Attachment P, Navigation, Fishing and Recreation Use

No impacts to wetlands or other waters are currently proposed on state-owned land.

Attachment Q, Restoration and Rehabilitation of Temporary Impacts

A restoration plan for rehabilitation of temporary impacts has been prepared and is attached here. This plan is based on the Project's vegetation management plan and is separate from the compensatory wetland and non-wetland mitigation plan.

Draft
Site Rehabilitation Plan
Boardman to Hemingway Transmission Line Project

Prepared by:

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February 2013

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1.0 INTRODUCTION

Idaho Power Company (IPC) is proposing to construct and operate approximately 281 miles of new transmission line known as the Boardman to Hemingway Transmission Line Project (Project). The Project would include a 500-kilovolt (kV) single circuit line, and a rebuild of existing 138-kV and 69-kV double circuit lines between Boardman, Oregon and the Hemingway Substation (located approximately 30 miles southwest of Boise, Idaho). Construction of the Project will result in temporary impacts to waters of the state. This site rehabilitation plan presents goals and objectives, jurisdictional authority, implementation, and follow-through methods for restoring temporary wetland impacts. Temporary impacts to wetlands include construction activities that do not result in permanent removal or fill, such as construction of laydown areas, staging areas, or temporary contouring allowing for access of equipment.

1.1 Purpose

Rules regulating the rehabilitation of temporary wetland impacts are provided in Oregon Administrative Rule (OAR) 141-085-0715: Mitigation for Temporary Impacts (ODSL 2011a).

This OAR provides that a rehabilitation plan should be designed to:

- Re-establish the pre-existing contours of the site;
- Re-establish the pre-existing vegetation community; and
- Provide for rapid site stabilization to prevent erosion.

The Oregon Department of State Lands (ODSL) further provides rehabilitation guidelines for temporary impacts in *A Guide to the Removal-Fill Permit Process* (ODSL 2011b). The rehabilitation plan should include a grading plan and list of seeds and plants to be utilized, as applicable. A monitoring plan (including monitoring method, criteria and duration) must also be included to confirm successful re-establishment of the wetland and vegetation. Temporary impacts that are rectified within 24 months from the date the impacts generally occurred do not require compensatory mitigation; however, site rehabilitation and monitoring is required (ODSL 2011b).

1.2 Goals and Objectives

The primary goal of the Plan is to assist IPC and its contractors in restoring wetland habitat affected by temporary impacts within 24 months of disturbance. This goal is established pursuant to the definitions of OAR 141-085-0510, which states:

- “Temporary Impacts” are adverse impacts to waters of this state that are rectified within 24-months from the date the impact occurred; and
- "Wetland Restoration" means to re-establish a former wetland.

The Plan provides measures that will be implemented prior to and during construction with the objective of minimizing wetland habitat impacts. It also provides details and measures that will be implemented following construction with the objectives of reestablishing, maintaining and monitoring wetlands temporarily impacted by construction.

2.0 REHABILITATION PLAN

IPC will begin rehabilitation of disturbed sites as soon as practicable after construction is completed. The Plan is applicable to all temporary wetland impacts along the transmission ROW, laydown areas, staging areas, temporary construction areas, and access roads in Oregon. Measures to be implemented to ensure successful rehabilitation include topsoil and subsoil segregation and stockpiling during construction, cleanup, appropriate surface recontouring, soil erosion control, seedbed preparation, application of ecologically site-specific seed mixes, planting, weed abatement, and monitoring.

2.1 Site Preparation

As part of the reclamation process, IPC will prepare the seedbed to facilitate the restoration of vegetation to pre-construction conditions. Construction activities within sites identified as temporary impacts shall not exceed two construction seasons, and rehabilitation of temporary impacts will be completed within 24 months of the initiation of impacts.

Initial construction activities include marking wetland boundaries clearly with high visible flagging and signs, installing temporary sediment controls, segregating and stockpiling topsoil, and grading for safe construction passage. Dense stands of noxious and invasive weeds will be treated with approved herbicides prior to vegetation clearing.

Prior to construction, topsoil will be stockpiled and separated from subsoil. IPC will minimize the length of time that topsoil is stockpiled. Surface soil thickness will vary throughout the construction area, depending on soil type; however, the top 1 foot of wetland topsoil shall be preserved to the greatest extent feasible. Surface topsoil containing the seed reservoir and existing vegetation will be scraped and stored. The topsoil/vegetation mixture will not be mixed with underlying subsoil horizons. Oregon-certified weed-free erosion control blankets and/or certified weed-free straw bales will be used to contain and limit erosion at the stockpiles as needed. Surface soil and sub-surface soils will be replaced in the proper order during cleanup and final grading operations.

2.2 Site Restoration

Restoration will include cleanup, soil decompaction, topsoil replacement, surface grading/contouring, installation of soil erosion and sediment control measures, and seedbed preparation. Compacted soils would typically be associated with the access roads and along the transmission ROW, staging areas, laydown areas, temporary construction areas, and access roads. Subsoil decompaