)*
- ☐ Transmission *(with static)*
- ☐ Other *(describe below)*

Apparatus
- ☐ Transformer
- ☐ Arrestor
- ☐ Cutout
- ☐ Switch
- ☐ Regulator
- ☐ Capacitor
- ☐ Reclosure
- ☐ Jumper wires
- ☐ Bad insulator cover
- ☐ None

Did ground contribute to electrocution? ☐ No ☐ Yes

Crossarm length: ☐ 8 ft. ☐ 10 ft. ☐ 11 ft. ☐ Fiberglass ☐ Metal Brackets ☐ Armless ☐ Other *(describe below)*

Recommended Action

- ☐ Cover Jumpers
- ☐ Reframe Structure
- ☐ Move Grounds
- ☐ No Action
- ☐ Replace Structure
- ☐ Install Insulator Cover
- ☐ Install Switch cover
- ☐ Other *(describe below)*

Structure Modified: ☐ No ☐ Yes *(please explain)* **Carcass Disposition:** ☐ Buried ☐ Landfill ☐ Collected

Comments

_____

_____

Report Prepared By	Company / Agency	Phone Number

PSD 007 (4/14) CID# 20620 Send to Natalie Turley—CHQ-5. IPC

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Attachment P2-3

Greater Sage-Grouse Habitat Mitigation Plan

ATTACHMENT P2-3
GREATER SAGE-GROUSE HABITAT MITIGATION PLAN

Greater Sage-Grouse Habitat Mitigation Plan

Boardman to Hemingway Transmission Line Project

1221 West Idaho Street
Boise, Idaho 83702

Mark Stokes, Project Leader
(208) 388-2483
mstokes@idahopower.com

Zach Funkhouser, Permitting
(208) 388-5375
zfunkhouser@idahopower.com

September 2018

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ACRONYMS AND ABBREVIATIONS

Action Plan	Oregon Sage-Grouse Action Plan
HMP	Habitat Mitigation Plan
HQT	habitat quantification tool
IPC	Idaho Power Company
Mitigation Manual	Greater Sage-Grouse Mitigation Manual
OAR	Oregon Administrative Rule
Project	Boardman to Hemingway Transmission Line Project
SSP	site-specific plan

1.0 INTRODUCTION

Oregon's Greater Sage Grouse Conservation Strategy—Chapter 635, Division 140 of the Oregon Administrative Rules (OAR)—requires compensatory mitigation to address unavoidable direct and indirect impacts to greater sage-grouse (*Centrocercus urophasianus*, hereafter sage-grouse) habitat. This Greater Sage-Grouse Habitat Mitigation Plan (HMP) describes how unavoidable impacts to sage-grouse habitat from the Boardman to Hemingway Transmission Line Project (Project) will be mitigated.

Prior to commencement of construction, Idaho Power Company (IPC) will secure the legal authority to conduct the required mitigation actions at compensatory mitigation sites with sufficient credits to offset the impacts of the Project. IPC will evaluate the types and functionality of the habitat at each site through on-the-ground surveying and will develop a comprehensive management plan for each site. In the meantime and in order to show there are mitigation site opportunities sufficient to meet the needs of the Project, IPC identifies potential mitigation sites currently on the market and provides a desktop-level assessment of the credits available at each site (see Appendix A).

2.0 APPLICABLE RULES AND EXECUTIVE ORDER PROVISIONS

2.1 General Standards for Siting Facilities

The Fish and Wildlife Habitat Standard at OAR 345-022-0060 states:

> *For the Council to issue a site certificate, it must find that the design, construction, and operation of the facility, taking into account mitigation, are consistent with the fish and wildlife habitat mitigation goals and standards of OAR 635-415-0025 in effect as of September 1, 2000.*

2.2 Greater Sage-Grouse Conservation Strategy for Oregon

Policy 2 and 3 of Oregon's Greater Sage-Grouse Conservation Strategy at OAR 635-140-0025(2) and (3), respectively, provide:

> *Policy 2. The Department may approve or recommend approval of mitigation for impacts from a large-scale development permitted by a county; or development actions permitted by a state or federal government entity on public land, within sage-grouse habitat only after the following mitigation hierarchy has been addressed by the permitting entity, with the intent of directing the development action away from the most productive habitats and into the least productive areas for sage-grouse (in order of importance: core area, low density, general, and non-habitat).*
>
> *. . .*
>
> > *(e) Compensatory Mitigation. If avoidance and minimization efforts have been exhausted, compensatory mitigation to address both direct and indirect impacts will be required as part of the permitting process for remaining adverse impacts from the proposed development action to sage-grouse habitat, consistent with the mitigation standard in (3) Policy 3 below.*
>
> *Policy 3. The standard for compensatory mitigation of direct and indirect habitat impacts in sage-grouse habitat (core[,] low density, and general areas) is to achieve net*

conservation benefit for sage-grouse by replacing the lost functionality of the impacted habitat to a level capable of supporting greater sage-grouse numbers than that of the habitat which was impacted. Where mitigation actions occur in existing sage-grouse habitat, the increased functionality must be in addition to any existing functionality of the habitat to support sage-grouse. When developing and implementing mitigation measures for impacts to core, low density, and general sage-grouse habitats, the project developers shall:

(a) Work directly with the Department and permitting entity to obtain approval to implement a mitigation plan or measures, at the responsibility of the developer, for mitigating impacts consistent with the standard in OAR 635-140-0025(3) or,

(b) Work with an entity approved by the Department to implement, at the responsibility of the developer, "in-lieu fee" projects consistent with the standard in OAR 635-140-0025(3).

(c) Any mitigation undertaken pursuant to (a) or (b) above must have in place measures to ensure the results of the mitigation activity will persist (barring unintended natural events such as fire) for the life of the original impact. The Department will engage in mitigation discussions related to development actions in a manner consistent with applicable timelines of permitting entities.

2.3 Habitat Classification

Oregon's Greater Sage-Grouse Conservation Strategy addresses impacts to the following habitat types: areas of high population richness; core area habitat; low density habitat; and general habitat. Table 1 sets forth the definition for each of those habitat types:

Table 1. Sage-Grouse Habitat Types

Category Type	Definition Provided in OAR 635-140-0002
Areas of High Population Richness	[M]apped areas of breeding and nesting habitat within core habitat that support the 75th percentile of breeding bird densities (i.e., the top 25%).
Core Area	[M]apped sagebrush types or other habitats that support greater sage-grouse annual life history requirements that are encompassed by areas: a) of very high, high, and moderate lek density strata; b) where low lek density strata overlap local connectivity corridors; or c) where winter habitat use polygons overlap with either low lek density strata, connectivity corridors, or occupied habitat." Core area maps are maintained by the Department.
Low Density	[M]apped sagebrush types or other habitats that support greater sage-grouse that are encompassed by areas where: a) low lek density strata overlapped with seasonal connectivity corridors; b) local corridors occur outside of all lek density strata; c) low lek density strata occur outside of connectivity corridors; or d) seasonal connectivity corridors occur outside of all lek density strata." Low density area maps are maintained by the Department.
General Habitat	[O]ccupied (seasonal or year-round) sage-grouse habitat outside core and low density habitats.

2.4 Executive Order No. 15-18 and the Oregon Sage-Grouse Action Plan

On September 16, 2015, Oregon Governor Kate Brown signed Executive Order No. 15-18, adopting the Oregon Sage-Grouse Action Plan (Action Plan; Sage-Grouse Conservation Partnership 2015) as the plan for the conservation of sage-grouse in Oregon. The Plan included

as Appendix 6 the Greater Sage-Grouse Mitigation Manual (Mitigation Manual),[1] which provides guidelines and processes for compensating for development impacts to sage-grouse habitat in Oregon.

3.0 ANALYSIS

Proponents of large-scale development projects in sage-grouse habitat must first show that impacts to sage-grouse habitat have been avoided and minimized in accordance with Oregon's Greater Sage Grouse Conservation Strategy (see Mitigation Manual, p. 32). In furtherance of that objective, project proponents must provide ODFW with a mitigation plan that outlines avoidance and minimization measures, as well as an estimate of mitigation credits needed to provide a net benefit to sage-grouse and its habitat in accordance with OAR 635-140-0015 and -0025 (see Mitigation Manual, p.31).

3.1 Sage-Grouse Habitat Map

Figure 1 provides an overview of the sage-grouse habitat near the Project in Oregon. Exhibit P2, Attachment P2-1 contains a map-book that shows the same at a finer scale.

[1] To the extent the content of the Mitigation Manual is used or duplicated in this HMP, the following acknowledgement applies: "This content was created in part through the adaptation of procedures and publications developed by Environmental Incentives, LLC, Environmental Defense Fund, and Willamette Partnership, but is not the responsibility or property of any of these entities" (see Mitigation Manual, p. 1) (open content license).

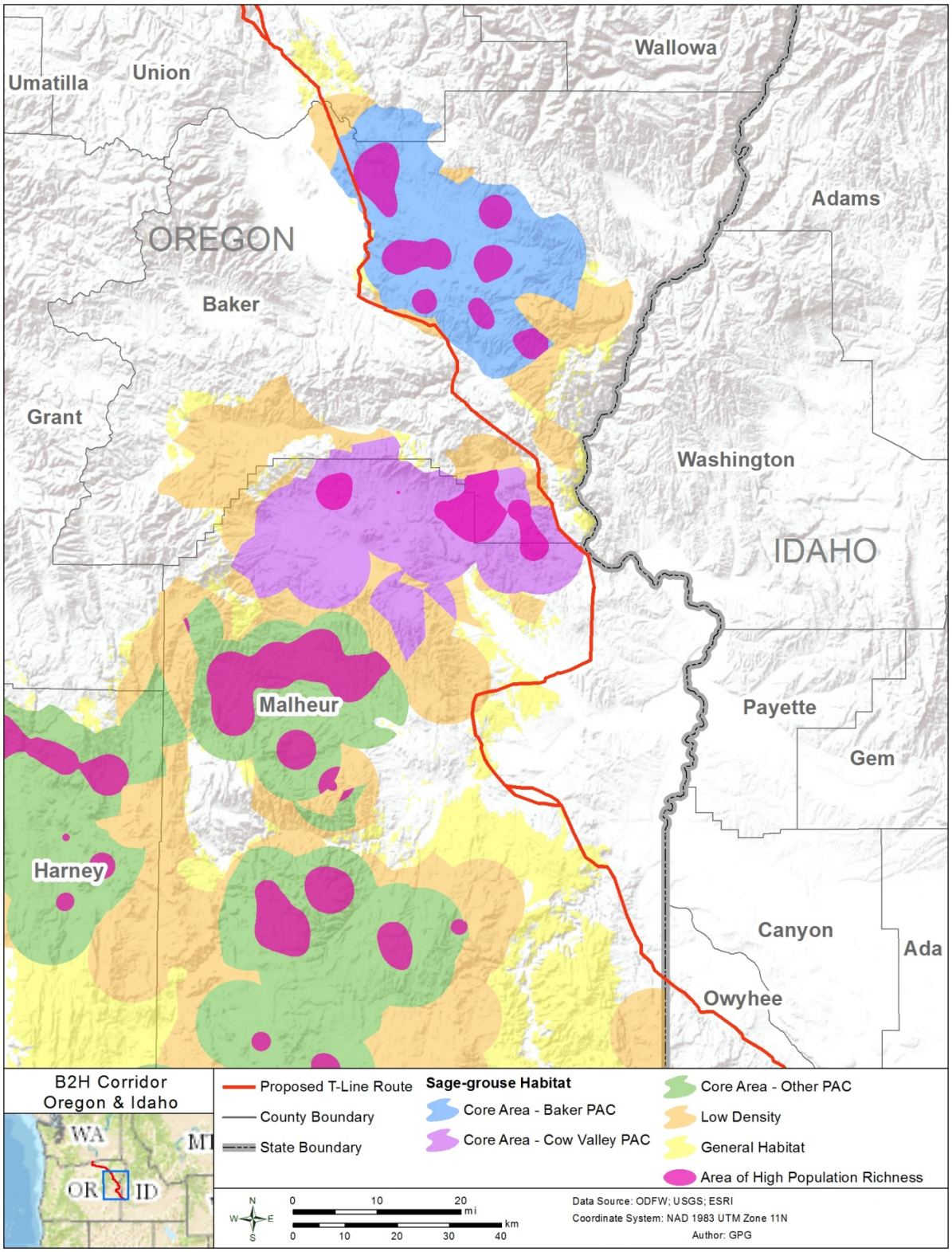

Figure 1. Sage-Grouse Habitat Near the Project in Oregon

3.2 Avoidance

Under OAR 635-415-0025(7), the Project is exempt from the avoidance provisions of Oregon's Greater Sage Grouse Conservation Strategy. Even so, as discussed in Section 3.7.5.1 of Exhibit P2, the history of the Project demonstrates that IPC—in response to ODFW and BLM input—has developed routes and changed the Project numerous times to avoid and minimize impacts to sage-grouse habitat. Although the Proposed Route will impact some sage-grouse habitat, there is no reasonable alternative location that would avoid the habitat.

3.3 Minimization

OAR 635-415-0025(7) exempts the Project from each of the minimization provisions of Oregon's Greater Sage Grouse Conservation Strategy, except for OAR 635-140-0025(2)(d)(B). OAR 635-140-0025(2)(d)(B) provides that, where general habitat will be impacted, the project developer will consult with ODFW, and ODFW will provide recommendations on how best to avoid or minimize impacts on important habitat within general habitat areas. Here, the Project will impact general habitat. As discussed in Section 3.7.5.1 of Exhibit P2, IPC has proposed certain site certificate conditions intended to minimize impacts to sage-grouse and their habitat including certain seasonal and spatial restrictions.

3.4 Compensatory Mitigation

Despite IPC's efforts to avoid and minimize impacts to sage-grouse habitat, certain impacts will be unavoidable. Therefore, compensatory mitigation will be required for large-scale development projects proposed in core and low density habitat. Some uses in other sage-grouse habitat—i.e., general habitat—may also require compensatory mitigation depending on the proximity to sage-grouse lek sites and/or the permitting agency involved (see Mitigation Manual, p.33).

3.4.1 Quantifying Project Impacts

Determining the amount of compensatory mitigation needed to ensure a net conservation benefit for a proposed development project requires a method for measuring the impacts of the debiting project and the benefit of the crediting project (see Mitigation Manual, p.21). Oregon currently is developing a habitat quantification tool (HQT) to quantify debits and credits. The Action Plan provides that Oregon's tool will measure both the quantity of habitat affected by an action and the quality of the affected habitat in terms of functional value to sage-grouse (see Mitigation Manual, p. 21). Oregon's tool will quantify impacts and benefits in terms of functional habitat acres by measuring habitat indicators that reflect the quantity and functional quality of habitat at a particular site. Individual indicators are combined into themes, which will then be summarized into a single functional acre score (see Mitigation Manual, p. 21). Further, Oregon's tool is being designed to consider the habitat indicators at four spatial orders: (1) range-wide distribution scale; (2) population/sub-population scale; (3) local scale; and (4) site scale (see Mitigation Manual, pp. 21-22).

At this time, the HQT continues to be under development. Even so, ODFW has indicated the HQT will be finalized prior to commencement of construction on the Project and ODFW intends that IPC utilize the HQT to calculate the Project's impacts to sage-grouse habitat. Accordingly, in this application, IPC has not quantified indirect impacts or the amount of compensatory mitigation required for the Project related to sage-grouse. Rather, the amount of sage-grouse habitat compensatory mitigation required for the Project will be determined by the HQT prior to commencement of construction.

3.4.2 Purchasing Credits to Offset Project Impacts

A large-scale development project proponent impacting sage-grouse grouse habitat in Oregon must offset such impacts by either paying an in-lieu fee through the State's in-lieu fee sage-grouse mitigation program or conducting its own compensatory mitigation projects (see OAR 635-140-0025(3)(a), (b)). Here, IPC may offset the impacts of the Project by paying an in-lieu fee through the State's program, if available. In the alternative, IPC will implement a mitigation project or projects sufficient to offset the Project's impacts, as described in more detail below in Section 3.4.3.

3.4.3 Creating Credits by Implementing Mitigation Projects

If IPC chooses to acquire credits through a mitigation project or projects and not through the in-lieu fee program, IPC will secure the necessary mitigation sites prior to commencing construction on the Project. In this section, IPC describes the mitigation site selection process, the mitigation credit score assessment approach, the standards for each mitigation project, and the documentation and verification processes for the mitigation projects. In the HMP appendices, IPC provides a desktop analysis of certain potential mitigation sites that currently are on the market, demonstrating there are mitigation site opportunities sufficient to meet the needs of the Project.

3.4.3.1 Mitigation Project Eligibility Requirements

As set forth in the Mitigation Manual, to help ensure that crediting projects will provide a net conservation benefit to sage-grouse habitat and support the long-term function of sagebrush ecosystems, each mitigation site must meet the eligibility criteria in Table 2 below (see Mitigation Manual, p.17).

Table 2. Eligibility Requirements for Crediting Projects

Eligibility Requirement	Criteria
Conservation actions are additional	• Exceeds pre-existing legal obligations • Avoidance or minimization of existing impacts • Use of public conservation funds prohibited from generating credits
Project benefits are durable	• No imminent threat • Benefits expected to meet or exceed duration of impact • Legal protection of site • Plan and funding for long-term stewardship
Appropriate site selection and conservation actions	• Projects integrated with state-wide strategic conservation plan • All projects include enhancement actions
Conservation actions are additional	• Exceeds pre-existing legal obligations • Avoidance or minimization of existing impacts • Use of public conservation funds prohibited from generating credits

3.4.3.2 Mitigation Project Documentation

Site-Specific Plan

For each mitigation project, IPC will produce a site-specific plan (SSP), which identifies the extent, type, and description of all proposed conservation actions, including the following:

- The type and location of ecological states present on the project site;
- Current and future threats to sage-grouse habitat function for the site; and
- Specific conservation practices that will be implemented on the site to maintain or improve habitat for the species.

Stewardship Plan, Legal Protections, and Financial Assurances

Crediting projects must be durable—that is, the period of time that mitigation is effective must be equal or greater in duration to the impacts being offset (see Mitigation Manual, p.18). Demonstrating project durability requires that legal protections be put in place to ensure the mitigation project benefits are not disturbed for the life of the credits. Legal protection may be demonstrated through term or permanent conservation easements or through other tools ensuring the protections will last for the duration of the offset impacts (see Mitigation Manual, p.18).

Financial assurances must be in place to ensure appropriate management will occur throughout the life of the credits (see Mitigation Manual, p.18). Funding for site management may occur through various mechanisms, provided they ensure management will persist throughout the life of the mitigation project (see Mitigation Manual, pp.18-19).

Each proposed crediting project will include a stewardship plan that identifies a long-term steward, stewardship goals and activities, the amount and form of financial assurances necessary to maintain the site, and documentation of the time needed to implement the full stewardship plan.

3.4.3.3 Mitigation Project Standards

Service Areas

Mitigation projects must occur on sage-grouse habitat or potential sage-grouse habitat,[2] and must occur within the same Western Association of Fish and Wildlife Agencies Management Zone impacted by the Project (see Mitigation Manual, pp.34-35). When appropriate and sufficient crediting opportunities are available, IPC will also consider the following criteria in selecting mitigation projects:

- Impacts to core area habitat should be offset by crediting projects within the same PAC area;
- Impacts to low-density habitat should be offset by crediting projects within the most proximate PAC;

[2] Potential habitat is defined as “land areas within the current range of the species that have the potential, based on environmental conditions such as mean annual precipitation, topographic position, etc., to support sagebrush-dominated plant communities or other seasonal natural habitats such as wet meadows. Potential habitat may not currently support sage-grouse at any time during the year” (Mitigation Manual, p.8, Box 1.2).

- Impacts to general habitat and core and low-density impacts for which PAC specific credits are not available, should be offset by crediting projects within the same population area (see Mitigation Manual, p.35).

Net Conservation Benefit

Each crediting project will provide a net conservation benefit for sage-grouse and its habitat by replacing the lost functionality of the impacted habitat to a level capable of supporting greater sage-grouse numbers than that of the habitat which was impacted (see OAR 635-140-0025(3)). To determine the amount of compensatory mitigation needed to meet that standard, IPC will use its HQT to determine the number and duration of credits needed to meet the net conservation benefit standard as part of a draft mitigation plan (see Mitigation Manual, p.33). The same quantification tool used to calculate the debit score for the Project (see Section 3.4.3.4) will be used to calculate the benefits of the crediting mitigation projects (see Mitigation Manual, p.21) (providing that the relevant quantification tool should measure impacts of both the debiting and crediting projects). Implementation of the quantification tool for calculating credits is discussed in more detail in Section 3.4.3.4 below.

Project Additionality

"Additionality" refers to the requirement that credit-generating benefits from a project must be in addition to what would have happened without participation as a mitigation project and what is required by existing law and legal commitments (see Mitigation Manual, p.17). To meet the mitigation program goal of providing a net benefit for sage-grouse and its habitat, credit-producing projects and conservation actions must be in addition to all existing affirmative obligations (including land use restrictions) relevant to the project site and comply with all applicable federal, state, and local laws (see Mitigation Manual, pp.17-18). Only actions in excess of existing affirmative legal obligations will be creditable (see Mitigation Manual, p.18).

Conservation Actions

Credits may be generated by the following types of conservation actions:

- **Enhancement**: Measures that increase the quantity and/or quality of sage-grouse habitat and are aimed at transitioning an area of sage-grouse habitat from a less to a more desirable ecological state. Appropriate enhancement measures may vary among sites, depending on the initial and desired future ecological states of a site.

- **Avoided loss**: Measures that prevent undesirable state changes in areas that are at a demonstrated risk of degradation from threats such as development, wildfire, and invasive species. Depending on the current and anticipated future threats at a given site, appropriate avoided loss activities may include legal protection, fire prevention, and management of invasive species.

Specific conservation actions will be developed upon identification of a mitigation site and formal evaluation of site conditions and possible habitat improvement measures. Table 3 below includes a preliminary list of potential enhancement measures that IPC might apply to its mitigation projects. Table 4 includes a preliminary list of avoided loss measures.

Table 3. Enhancement Measures

STM	Initial State	Desired state outcome	Practices to Implement	Uncertainty	Risk	Likelihood of state change	Time to state change	Duration of benefit/ treatment	Avoided loss (sage- grouse habitat)	Measure of Success	Cost	Comments
Low-elevation sagebrush rangeland	B	A	Time/ Sagebrush transplanting	M	Wildfire	M	Long	Long	N/A	Increase shrub cover	$$	Poorest success of three types of sites
	C	A	Shrub reduction/Control annuals/Revegetate	H	Moving to state D	M	Moderate	Long	H	Increase perennial bunchgrass density	$	High uncertainty, difficult to protect from fire
	C	A	Improve grazing management of desired plants	M	Wildfire	M	Moderate-Long	Long	H	Increase perennial bunchgrass density	$	Reducing grazing pressure may mean more fuel
	C	B	Provide fire-fighting or fire-detection equipment	M	Wildlife	M	Moderate-Long	Long	H	Increase shrub cover	S	Depends on successful use of the equipment
	D	B	Control annuals/ Revegetate with natives	L		L	Moderate	Long	N/A, D is non-habitat	Increase perennial bunchgrass density	$$$	High uncertainty, native seeding success is reliably poor, may include prescribed fire for site prep; drill seeding improves probability
	D	B	Control annuals/ Revegetate using introduced species such as Crested Wheatgrass	L	Wildfire	M	Moderate	Long	N/A, D is non-habitat	Increase perennial bunchgrass density	$$	Crested wheatgrass seeding success is more reliable, may include prescribed fire for site prep
	B	A	Protect from high severity wildfire (fuel breaks)	H	Wildfire	M	Long	Long	M	Increase shrub cover	$	High uncertainty, difficult to protect from fire
Mid elevation Sagebrush Rangeland	B	A	Time, Sagebrush planting	M		H	Moderate	Long	N/A	Increase shrub cover	$$	Intermediate success of sagebrush seeding
	B	A	Time, Protect from wildfire	L	Conversion to C	H	Moderate	Long	M	Increase shrub cover	$	
	C	A	Cutting/ Mechanical juniper removal	L		H	Immediate	Moderate	N/A, non- habitat as C	Decrease Juniper density/cover	$$	Sagebrush usually responds quickly to release from juniper competition
	C	B	Provide fire-fighting or fire-detection equipment	M	Wildlife	M	Moderate-Long	Long	H	Increase shrub cover	S	Depends on successful use of the equipment
	D	B	Cutting/Mechanical juniper removal/ Revegetate understory	M	Conversion to E	M	Moderate	Moderate	N/A, non- habitat as D	Decrease Juniper density/cover & Increase perennial bunchgrass cover	$$$	Consider partial juniper removal initially to gauge understory response
	E or D	B	Cutting/ Mechanical juniper removal/ Control annuals/ Revegetate with native perennial species	H	No perennial grass recovery	L-M	Moderate	Moderate	N/A, non- habitat as D	Increase perennial bunchgrass density	$$$	Lengthy process with multiple steps
Mid elevation Sagebrush Rangeland (continued)	E or D	B	Cutting/Mechanical juniper removal/ Control annuals/ Revegetate with introduced perennial species such as crested wheatgrass	L	No perennial grass recovery	M-H	Moderate	Moderate	N/A , non- habitat as D	Increase perennial bunchgrass density	$$	Fire risk reduction strategy

STM	Initial State	Desired state outcome	Practices to Implement	Uncertainty	Risk	Likelihood of state change	Time to state change	Duration of benefit/ treatment	Avoided loss (sage- grouse habitat)	Measure of Success	Cost	Comments
High elevation Sagebrush Rangeland	B	A	Sagebrush seeding	L		M	Moderate	Long	N/A	Increase shrub cover	$$	Success much higher here than in mid and especially low elevation sites
	B	A	Time/ Protect from fire	L	Increase in Juniper cover	H	Moderate - long	Long	N/A	Increase shrub cover	$	Success depends on seed bank and proximity to seed sources
	C	A	Prescribed fire with mosaic effects	L	Decrease shrub cover	H	Immediate	Moderate	avoided loss (sage- grouse habitat)	Decreased juniper, increase mosaic habitats	$$	Mosaic burn maintains seed source for sagebrush in unburned islands
	C	B	Prescribed fire with homogenous effects	L	Decrease shrub cover	H	Immediate	Long	N/A, non- habitat as C	Decreased juniper	$$	
	C	A	Cutting/ Mechanical juniper removal	L		H	Immediate	Short - moderate	N/A, non- habitat as C	Decreased juniper	$$	Moderate cost, but if understory is intact this is a low risk treatment
	D	B	Prescribed fire	M		M	Immediate	Long	N/A, non- habitat as D	Decreased juniper	$$	Depends on percent juniper kill and burn coverage
	D	B	Cutting/ Mechanical juniper removal/ Understory restoration	L		H	Immediate	Short- moderate	N/A, non- habitat as D	Decreased juniper	$$$	
	E	B	Cutting/ Mechanical juniper removal/ Understory restoration	M		M	Moderate - long	Short- moderate	N/A, non- habitat as E	Decreased juniper	$$$	Depends on pretreat BG density

[1] Firefighting equipment is not being proposed as a stand-alone mitigation action; it will be considered alongside other enhancement actions.

Table 4. Avoided Loss Measures

Practices to Maintain Desired Plant Community - State A						
Practices List	**Uncertainty**	**Risk**	**Avoided Loss**	**Measure Success**	**Cost**	**Comments**
Limit intense and/ or frequent disturbances and/ or stress to desired plants, this can include prescribed grazing practices; low intensity fire; limited equipment use	L	L		Maintenance of desired vegetation, shrub cover, perennial bunchgrass density &/ or cover	$	Disturbances generally favor undesirable community changes any practice to minimize the intensity or frequency of disturbances will favor desired plants
Create prevention program: Map and delineate priority zones; Identify corridors of spread; action plan for early detection & rapid response and for eradicating infestations Create fuel break if weed infestations are adjacent to desired community	M	L		Maintenance of desired vegetation, shrub cover, perennial bunchgrass density &/ or cover	$ to $$$	Comprehensive prevention program ideas are available in the user guide: Establishing a Weed Prevention Area
Increase seed production and dispersal of desired plants	M	L		Maintenance of desired vegetation, shrub cover, perennial bunchgrass density &/ or cover	$	
Limit resource availability by keeping nutrients conserved in desired plants	M	M		Maintenance of desired vegetation, shrub cover, perennial bunchgrass density &/ or cover	$	
Maintain or increase perennial bunchgrass to reduce invasion potential	M	L		Maintenance of desired	$$	

3.4.3.4 Calculating Credits

Quantifying credits and debits in a similar manner provides an "apples to apples" comparison of the impacts from the Project and mitigation area by accounting for existing disturbances and habitat suitability. Thus, if the enhanced credits are greater than the number of debits, the mitigation site is considered to achieve net conservation benefit for sage-grouse by replacing the lost functionality of the impacted habitat to a level capable of supporting greater sage-grouse numbers than that of the habitat which was impacted.

After Oregon's habitat quantification tool is finalized, IPC transmit spatial data regarding potential mitigation sites to ODFW so conservation action credits can be calculated by ODFW.

Access Road Control

One conservation action to improve habitat quality for sage-grouse is to eliminate or limit traffic activity on roads in sage-grouse habitat. For those mitigation sites where IPC proposes to gain credits for addressing impacts from existing roads by eliminating or limiting access to those roads, IPC will quantify the benefits of the conservation action by comparing the pre-conservation action impacts with the post-conservation action impacts as those impacts are defined in the Mitigation Manual.

Non-Access-Road-Control Conservation Actions

As described in the Mitigation Manual, other conservation actions could be implemented to improve sage-grouse habitat quality including, but not limited to, juniper removal, fence marking, invasive plant species removal. Specific conservation actions will be identified based on the mitigation site selected. For those mitigation sites where IPC proposes conservation actions other than access road control, IPC will determine the number of functional habitat acre credits earned by the Project by running the habitat quantification analysis twice. It will be run first on the current condition of the mitigation site and then again on the future conditions of the site based on the improvements resulting from the proposed conservation actions (see Mitigation Manual, p.34). Credits are quantified based on the estimated post-conservation action number of functional habitat acres within the assessment area, subtracted from the current number of functional habitat acres within the area.

3.4.3.5 Verification

Monitoring conducted at reclamation sites related to temporarily disturbed areas, and the associated annual reports to the applicable agencies, are discussed in IPC's draft Reclamation and Revegetation Plan (Exhibit P1, Attachment P1-3). Monitoring conducted as part of the "Wildlife Injury and Mortality Reporting System" is discussed in IPC's Species Conservation Plan (IPC 2013). The following discussion addresses monitoring related to mitigation sites.

Performance Measures

The criteria used to measure success will depend on the extent of impacts and the final mitigation strategy (e.g., success criteria could be different if mitigation is conducted through payments to a conservation bank as opposed to permittee-responsible mitigation sites). The criteria used to measure mitigation success will be site-specific, will depend on the goals and objectives of the mitigation site, and will need to be developed for each individual mitigation site prior to the onset of mitigation efforts.

Reporting

IPC will document the progress of mitigation efforts to applicable federal and state-management agencies in a progress report that will be provided following the periodic monitoring surveys. These reports will also contain recommendations from IPC regarding any additional remedial actions that may be necessary. It is expected that the applicable federal and state management agencies will provide comments and counter suggestions, or approval of IPC's suggestions if remedial efforts are required (i.e., corrective measures if revegetation or mitigation efforts were not successful). Separate monitoring reports may be prepared for each individual mitigation site. Reports will contain information regarding the mitigation actions taken during the reporting period, the success of these actions (based on predefined success criteria established for that mitigation site), and a description of the methods used to monitor the mitigation site.

4.0 DRAFT MITIGATION SITE ASSESSEMENTS

Prior to commencement of construction, IPC will secure the legal authority to conduct the required mitigation actions at compensatory mitigation sites with sufficient credits to offset the impacts of the Project. In order to show there are mitigation site opportunities sufficient to meet the needs of the Project and to demonstrate how IPC's debiting and crediting approach will be implemented, in the HMP appendices, IPC identifies potential mitigation sites currently on the market and provides a desktop-level assessment of the credits available at each site.

5.0 REFERENCES

IPC (Idaho Power Company). 2013. Draft Species Conservation Plan. Boardman to Hemingway Transmission Line Project. February.

Sage-Grouse Conservation Partnership. 2015. The Oregon Sage-Grouse Action Plan. Governor's Natural Resources Office. Salem, Oregon. http://oregonexplorer.info/content/oregon-sage-grouseaction-plan?topic=203&ptopic=179. Print version PDF available at http://oe.oregonexplorer.info/ExternalContent/SageCon/OregonSageGrouseActionPlan-Print.pdf

APPENDIX A
HABITAT MITIGATION SITES

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Alder Creek
Landowner:
Parcel Size in Acres: 3,081
Date of Assessment: 9/11/2014
Parcel Elevation (ft): 3,700 – 4,450
Within Mitigation Service Area?: Yes

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Baker County, approximately 20 miles northwest of Brogan, 20 miles southwest of Durkee.
T13S R40E Sections 14, 15, 16, 21, 22, 23, 26, 27, 28 (**Figure 1**)

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Parcel	Wildlife Habitat[3]
Category 1		**0**	**0**	
Category 2		**0**	**0**	-
Shrub-Steppe with Big Sage	Shrub/Grass	1,452.3	49.3	RMEWR
Shrub-Steppe with Big Sage	Shrub/Grass	294.1	10.0	RMEWR, MDWR
Introduced Upland Vegetation	Shrub/Grass	258.1	8.8	RMEWR
Introduced Upland Vegetation	Shrub/Grass	233.7	7.9	RMEWR, MDWR
Shrub-Steppe without Big Sage	Shrub/Grass	213.7	7.3	RMEWR
Shrub-Steppe without Big Sage	Shrub/Grass	171.6	5.8	RMEWR, MDWR
Native Grasslands	Shrub/Grass	41.2	1.4	RMEWR
Native Grasslands	Shrub/Grass	27.0	0.9	RMEWR, MDWR
Bare Ground Cliffs Talus	Bare Ground	5.6	0.2	RMEWR
Bare Ground Cliffs Talus	Bare Ground	1.3	0.0	RMEWR, MDWR
Emergent Wetland	Wetland	3.4	0.1	RMEWR
Emergent Wetland	Wetland	13.5	0.5	RMEWR, MDWR
Desert Shrub	Shrub/Grass	0.4	0.0	RMEWR
Desert Shrub	Shrub/Grass	12.2	0.4	RMEWR, MDWR
Forested Wetland	Wetland	0.2	0.0	RMEWR
Forested Wetland	Wetland	0.7	0.0	RMEWR, MDWR
Western Juniper	Forest/Woodland	13.8	0.5	RMEWR, MDWR
Ponderosa Pine	Forest/Woodland	4.4	0.2	RMEWR, MDWR
Scrub-Shrub Wetland	Wetland	1.1	0.0	RMEWR, MDWR
Rocky Mountain Aspen	Forest/Woodland	0.2	0.0	RMEWR, MDWR
Mixed Grand Fir / Douglas Fir	Forest/Woodland	0.2	0.0	RMEWR, MDWR
Category 3		**0**	**0**	-
Category 4		**0**	**0**	-
Category 5		**0**	**0**	-
Category 6		**198.3**	**6.7**	
Agriculture	Agriculture/ Developed	194.5	6.6	RMEWR
Developed	Agriculture/ Developed	3.8	0.1	RMEWR
Total[4]	**NA**	**2,947.1**	**100**	**-**

[1] USGS Gap Analysis Project (GAP) GIS data for ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in Exhibit P1, Attachment P1-1 Habitat Categorization Matrix.
[2] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3] RMEWR = Category 2 habitat for ODFW Rocky Mountain elk winter range. MDWR = Category 2 habitat for ODFW mule deer winter range.
[4] Total acres of habitat type may not match actual parcel size due to resolution of the GAP raster dataset. Pixels of the raster dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Hydrologic Features Present (SteamNet, NWI, NHD)	One perennial (Alder Creek) and four intermittent streams (NHD). Some spring and emergent wetlands not associated with the NHD streams are identified in the NWI dataset.
Adjacent land ownership, use, and condition	Property is bordered by both BLM and private lands. Land use is mostly rangeland with some agricultural developments. A majority of the adjacent landscape is classified as intermountain basins big sagebrush-steppe by GAP.
Infrastructure Density within or Near the Parcel (Qualitative Description)	Per the real estate listing, the property contains dwellings, shop, multiple large hay sheds, center pivot irrigation, and a livestock processing facility. HWY 26 and an existing transmission line are 5 miles to the south; state route 245 is approximately 4 miles to the north. Otherwise, the landscape is open rangeland.
Soil type, soil temperature and moisture regime (NRCS 2014)	Detailed SSURGO data is not available for this portion of Malheur County. STATSGO2 identifies the property is within the Ruclick-Ruckles-Lookout mapunit. Ruckles soils are shallow. They have a surface layer of very dark grayish brown very stony clay loam and a subsoil of dark brown very stony clay. These soils are on south- and west-facing slopes of 2 to 70 percent. Ruclick soils are moderately deep. They have a surface layer of very dark grayish brown very cobbly silt loam and a subsoil of dark brown very cobbly and extremely cobbly clay. These soils are on all aspects of the terrain at a slope of 2 to 70 percent. Lookout soils are moderately deep to a duripan. They have a surface layer mainly of very dark grayish brown very cobbly silt loam and a subsoil of dark yellowish brown clay over a duripan. In some areas the surface layer is silt loam. These soils are on hilltops and benches with slopes of 2 to 12 percent. The soils in this unit are used mainly for livestock grazing. The unit also provides habitat for many kinds of wildlife. In the areas used for livestock grazing, the main limitations are the very cobbly or very stony surface layer and the slope of the Ruckles and Rucklick soils. The temperature regime is Mesic and the moisture regime is Aridic bordering on Xeric (Warm/Dry bordering on Moist). This area is identified as having low relative resilience and resistance to disturbances (drought, fire, invasive species).

NRCS. 2014. Sage Grouse Management Zones Soil Taxonomic Temperature and Moisture Regimes. GIS Dataset.

Summary	The property is in sage-grouse core area within the Cow Valley PAC. According to Alternative D of the Oregon Sub-Region SAGR FEIS (Chapter 2, Figure 2-4), this property is located within or immediately adjacent to three proposed Sage-Grouse Strategic Areas: Climate Change Consideration Area – identified as higher elevation areas of high quality habitat likely to provide habitat over the long-term; Restoration Opportunity Area – within existing habitat where restoration would increase habitat quality and connectivity; and High-density Breeding Area – high quality habitat with a high density of active lek sites. The property is also completely within elk winter range and elk summer range and the northern 1/3 of the property is within mule deer winter range. Year-round springs, perennial stream (Alder Creek), and emergent wetlands increase the value of the property to wildlife in the arid landscape as well as provide potential for watershed improvement projects. GAP data indicates that introduced upland vegetation is present on site and could provide upland habitat restoration opportunities. Weed treatment and revegetation opportunities are available across the entire property but are abundant in areas currently in agricultural production and where livestock congregate. Opportunity areas generally coincide with habitat identified as Agriculture and/or Introduced Upland Vegetation by the GAP dataset (**Figure 2**). Western juniper woodlands are encroaching into sagebrush habitats on the parcel.
Pass/Fail Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on both Category 1 and category 2 sage-grouse core area habitat and Category 2 elk and mule deer winter range within the shrub/grass general vegetation type. Areas where sage-grouse habitat and big game winter range overlap are typically shrub-steppe and native grassland types with a continuous or mosaic big sagebrush component. The mitigation site contains important habitat features with ample opportunities to provide durable ecological uplift through implementation of standard mitigation actions. The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to sage-grouse and big game (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to State of Oregon, Federal Land Management Agency, approved NPO or Land Trust
Mitigation Actions	The following are mitigation actions that IPC may consider implementing at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods and be conducted as necessary to maintain desired habitat conditions throughout the life of the Project impacts. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Juniper/Conifer Removal* – There are approximately 300-450 acres of shrub-steppe and introduced upland vegetation where juniper encroachment is occurring (**Figure 3**). The juniper stands appear to be Phase I consisting of early successional young trees at very low density. Opportunity for spot-treating single trees occurs throughout the property. • *Modification of Livestock Grazing* – this would benefit a majority of the mitigation site as grazing has reduced native plant cover and has likely been a contributor to dispersal of non-native/invasive plant species across the site. In addition, livestock grazing may be incompatible with the short-term success of some of the mitigation actions identified, such as seeding of native plant species. Long-term maintenance of the mitigation site may consider domestic livestock grazing as a management tool. • *Fence Removal/Marking/Upgrade* – the mitigation site has approximately 60,000 feet of cross fencing (**Figure 3**) that can be removed. Fence removal would reduce the potential for wildlife injuries/mortalities from collisions. Fencing acts as a source of weed establishment through accumulation of windblown weeds. Fences provide perching opportunity for raptors and corvids. Marking of perimeter fencing in areas of concern would allow sage-grouse and other wildlife to more effectively visualize the fence and avoid collisions. Fences maintained on the mitigation site can be upgraded to a more wildlife friendly design that reduces the likelihood of significant injury during crossing events. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. Opportunities likely exist in areas identified for native seeding (**Figure 3**), along fence lines, within livestock handling facilities, near the residence, and other outbuildings/haysheds etc.

Mitigation Actions (cont.)	• *Native seeding/revegetation* – opportunity exists to seed native plant species in areas currently in agriculture and lowland areas adjacent to drainages where cattle have congregated. These areas cover approximately 300 acres of the mitigation site (**Figure 3**). Other seeding opportunities are available throughout the mitigation site. • *Wetland/Spring/Riparian Improvement* – drainages and riparian/wetland areas on the mitigation site are currently lacking native vegetation components. Opportunities exist to modify/improve water resources (channel modification, erosion control, vegetation treatment/plantings) on the mitigation site to reflect a more natural state and to provide water to mitigation action areas as needed to ensure success. There is approximately 3-8 miles of riparian corridor within the mitigation site and several acres of wetlands.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).
Success Criteria	Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to: • Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift. • Successful weed control through documentation of weed reduction. • Natural recruitment of sagebrush into areas currently in Agriculture or Introduced Upland Vegetation that were seeded to native plant species. • Successful juniper removal and continued control of encroachment onto the mitigation site for the life of the project. • Mitigation success will not be dependent on documentation of increased use of the mitigation site by sage-grouse or any other wildlife species.

Financial Outline	This financial outline provides estimated figures and data for informational purposes only. These estimates are meant to provide an overview of the potential and commercially reasonable costs of acquiring and implementing mitigation on this mitigation site. The financial outline does not guarantee the final sales price and costs for the acquisition, and the price offering is subject to prior sale, price change, correction, amendment or withdrawal.
	• Initial purchase of the mitigation site: $2,750,000
	• Juniper removal: $80 - $200 per acre
	• Fence removal: $1.88 per foot
	• Fence marking: $0.11 per foot of fence ($581 per mile)
	• Weed treatment: $20 - $200 per acre
	• Native Seeding:
	  ○ Site preparation (mowing/discing) $500 per acre
	  ○ Broadcast/Drill seed: $100 - $250 per acre
	• Hydroseeding: $792 per acre

Financial Outline (cont.)

- Wetland/Spring/Riparian Improvement
  - Complex Restoration: $2,400 per acre
  - Riparian Herbacous Cover
    - Broadcast Seeding: $687 per acre
    - Pollinator Cover: $1,303 per acre
    - Plug Planting: $13,730 per acre
    - Combo Seeding and Plug Planting: $6,947 per acre
  - Riparian Forest Buffer
    - Hand Plant, bare root: $768 per acre
    - Cuttings, small to medium: $867 per acre
    - Seeding: $106 per acre

Estimated Budget for the Alder Creek Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition of mitigation site	$2,750,000	1	-	$2,750,000
Juniper Removal	$100	450	-	$45,000
Grazing Modification	-	-	-	-
Removal of cross fencing	$2	60,000	-	$120,000
Marking of perimeter fence	-	-	-	-
Weed Treatment	$20-$200	75	-	$15,000
Native Seeding	$750	300	-	$225,000
50-year Operation and Management Costs				
O&M[1]	$30	3,081	50	$4,621,500
Total	**-**			**$7,776,500** ($2,524/acre)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The average cost per acre presented in that document was $24 in 2004 dollars, this has been adjusted to reflect 2015 dollars. In addition, one of the projects presented in the document was the 10,000 acre Sagebrush Flat Wildlife Mitigation area in Washington state which is within a similar habitat type and has a FY2015 budget of approximately $300,000 (or $30/acre).

[2] Cost per acre here includes cost of acquisition and initial mitigation actions and long-term O&M for 50 years.

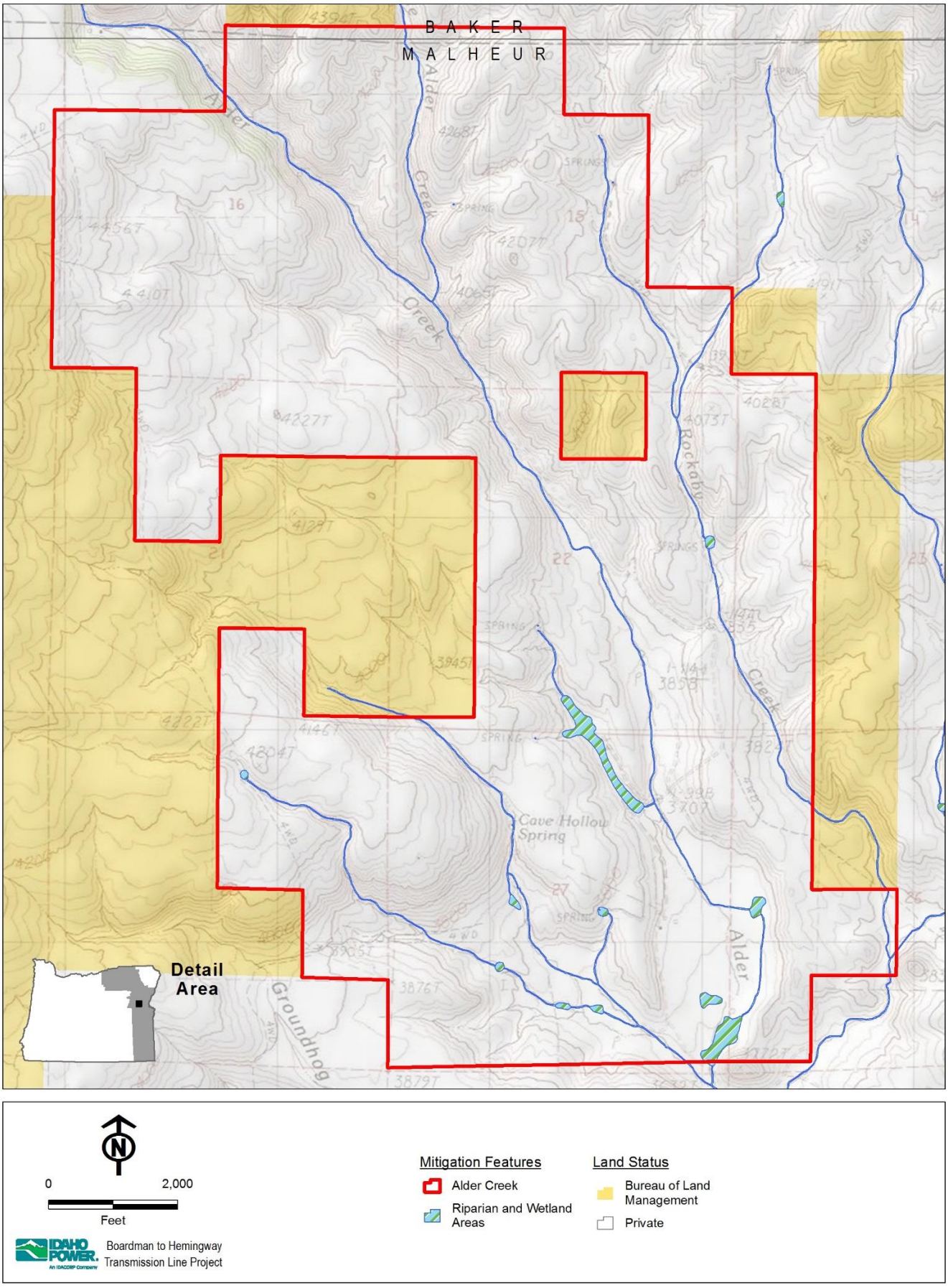

Figure 1. Alder Creek Ownership and Water

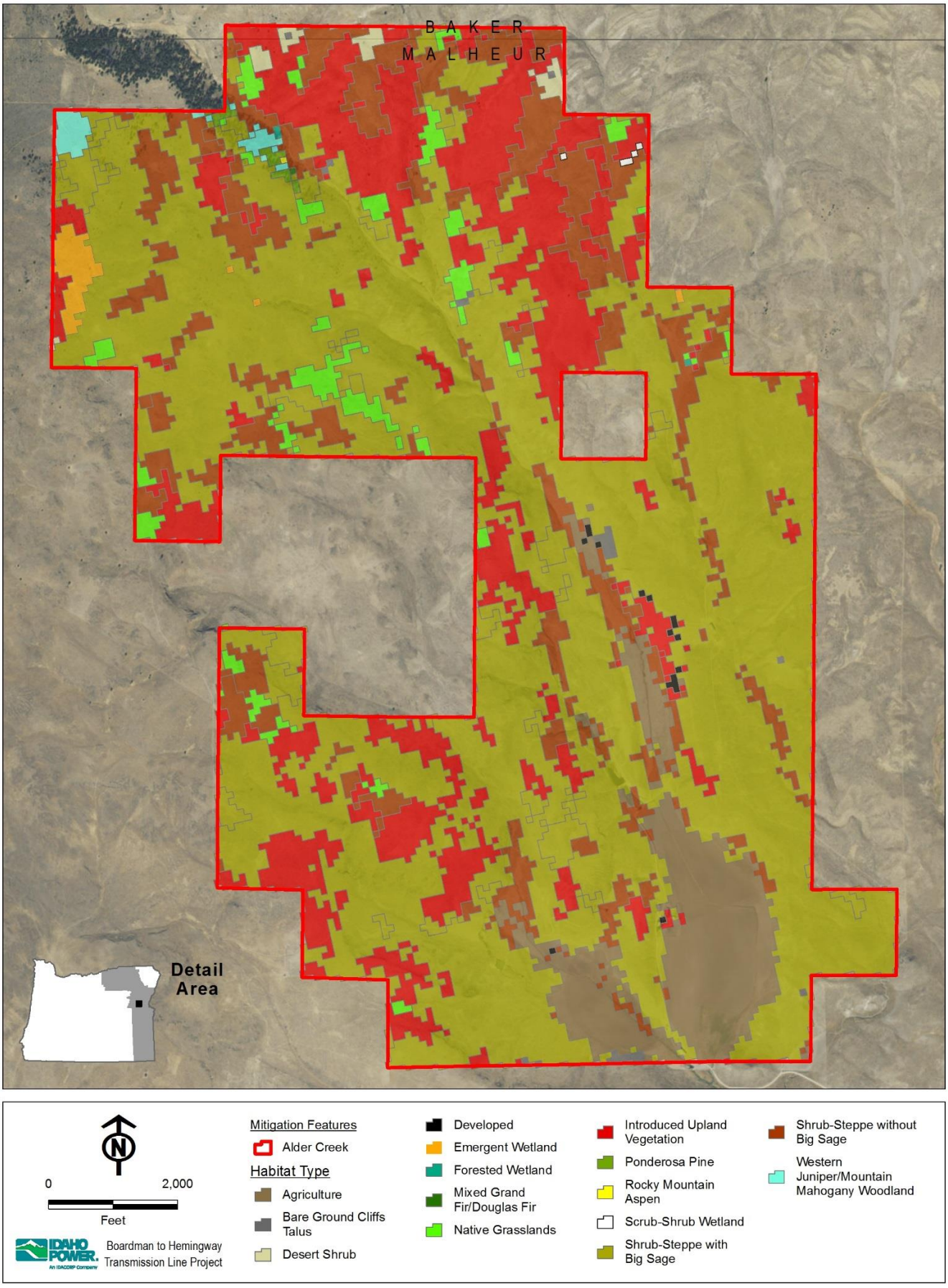

Figure 2. Alder Creek Ranch Habitat Types

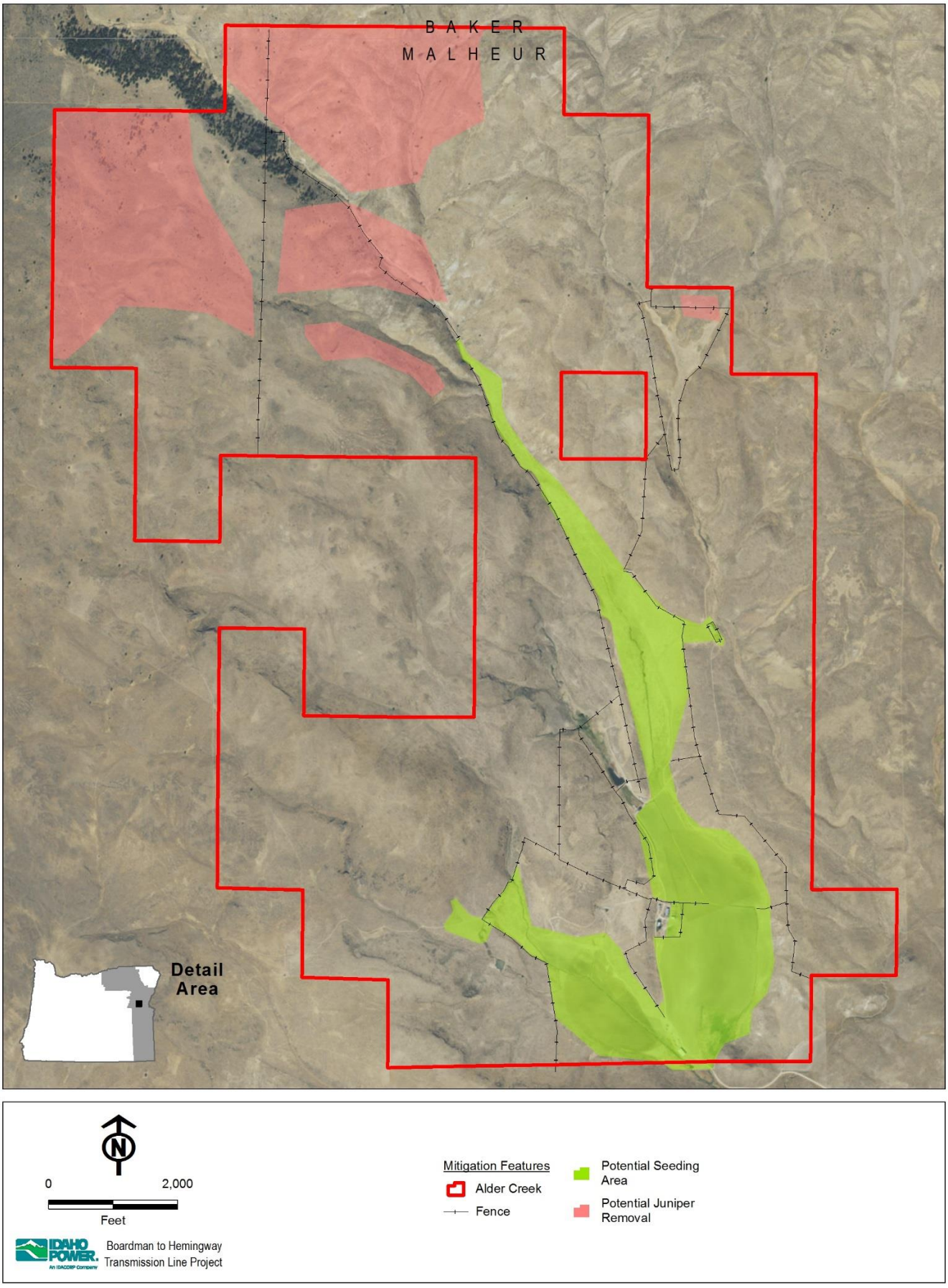

Figure 3. Alder Creek Potential Mitigation Action Areas

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Glasgow (**Figure 1**)
Landowner:
Parcel Size in Acres: 1,438
Date of Assessment: 10/13/2014
Parcel Elevation (ft): 3,000 – 4,600
Within Mitigation Service Area?: Yes

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Baker County, 10 miles southeast of Keating.
T9S R43E Sections 11, 12, 13, 14, 23, 24

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Total	Wildlife Habitat[3]
Category 1		**0**	**0**	
Category 2				-
Shrub-Steppe with Big Sage	Shrub/Grass	675.9	47.0	MDWR
Shrub-Steppe with Big Sage	Shrub/Grass	364.9	25.4	MDWR, RMEWR, RMESR
Shrub-Steppe with Big Sage	Shrub/Grass	25.9	1.8	MDWR, RMESR
Shrub-Steppe with Big Sage	Shrub/Grass	6.2	0.4	RMEWR, MDWR
Shrub-Steppe without Big Sage	Shrub/Grass	76.0	5.3	MDWR
Shrub-Steppe without Big Sage	Shrub/Grass	159.9	11.1	MDWR, RMEWR, RMESR
Shrub-Steppe without Big Sage	Shrub/Grass	10.5	0.7	MDWR, RMEWR
Native Grasslands	Shrub/Grass	39.6	2.7	MDWR, RMEWR, RMESR
Native Grasslands	Shrub/Grass	35.6	2.5	MDWR
Native Grasslands	Shrub/Grass	1.7	0.1	MDWR, RMESR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	23.8	1.7	MDWR, RMEWR, RMESR
Western Juniper/Mountain Mahogany Woodland	Forest/Woodland	4.4	0.3	MDWR, RMEWR, RMESR
Rocky Mountain Aspen	Forest/Woodland	1.6	0.1	MDWR, RMEWR, RMESR
Introduced Upland Vegetation	Shrub/Grass	8.0	0.6	MDWR
Ponderosa Pine	Forest/Woodland	0.9	0.1	MDWR, RMEWR, RMESR
Forested Wetland	Wetland	1.1	0.1	MDWR
Emergent Wetland	Wetland	0.7	0.0	MDWR
Remaining	-	2.2	0.2	-
Category 3		**0**	**0**	-
Category 4		**0**	**0**	-
Category 5		**0**	**0**	-
Category 6		**0**	**0**	-
Total		**1,438.9**	**100**	**-**

[1] USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P1-1 of Exhibit P1).
[2] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3] RMEWR = Category 2 habitat for ODFW Rocky Mountain elk winter range. MDWR = Category 2 habitat for ODFW mule deer winter range.
[4] Total acres of habitat type may not match actual parcel size due to the resolution of the GAP raster dataset. Pixels of the raster dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Soil types	The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the following soils were identified on the property (**Figure 3**): *Ateron very stony loam* (**84 acres**). Ateron soils consist of shallow, well drained soils found on ridge tops and side slopes of hills and mountains at elevations from 3,600 to 5,800 feet. Ateron soils are used for livestock grazing. The native vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and Sandberg bluegrass. *Brownscombe silt loam* (**389 acres**). Brownscombe soils consist of moderately deep, well drained soils found on hills at elevations of 2,400 to 3,600 feet. Brownscombe soils are used for range, dryland winter wheat, and wildlife habitat. Native vegetation is bluebunch wheatgrass, Sandberg bluegrass and arrowleaf balsamroot. *Hibbard gravelly silty clay loam* (**143 acres**). Hibbard soils consist of moderately deep to a duripan, well drained soils found on fan terraces at elevations of 3,000 to 3,700 feet. Hibbard soils are used for rangeland. The native vegetation is bluebunch wheatgrass, Idaho fescue and big sagebrush. *Lookout very cobbly silt loam* (**85 acres**). Lookout soils consist of moderately deep to a duripan, well drained soils found on hills at elevations of 2,800 to 3,600 feet. Lookout soils are mainly rangeland. Small acreage is irrigated for alfalfa, hay, pasture and small grain. Native vegetation dominantly is bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, buckwheat, and big sagebrush. *Ruckles-Ruclick complex* (**20 acres**). Ruckles soils consist of shallow, well drained soils found on hill and canyon side slopes at elevations ranging from 1,200 to 3,800 feet in Oregon. Ruckles soils are used for livestock grazing. Native vegetation dominantly is bluebunch wheatgrass, Idaho fescue on north slopes, Sandberg bluegrass and Wyoming big sagebrush. Ruclick soils consist of moderately deep, well drained soils found on summits, dipslopes, and sideslopes of foothills and tablelands at elevations of 4,000 to 6,500 feet in Idaho, and as low as 1,200 feet in Oregon. Ruclick soils are used mainly for rangeland and wildlife habitat. The dominant natural vegetation is Wyoming big sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. *Skullgulch silty clay loam* (**196 acres**). Skullgulch soils consist of very deep, well drained soils in concave positions on north-facing side slopes on terraces and on fans with elevations ranging from 4,000 to 5,400 feet. Skullgulch soils are used for rangeland. The native vegetation in MLRA 10 is Idaho fescue, bluebunch wheatgrass, prairie junegrass, mountain big sagebrush, and green rabbitbrush. The native vegetation in MLRA 9 is Idaho fescue, bluebunch wheatgrass and prairie junegrass. *Snell-Ateron complex* (**468 acres**). Snell series consists of moderately deep, well drained soils found on hills, plateaus, mountains and on canyon walls at elevations of 2,000 to 6,800 feet. Snell soils are used for livestock grazing and wildlife habitat. Potential native vegetation is bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass. Ateron soils consist of shallow, well drained soils found on ridge tops and side slopes of hills and mountains at elevations from 3,600 to 5,800 feet. Ateron soils are used for livestock grazing. The native vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and Sandberg bluegrass. *Virtue very gravelly silt loam* (**53 acres**). Virtue soils consist of moderately deep to a duripan well drained soils found on fans and terraces at elevations of 2,300 to 4,000 feet. Virtue soils are used for rangeland, irrigated small grain, hay and pasture. The native vegetation is bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, Thurber needlegrass and Wyoming big sagebrush.

Hydrologic Features Present (SteamNet, NWI, NHD)	Two perennial streams and one intermittent stream within the property boundary (NHD). NWI identifies a couple of emergent wetlands, a scrub-shrub wetland, and three cold water springs in addition to riparian areas associated with NHD data.
Adjacent land ownership, use, and condition	The northern boundary of the property connects to a very large tract of BLM land that connects many of the uplands above the Lower Powder Valley; including Spring Creek and Goose Creek areas to the north of State Route 86; Love Creek, Ritter Creek and Ruckles Creek south of State Route 86; and areas extending into the upper Lower Powder Valley including Crews Creek and portions of the Powder River north of State Route 203 to the Union/Baker County line. However, a majority of the property is immediately adjacent to private properties. Adjacent land use is rangeland that appears to be heavily grazed.
Infrastructure Density within or Near the Parcel (Qualitative Description)	Property is approximately 1 mile south of State Route 86 and contains some fencing and two-track trails; otherwise, the property is open rangeland absent of development.
Summary	The entire property is within a sage-grouse Core Area that is well-studied by ODFW. Nesting sage-grouse have been documented on the property. The property contains both elk and mule deer winter ranges and is heavily utilized by pronghorn in the spring. The property is grazed every other year, and has been managed in this manner for the last 10 years. Landowner explained that since this grazing rotation was implemented, he has seen an upward trend in desirable vegetation (Idaho fescue especially). The property is mostly Wyoming big sagebrush with islands of invasive species (Japanese brome was mentioned) that would need treatment. Landowner believes that ten years of rest from grazing and some treatments would get the property to a state where, barring fire or some other unexpected event, habitat would contain enough native desirable vegetation that few management actions would be needed to maintain the quality of habitat.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on Category 2 Rocky Mountain elk winter range and mule deer winter range within the shrub/grass general vegetation type. This mitigation site could also help meet the Project need for sage-grouse habitat mitigation. It also provides opportunity for shrub/grass mitigation of Category 3, 4, & 5 habitats. It contains important habitat features that could be preserved and has some uplift opportunities that could be achieved through implementation of standard mitigation actions. The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to sage-grouse, elk, and deer (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to State of Oregon, Federal Land Management Agency, approved NPO or Land Trust.
Mitigation Actions	The following are mitigation actions that may be implemented at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Modification of Livestock Grazing* – this property has been grazed every other year for the past ten years, allowing for re-establishment of native vegetation. Future management would focus primarily on grazing practices that would not compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Fence Removal/Marking* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. Some areas of introduced upland vegetation (specifically Japanese brome) were noted on the property in cattle congregation areas. • *Native revegetation/restoration* – focus of efforts would be to promote establishment of sagebrush and bunchgrasses; opportunities exist but have not been specifically identified at this time. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).

Success Criteria

Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to:

- Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift.
- Successful weed control through documentation of a reduction in weeds and non-native invasive plant species.
- Mitigation success will not be dependent on documentation of increased use of the mitigation site by sage-grouse or any other wildlife species.

Financial Outline

Estimated Budget for the Glasgow Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition	?	1		?
50-year Operation and Management Costs				
O&M[1]	$30.00	1,438	50	$2,157,000
Total	**-**			**$?** ($?)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The average cost per acre presented in that document was $24 in 2004 dollars, this has been adjusted to reflect 2015 dollars. In addition, one of the projects presented in the document was the 10,000 acre Sagebrush Flat Wildlife Mitigation area in Washington state which is within a similar habitat type and has a FY2015 budget of approximately $300,000 (or $30/acre).

[2] Cost per acre here includes cost of acquisition/easement and initial mitigation actions and long-term O&M for 50 years.

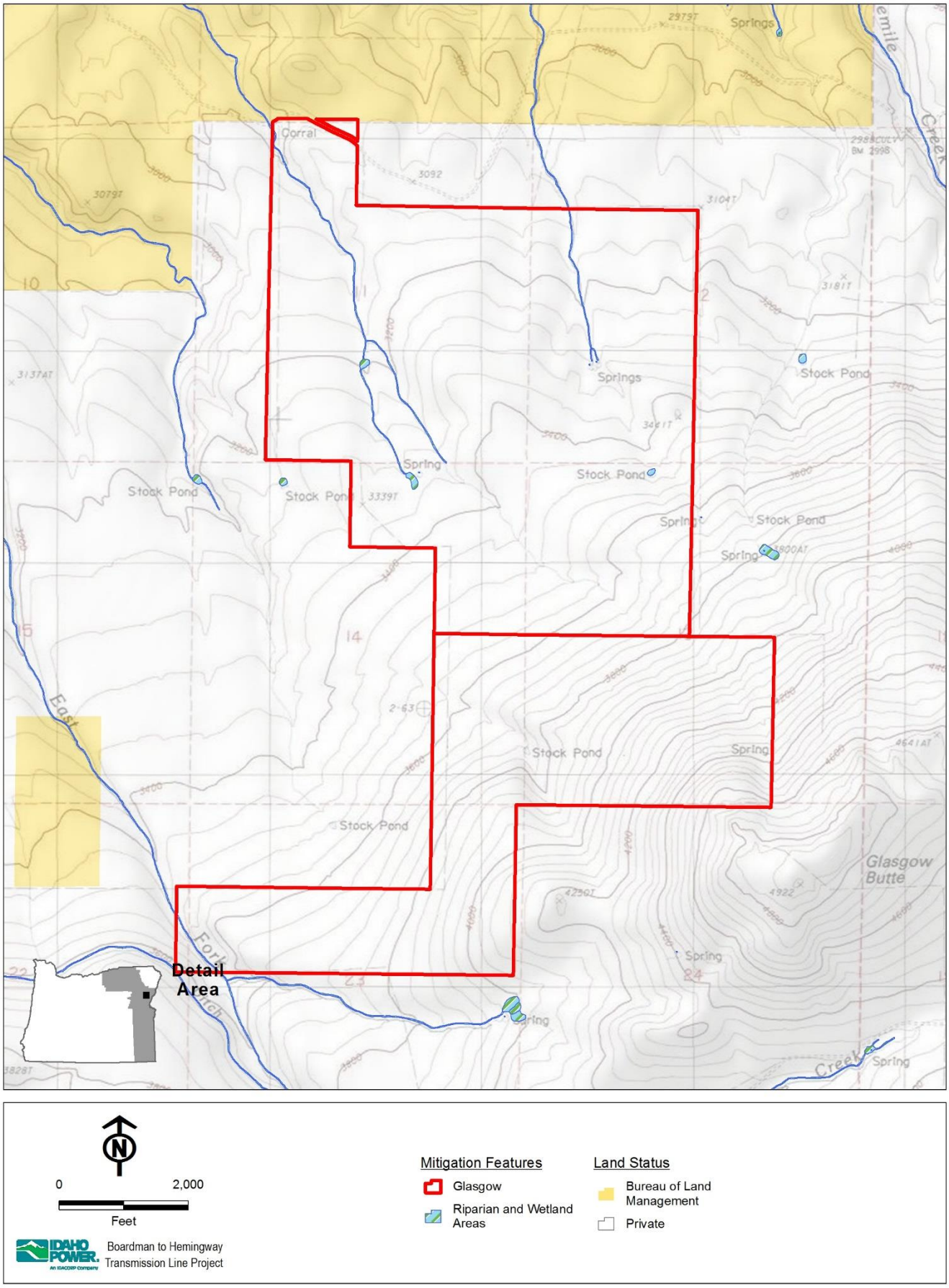

Figure 1. Glasgow Ownership and Water

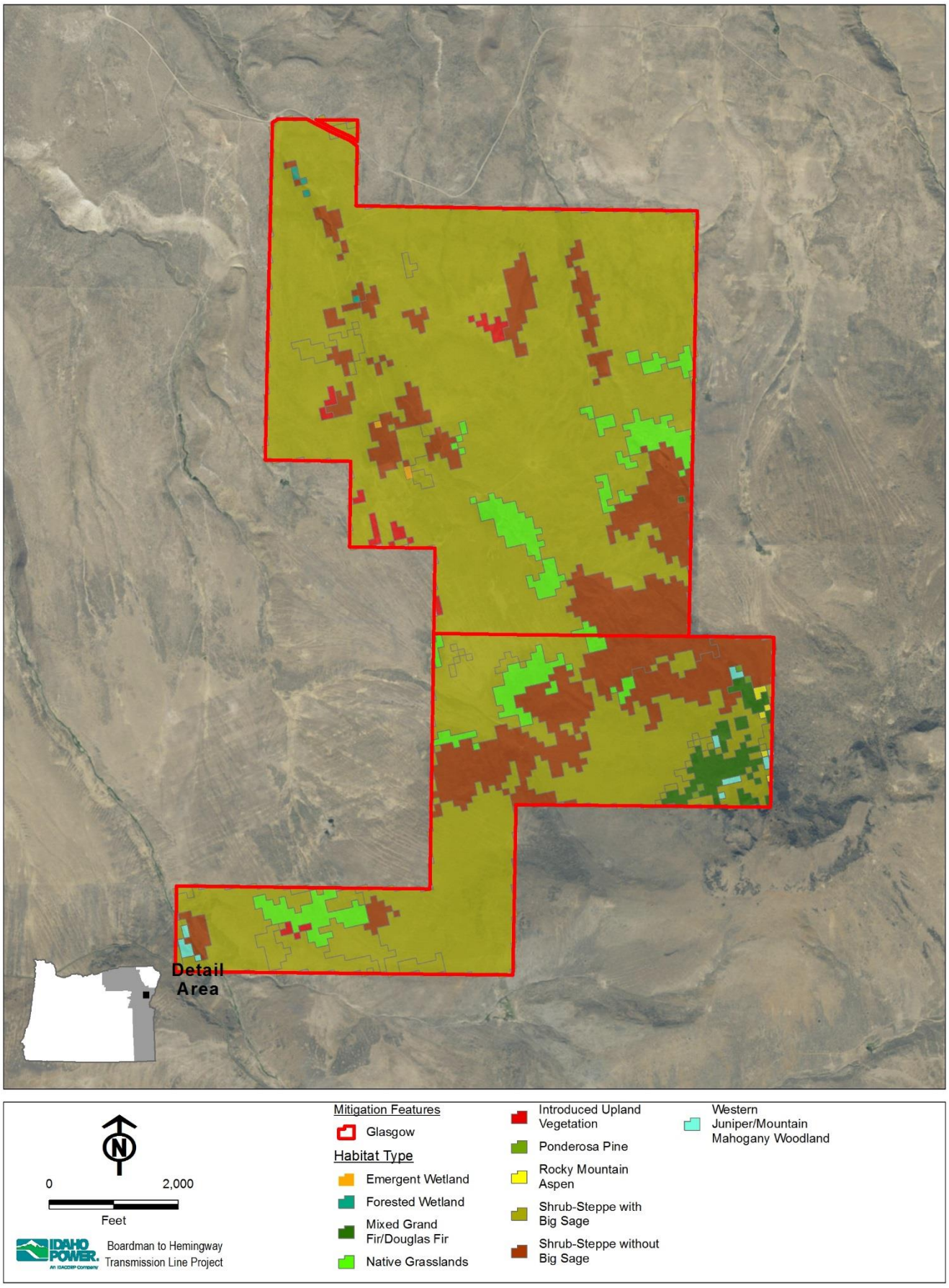

Figure 2. Glasgow Habitat Types

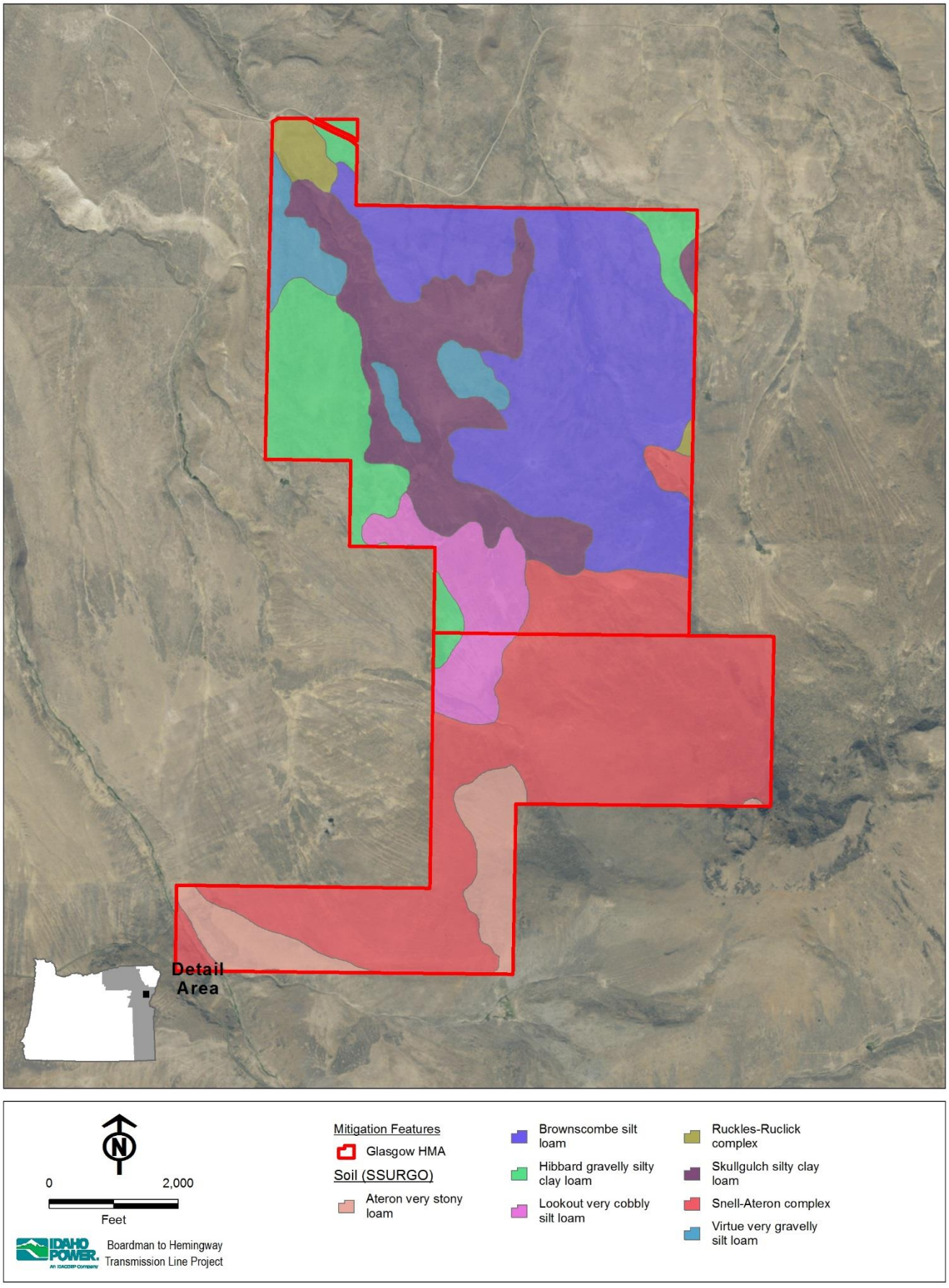

Figure 3. Glasgow Soil Types

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Trail Creek
Landowner:
Parcel Size in Acres: 624
Date of Assessment: 10/13/2014
Parcel Elevation (ft): 3,600 – 4,580
Within Mitigation Service Area?: Yes

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Baker County, approximately 5 miles northeast of Durkee.
T10S R43E Section 36, T10S R44E Section 31, T11S R43E Section 1, T11S R44E Section 6 (**Figure 1**)

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Parcel	Wildlife Habitat[3]
Category 1		**0**	**0**	-
Category 2		**624.5**	**100**	-
Shrub-Steppe with Big Sage	Shrub/Grass	490.0	78.5	RMEWR, RMESR, MDSR
Shrub-Steppe without Big Sage	Shrub/Grass	75.6	12.1	RMEWR, RMESR, MDSR
Native Grasslands	Shrub/Grass	27.1	4.3	RMEWR, RMESR, MDSR
Introduced Upland Vegetation	Shrub/Grass	8.2	1.3	RMEWR, RMESR, MDSR
Western Juniper /Mountain Mahogany Woodland	Forest/Woodland	7.6	1.2	RMEWR, RMESR, MDSR
Ponderosa Pine	Forest/Woodland	7.1	1.1	RMEWR, RMESR, MDSR
Mixed Grand Fir / Douglas Fir	Forest/Woodland	3.1	0.5	RMEWR, RMESR, MDSR
Rocky Mountain Aspen	Forest/Woodland	3.1	0.5	RMEWR, RMESR, MDSR
Bare Ground Cliffs Talus	Bare Ground	2.0	0.3	RMEWR, RMESR, MDSR
Emergent Wetland	Wetland	0.7	0.1	RMEWR, RMESR, MDSR
Category 3		**0**	**0**	-
Category 4		**0**	**0**	-
Category 5		**0**	**0**	-
Category 6		**0**	**0**	-
Total	**NA**	**624.5**[4]	**100**	**-**

[1] USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in Exhibit P1, Attachment P1-1 Habitat Categorization Matrix.
[2] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3] RMEWR = Rocky Mountain Elk Winter Range.
[4] Total acres of habitat type may not match actual parcel size due to resolution of the GAP raster dataset. Pixels of the raster dataset were not simplified or smoothed to match the exact shape of the parcel boundary. This is apparent in **Figure 2**.

Soil type

The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the following soil was identified on the property (**Figure 3**):

Durkee gravelly silt loam (**623**). Durkee soils consist of moderately deep, well drained soils on smooth rolling hills at elevation ranges from 3,600 to 6,100 feet.

Hydrologic Features Present (SteamNet, NWI, NHD)	Two intermittent streams are on the property (NHD). NWI does not indicate any additional wetland features beyond those associated with the streams identified by NHD.
Adjacent land ownership, use, and condition (if possible)	A majority of this property shares a border with a BLM parcel that is approximately 4,000 acres in size. Also adjacent to private land ownership. Dominant land use in the area is rangeland. Adjacent private lands appear to be more degraded as a result of heavier grazing practices (per 2013 site visit).
Infrastructure Density within or Near the Parcel (Qualitative Description)	The property contains some fencing and gates and some two track roads; otherwise open rangeland.
Summary	The property is completely within a sage-grouse Core Area and the Lookout Mountain Rocky Mountain elk herd's winter range. The property is completely within elk summer range and mule deer summer range as well. The property is close to the Nodine sage-grouse lek. The property provides sage-grouse breeding habitat, adequate sagebrush cover and height ensures adequate winter forage, and an abundance of forbs in the understory and a source of water in Trail Creek provides quality brood-rearing habitat. The property is able to support sage-grouse year-round and therefore provides habitat for many other sagebrush obligate species.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on Category 2 Rocky Mountain elk winter range within the shrub/grass general vegetation type. This mitigation site could also help meet the Project need for sage-grouse habitat mitigation. It also provides opportunity for shrub/grass mitigation of Category 3, 4, & 5 habitats. It contains important habitat features that could be preserved and has some uplift opportunities that could be achieved through implementation of standard mitigation actions. The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to sage-grouse and elk (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to State of Oregon, Federal Land Management Agency, approved NPO or Land Trust.
Mitigation Actions	The following are mitigation actions that IPC may consider implementing at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Juniper/Conifer Removal* –Opportunity for spot-treating single trees occurs throughout the property to prevent future encroachment. • *Modification of Livestock Grazing* –grazing on this property appears to have been managed in a manner that allows native vegetation to remain established and provide cover and forage for wildlife species. Future management would focus primarily on grazing practices that would not compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Fence Removal/Marking* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. Some areas of introduced upland vegetation were noted along Trail Creek where cattle congregate. • *Native revegetation/restoration* – focus of efforts would be to promote establishment of sagebrush and bunchgrasses; opportunities exist but have not been specifically identified at this time. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed. • *Wetland/Spring/Riparian Improvement* – opportunity exists along Trail Creek to perform riparian/watershed improvements.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).

Success Criteria

Specific success criteria will be developed once mitigation actions have been confirmed for the site. Success criteria may include but are not limited to:

- Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift.
- Successful weed control through documentation of weed reduction.
- Successful juniper removal and continued control of encroachment onto the mitigation site for the life of the project.
- Mitigation success will not be dependent on documentation of increased use of the mitigation site by sage-grouse or any other wildlife species.

Financial Outline

Estimated Budget for the Trail Creek Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition	?	1		?
50-year Operation and Management Costs				
O&M[1]	$30.00	624	50	$936,000
Total	**-**			**$?** ($?)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The average cost per acre presented in that document was $24 in 2004 dollars, this has been adjusted to reflect 2015 dollars. In addition, one of the projects presented in the document was the 10,000 acre Sagebrush Flat Wildlife Mitigation area in Washington state which is within a similar habitat type and has a FY2015 budget of approximately $300,000 (or $30/acre).

[2] Cost per acre here includes cost of acquisition/easement and initial mitigation actions and long-term O&M for 50 years.

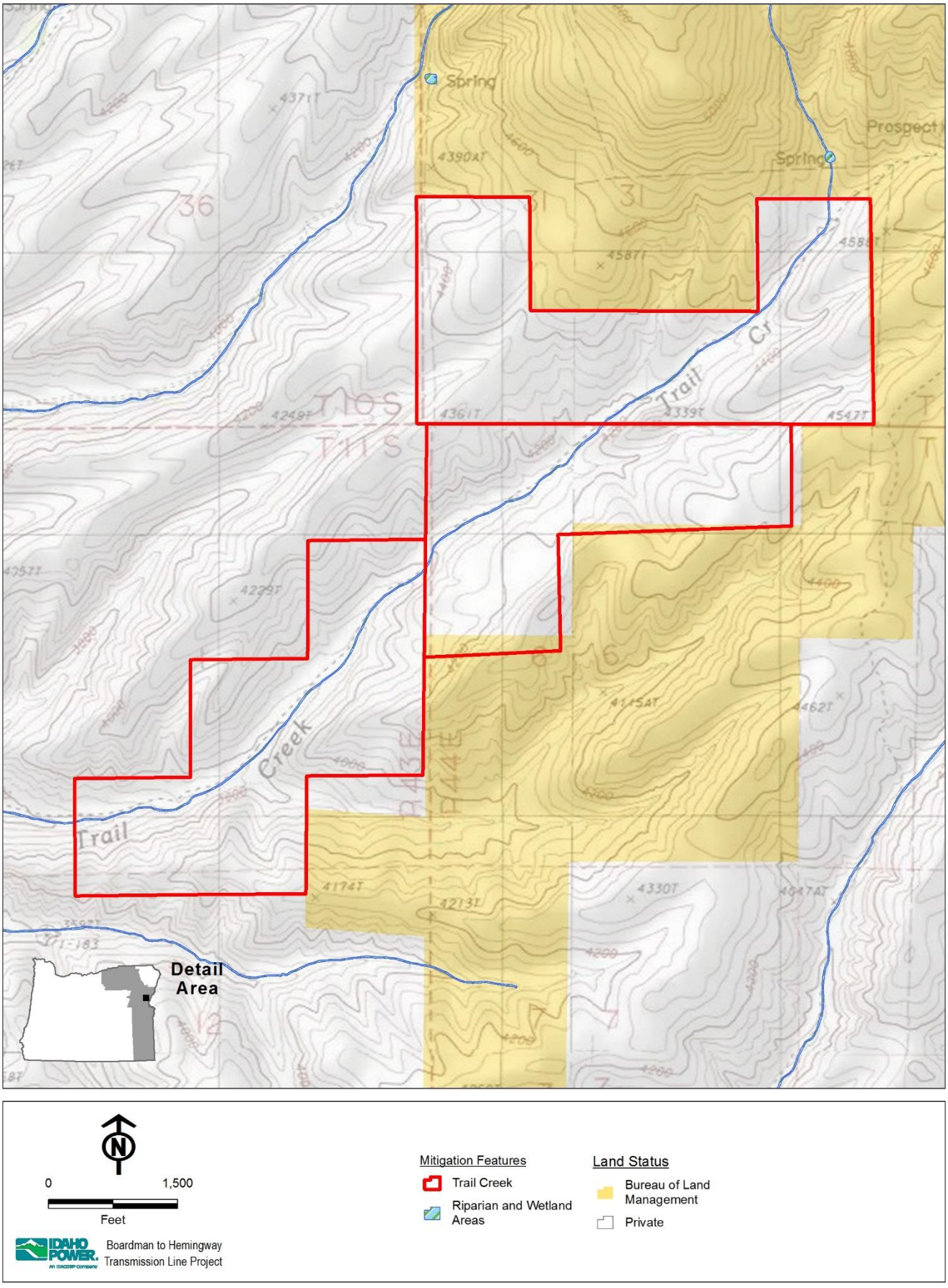

Figure 1. Trail Creek Ownership and Water

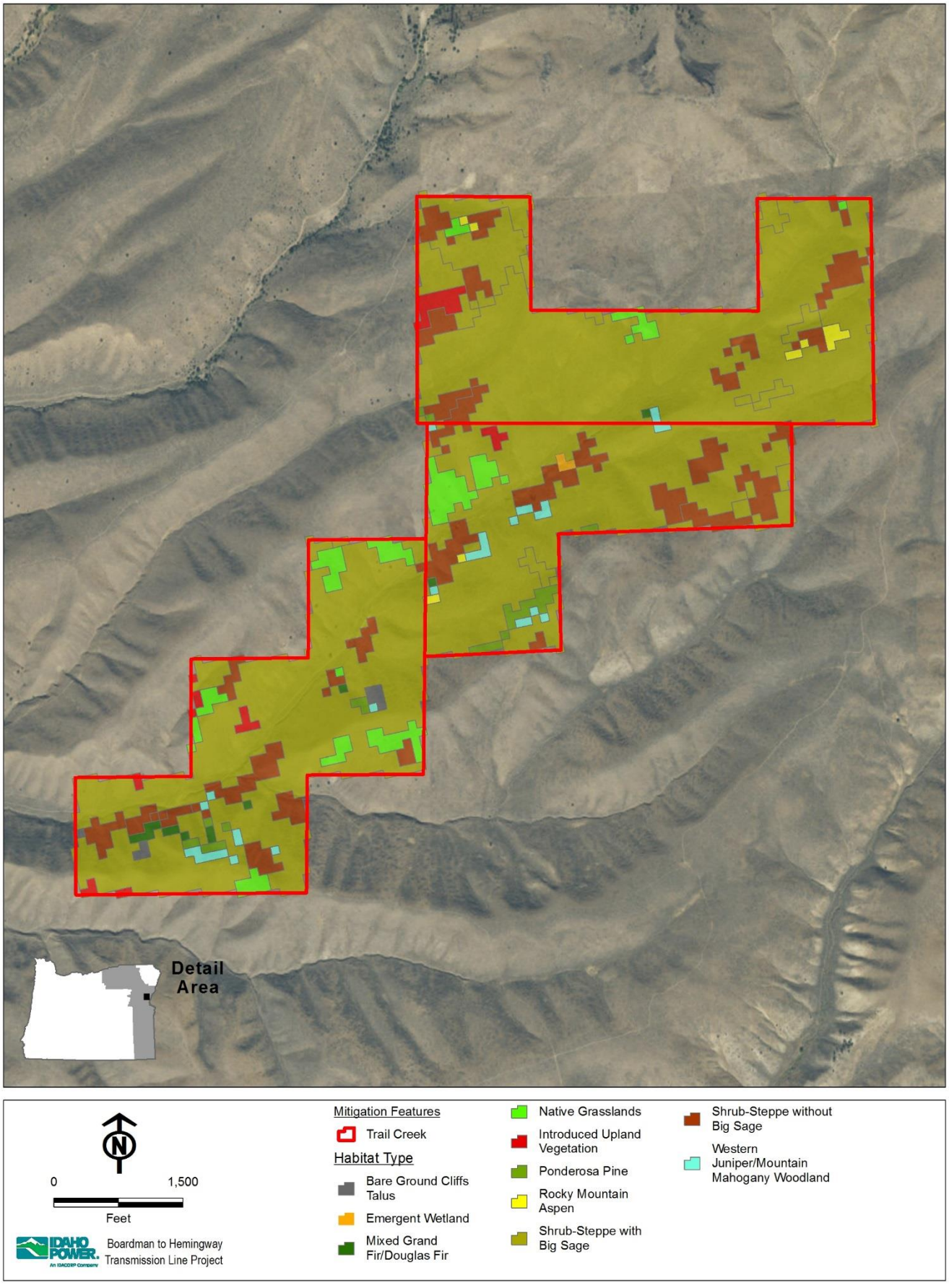

Figure 2. Trail Creek Habitat Types

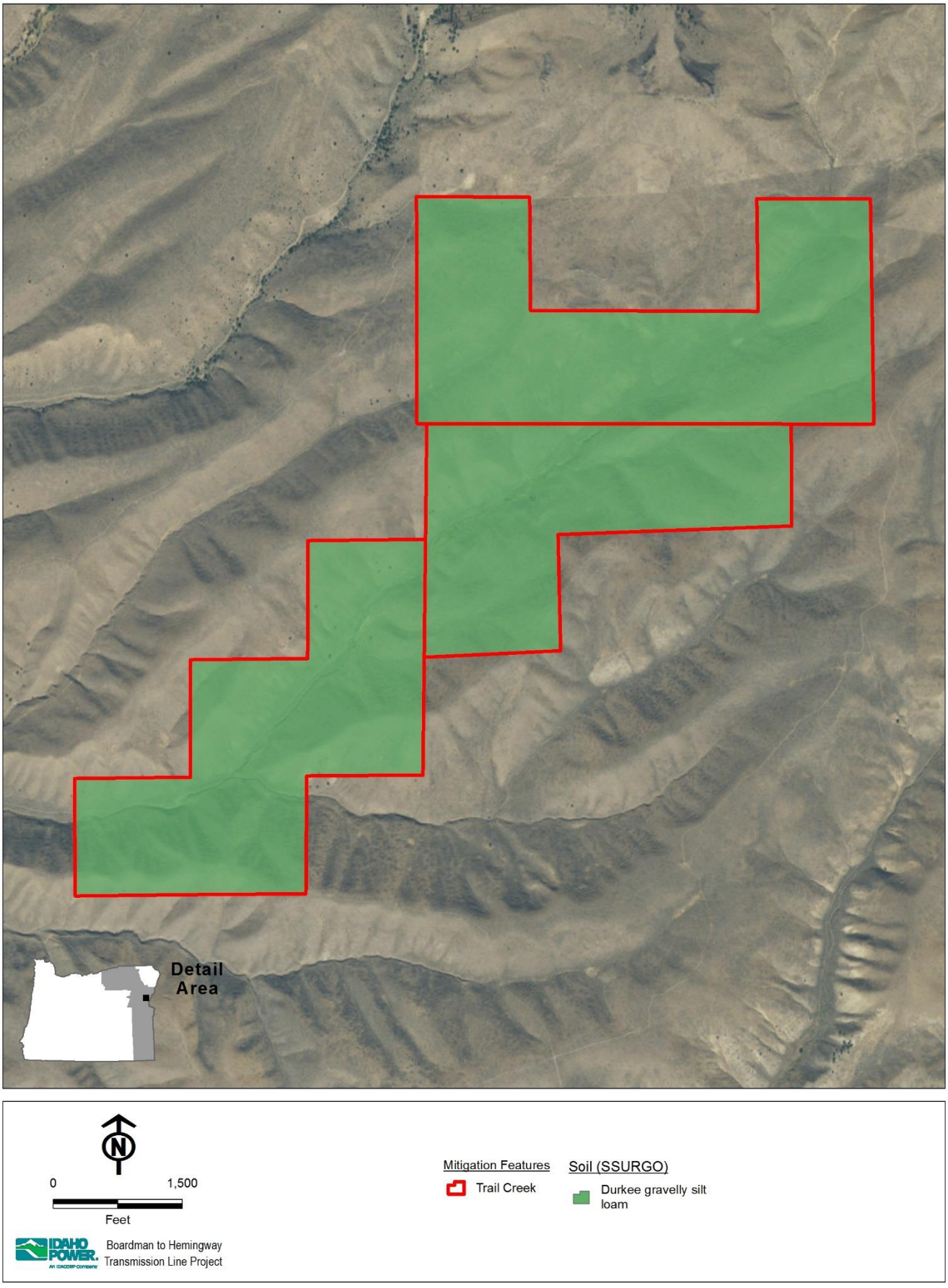

Figure 3. Trail Creek Soil Types

Boardman to Hemingway Transmission Line Project

Desktop Habitat Mitigation Site Assessment Worksheet

Parcel Name: Upper Timber (**Figure 1**) **Date of Assessment:** 10/13/2014
Landowner: **Parcel Elevation (ft):** 3,000 – 4,800
Parcel Size in Acres: 1,577 **Within Mitigation Service Area?:** Yes

Location Description
(County, miles and direction from known location, TRS, UTM, other):

Baker County, 5 miles west of Richland.
T9S R44E Sections 22, 23, 26, 27, 28, 29

Vegetation Cover Classes (GAP[1], **Figure 2**)

HMP Habitat Category[2] and Type	HMP General Vegetation Type	Acres	% of Total	Wildlife Habitat[3]
Category 1		**0**	**0**	
Category 2				-
Shrub-Steppe with Big Sage	Shrub/Grass	538.1	34.2	MDWR
Shrub-Steppe with Big Sage	Shrub/Grass	407.6	25.8	MDWR, RMESR
Shrub-Steppe with Big Sage	Shrub/Grass	104.1	6.6	RMEWR, RMESR, MDWR
Shrub-Steppe without Big Sage	Shrub/Grass	79.3	5.1	MDWR
Shrub-Steppe without Big Sage	Shrub/Grass	189.7	12.0	MDWR, RMESR
Shrub-Steppe without Big Sage	Shrub/Grass	32.1	2.0	RMEWR, RMESR, MDWR
Native Grasslands	Shrub/Grass	19.5	1.2	MDWR
Native Grasslands	Shrub/Grass	80.0	5.1	MDWR, RMESR
Native Grasslands	Shrub/Grass	11.2	0.7	RMEWR, RMESR, MDWR
Introduced Upland Vegetation	Shrub/Grass	36.2	2.3	MDWR
Introduced Upland Vegetation	Shrub/Grass	52.2	3.3	MDWR, RMESR
Introduced Upland Vegetation	Shrub/Grass	6.4	0.4	RMEWR, RMESR, MDWR
Forested Wetland	Wetland	7.4	0.5	MDWR
Forested Wetland	Wetland	1.5	0.1	MDWR, RMESR
Agriculture[4]	Ag/Developed	3.3	0.3	MDWR
Agriculture[4]	Ag/Developed	3.8	0.2	MDWR, RMESR
Mixed Grand Fir/Douglas Fir	Forest/Woodland	1.8	0.1	MDWR
Ponderosa Pine	Forest/Woodland	1.6	0.1	MDWR
Rocky Mountain Aspen	Forest/Woodland	1.1	0.1	MDWR
Category 3		**0**	**0**	-
Category 4		**0**	**0**	-
Category 5		**0**	**0**	-
Category 6		**0**	**0**	-
Total[5]		**1,576.9**	**100**	**-**

[1] USGS Gap Analysis Project (GAP) GIS data using ecological systems. Ecological systems were cross-walked to HMP Habitat Type as shown in the Habitat Categorization Matrix (Attachment P1-1 of Exhibit P1).
[2] Represents the habitat category based on overlap with wildlife habitat layers. Agriculture and Developed habitat types' categories are not modified by overlap with wildlife habitat.
[3] RMEWR = Category 2 habitat for ODFW Rocky Mountain elk winter range. MDWR = Category 2 habitat for ODFW mule deer winter range.
[4] A brief review of aerial imagery indicated that ReGAP is misclassifying areas as Agriculture. In this instance, the Agriculture appears likely to be wetlands. Therefore, Agriculture is remaining as a Category 2 habitat in this case. Reviewing of ReGAP data via aerial photo interpretation is not performed for the vast majority of habitat classifications on potential mitigation properties. On the ground knowledge of this property prompted a review of the Agriculture habitat classification.
[5] Total acres of habitat type may not match actual parcel size due to the resolution of the GAP raster dataset. Pixels of the raster dataset were not simplified or smoothed to match the exact shape of the parcel boundary.

Soil types	The NRCS Soil Survey Geographic Database (SSURGO) data was reviewed and the following soils were identified on the property (**Figure 3**): *Ateron very stony loam* (**123 acres**). Ateron soils consist of shallow, well drained soils found on ridge tops and side slopes of hills and mountains at elevations from 3,600 to 5,800 feet. Ateron soils are used for livestock grazing. The native vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and Sandberg bluegrass. *Bakeoven-Ruckles complex* (**101 acres**). Bakeoven soils consist of very shallow, well drained soils found on mountains, ridgetops, hillslopes, mesas, and benches at elevations of 300 to 4,800 feet. Bakeoven soils are used for livestock grazing and wildlife habitat. Native vegetation is Sandberg bluegrass and stiff sagebrush. Ruckles soils consist of shallow, well drained soils found on hill and canyon side slopes at elevations ranging from 1,200 to 3,800 feet in Oregon. Ruckles soils are used for livestock grazing. Native vegetation dominantly is bluebunch wheatgrass, Idaho fescue on north slopes, Sandberg bluegrass and Wyoming big sagebrush. *Bouldrock complex* (**129 acres**) and *Bouldrock loam* (**118 acres**). Bouldrock soils consist of moderately deep, well drained soils found on south-facing side slopes of mountainous areas at elevations ranging from 4,000 to 6,200 feet. Bouldrock soils are used for rangeland. The native vegetation is bluebunch wheatgrass, mountain big sagebrush, arrowleaf balsamroot and gray rabbitbrush. *Greenscombe loam* (**280 acres**). Greenscombe soils consist of moderately deep, well drained soils on low hills at elevations 3,200 to 3,800 feet. Greenscombe soils are Rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, Sandberg bluegrass, Thurber needlegrass, and big sagebrush. *Hyall-Simas association* (**91 acres**). Hyall soils consist of moderately deep to consolidated old alluvium (densic material), well drained soils on side slopes of dissected terraces at elevations of 2,700 to 3,500 feet. Hyall soils are used for range, watershed and wildlife habitat. Native vegetation is bluebunch wheatgrass, Idaho fescue and arrowleaf balsamroot. Simas soils consist of very deep, well drained soils found on hills at elevations of 1,200 to 4,000 feet. Simas soils are used for livestock grazing. Native plants are bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, and Wyoming and basin big sagebrush. *Kilmerque loam* (**25 acres**). Kilmerque soils consist of moderately deep, well drained soils on gently rolling bench tops to moderately steep south aspect side slopes in forested mountains at elevations ranging from 3,500 to 6,000 feet. Kilmerque soils are used for woodland. The native vegetation is ponderosa pine, Douglas fir and pinegrass. *Ruckles-Ruclick-Snellby complex* (**50 acres**). Ruckles soils consist of shallow, well drained soils found on hill and canyon side slopes at elevations ranging from 1,200 to 3,800 feet in Oregon. Ruckles soils are used for livestock grazing. Native vegetation dominantly is bluebunch wheatgrass, Idaho fescue on north slopes, Sandberg bluegrass and Wyoming big sagebrush. Ruclick soils consist of moderately deep, well drained soils found on summits, dipslopes, and sideslopes of foothills and tablelands at elevations of 4,000 to 6,500 feet in Idaho, and as low as 1,200 feet in Oregon. Ruclick soils are used mainly for rangeland and wildlife habitat. The dominant natural vegetation is Wyoming big sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. Snellby soils consist of moderately deep, well drained soils on hills at elevations of 3,400 to 3,800 feet. Snellby soils are used for rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, and big sagebrush.

Soil types (cont.)	*Ruckles-Ruclick complex* (**336 acres**). Ruckles soils consist of shallow, well drained soils found on hill and canyon side slopes at elevations ranging from 1,200 to 3,800 feet in Oregon. Ruckles soils are used for livestock grazing. Native vegetation dominantly is bluebunch wheatgrass, Idaho fescue on north slopes, Sandberg bluegrass and Wyoming big sagebrush. Ruclick soils consist of moderately deep, well drained soils found on summits, dipslopes, and sideslopes of foothills and tablelands at elevations of 4,000 to 6,500 feet in Idaho, and as low as 1,200 feet in Oregon. Ruclick soils are used mainly for rangeland and wildlife habitat. The dominant natural vegetation is Wyoming big sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. *Ruclick very cobbly silt loam* (**135 acres**). Ruclick soils consist of moderately deep, well drained soils found on summits, dipslopes, and sideslopes of foothills and tablelands at elevations of 4,000 to 6,500 feet in Idaho, and as low as 1,200 feet in Oregon. Ruclick soils are used mainly for rangeland and wildlife habitat. The dominant natural vegetation is Wyoming big sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. *Snell-Ateron complex* (**32 acres**). Snell series consists of moderately deep, well drained soils found on hills, plateaus, mountains and on canyon walls at elevations of 2,000 to 6,800 feet. Snell soils are used for livestock grazing and wildlife habitat. Potential native vegetation is bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass. Ateron soils consist of shallow, well drained soils found on ridge tops and side slopes of hills and mountains at elevations from 3,600 to 5,800 feet. Ateron soils are used for livestock grazing. The native vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and Sandberg bluegrass. *Snellby stony silt loam* (**79 acres**). Snellby soils consist of moderately deep, well drained soils on hills at elevations of 3,400 to 3,800 feet. Snellby soils are used for rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, and big sagebrush. *Taterpa loam* (**77 acres**). Taterpa soils consist of deep, well drained soils on north-facing side slopes of mountains at elevations ranging from 4,000 to 6,200 feet. Taterpa soils are used for rangeland. The native vegetation is Idaho fescue, bluebunch wheatgrass, mountain big sagebrush and green rabbitbrush.
Hydrologic Features Present (SteamNet, NWI, NHD)	The property contains four perennial streams. NWI identifies several (14) emergent wetlands, a couple of impounded ponds, and three cold springs.
Adjacent land ownership, use, and condition	A majority of the immediately adjacent lands are private ownership; however, a few small BLM parcels border the property and larger tracts of BLM land are within 1 mile of the property. Livestock rangeland is the primary land use in the area, with irrigated agriculture in the valley surrounding Richland, approximately 2 miles to the east of the property.
Infrastructure Density within or Near the Parcel (Qualitative Description)	State Route 86 is 1 mile north of the property. The property itself contains some fencing and two track trails; otherwise, the property is open range.

Summary	The property contains some high quality shrub-steppe and native grassland habitat, but is interspersed with invasive vegetation such as medusahead wildrye. The property contains numerous water sources and riparian habitat. The property is completely within a sage-grouse Core Area and mule deer winter range and also contains some elk winter range. The highest density of wintering mule deer in Baker County occurs just north of the property. Pronghorn are common in the area. The property is adjacent to multiple sage-grouse leks and is situated between known lek sites and Sheep Mountain where radio-collared birds have been located, indicating the property is likely used during seasonal migrations and/or for nesting and brood rearing. The Pevine Flat area to the east is important for both sage-grouse and wintering big game.
Pass/Fail Desktop Assessment?	Pass

Boardman to Hemingway Transmission Line Project

Consideration of Property as a Potential Mitigation Site

Mitigation Function	This mitigation site has been identified as in-kind and in-proximity mitigation for impacts on Category 2 mule deer winter range and Rocky Mountain elk winter range within the shrub/grass general vegetation type. This mitigation site could also help meet the Project need for sage-grouse habitat mitigation. It also provides opportunity for shrub/grass mitigation of Category 3, 4, & 5 habitats. It contains important habitat features that could be preserved and has some uplift opportunities that could be achieved through implementation of standard mitigation actions. The mitigation actions listed below, upon successful implementation, will increase the quality of habitat available to sage-grouse, elk, and deer (among other species) within the mitigation site and result in an ecological uplift to the mitigation site above what is provided under the current management.
Mitigation Site Manager	Fee title acquisition with transfer of ownership to State of Oregon, Federal Land Management Agency, approved NPO or Land Trust.
Mitigation Actions	The following are mitigation actions that may be implemented at this mitigation site in order to satisfy the mitigation policies/guidelines of the permitting agencies. All mitigation actions will follow reliable methods. The mitigation actions presented here are not comprehensive. Implementation will likely be some combination of one or more of the following: • *Modification of Livestock Grazing* –. Future management would focus primarily on grazing practices that would not compete with native wildlife life history needs. Targeted grazing may be considered for habitat enhancement/treatment actions. • *Fence Removal/Marking* – opportunities are unknown at this time, but it is anticipated that some unnecessary fencing may be removed or necessary fencing can be upgraded to more wildlife friendly fencing. • *Weed treatment* – the extent of noxious weed invasion on the mitigation site is unknown at this time but it is anticipated that opportunities exist to implement this mitigation action. Some areas of introduced upland vegetation (specifically medusahead wildrye) were noted on the property. • *Native revegetation/restoration* – focus of efforts would be to promote establishment of sagebrush and bunchgrasses; opportunities exist but have not been specifically identified at this time. • *Fire readiness* – efforts made to make the property more resistant to catastrophic fire and a fire response plan could be developed. • *Wetland/Spring/Riparian Improvement* – opportunity exists along Canyon Creek, Upper Timber Gulch, and other areas to perform riparian/watershed improvements.
Monitoring	A specific plan for monitoring will be developed, but in general, mitigation progress will be monitored through vegetation plot monitoring and establishment of photo locations. Monitoring will occur annually for the first 3-5 years and an annual report will be produced. During the annual monitoring phase, a longer-term monitoring plan will be developed using similar protocols and methods to monitor the mitigation actions at larger time intervals (i.e., 5 years, 10 years).

Success Criteria

Specific success criteria will be developed once baseline conditions have been determined and potential mitigation actions have been confirmed for the site. Success criteria may include but are not limited to:

- Vegetation plots show an increase in native vegetation cover and general trend toward increased habitat quality representing an ecological uplift.
- Successful weed control through documentation of a reduction in weeds and non-native invasive plant species.
- Mitigation success will not be dependent on documentation of increased use of the mitigation site by sage-grouse or any other wildlife species.

Financial Outline

Estimated Budget for the Upper Timber Mitigation Site

Action	Cost per Unit	Units	Years	Expense
One-time Costs				
Acquisition	?	1		?
50-year Operation and Management Costs				
O&M[1]	$30.00	1,577	50	$2,365,500
Total	**-**			**$?** ($?)[2]

[1] This O&M cost is an estimate of the cost per acre per year (not including acquisition/easement costs) based on the research presented in the Independent Economic Analysis Board's 2007 *Investigation of Wildlife O&M Costs*. The average cost per acre presented in that document was $24 in 2004 dollars, this has been adjusted to reflect 2015 dollars. In addition, one of the projects presented in the document was the 10,000 acre Sagebrush Flat Wildlife Mitigation area in Washington state which is within a similar habitat type and has a FY2015 budget of approximately $300,000 (or $30/acre).

[2] Cost per acre here includes cost of acquisition/easement and initial mitigation actions and long-term O&M for 50 years.

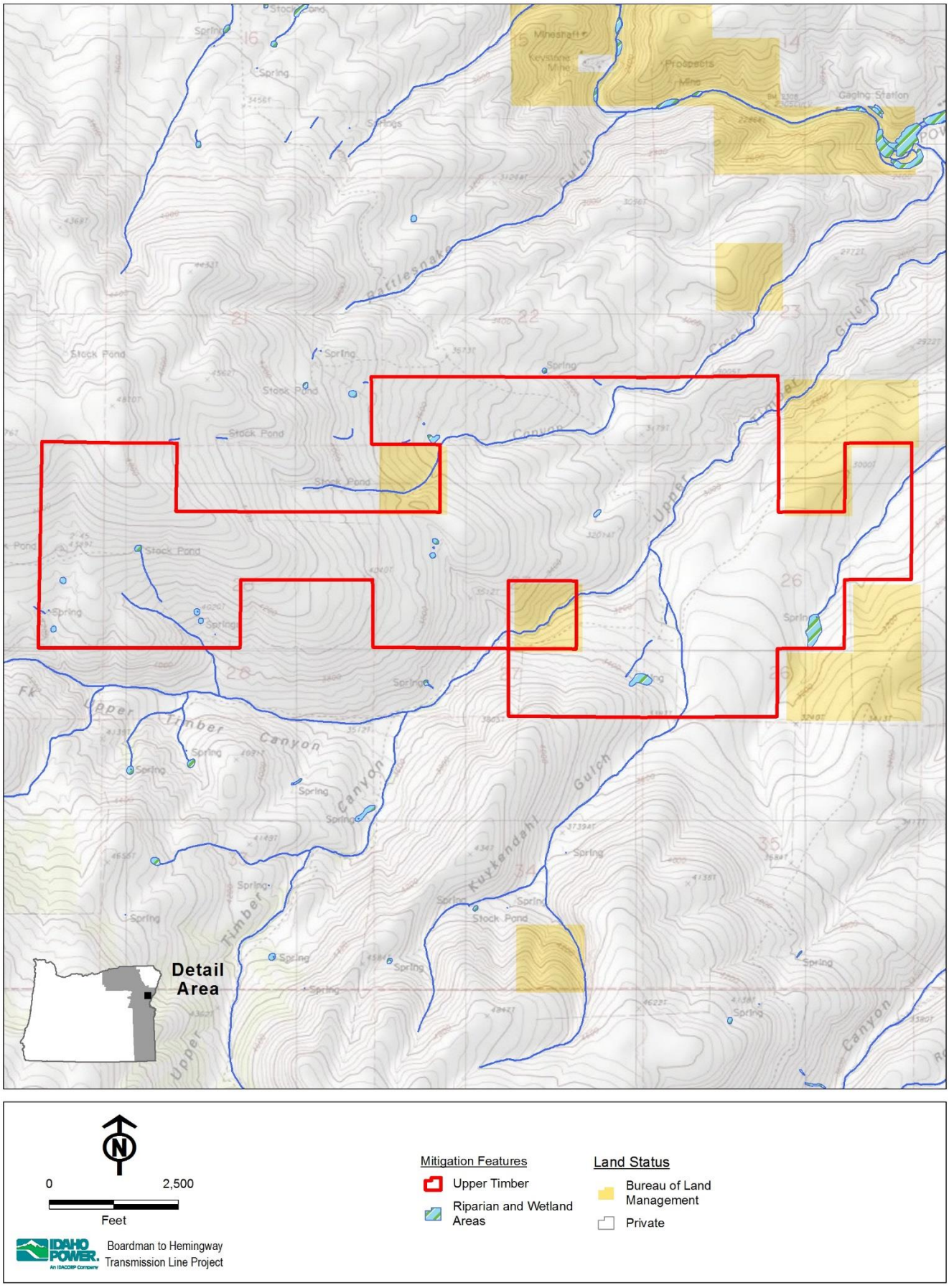

Figure 1. Upper Timber Ownership and Water

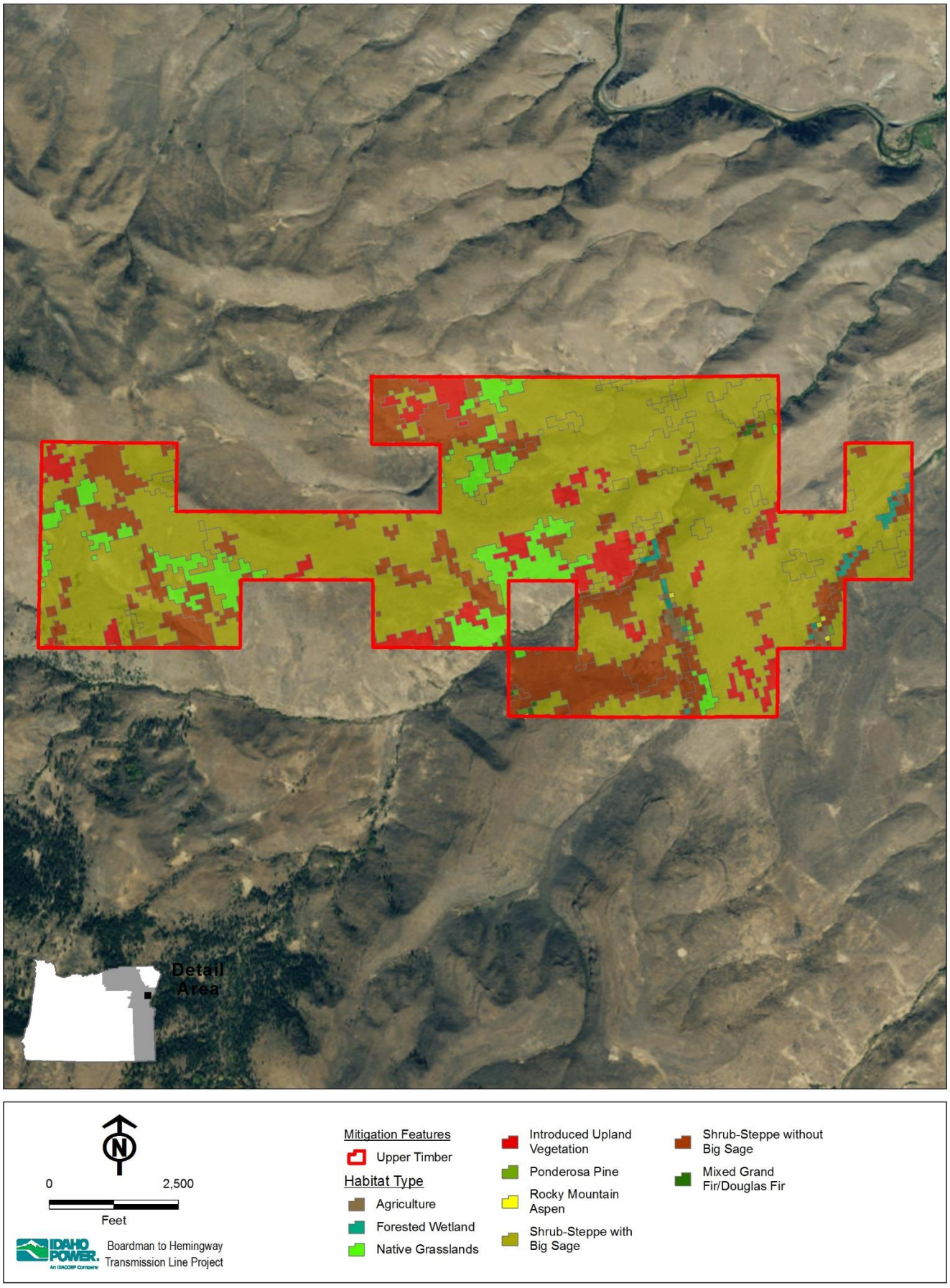

Figure 2. Upper Timber Habitat Types

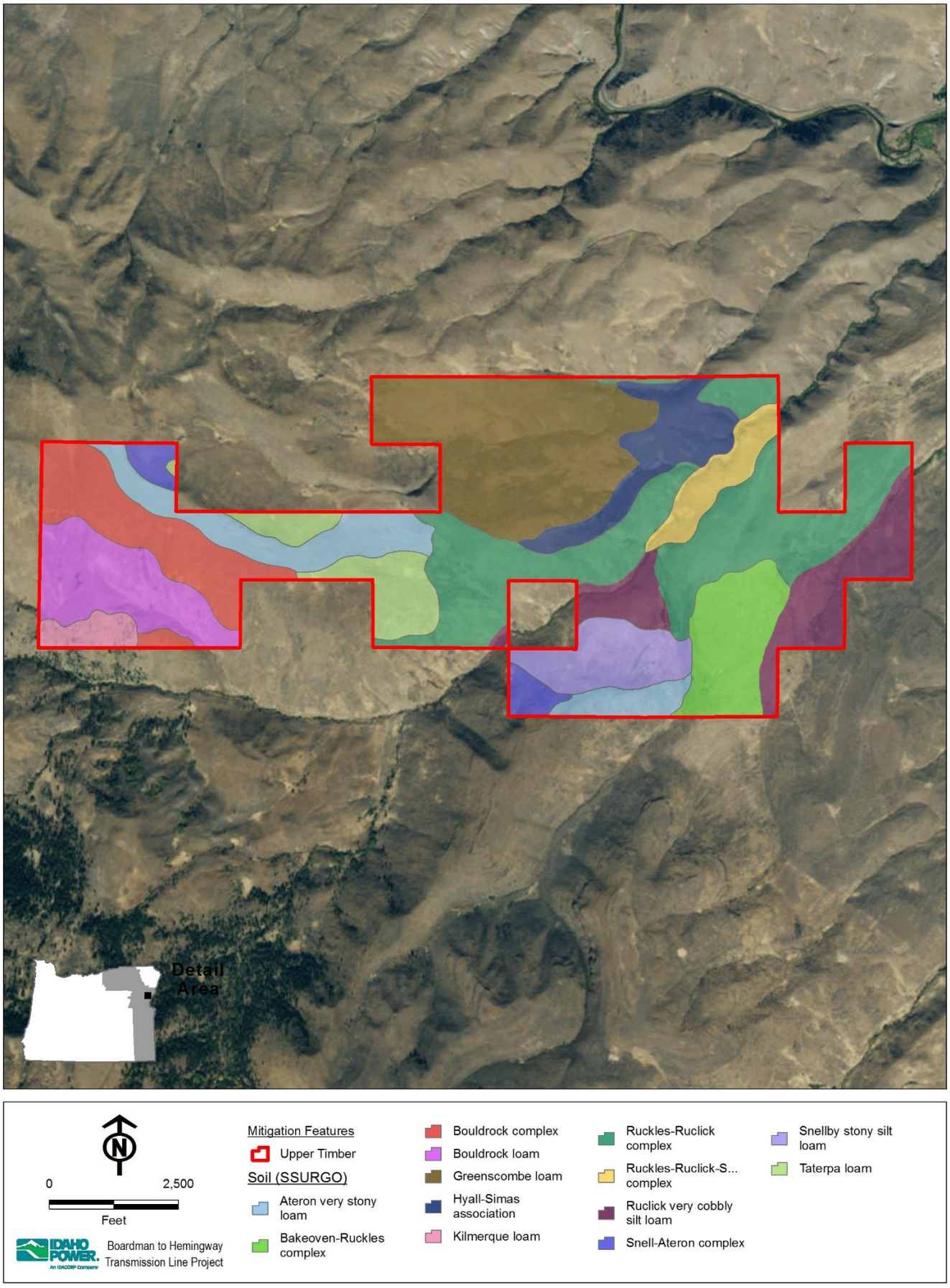

Figure 3. Upper Timber Soil Types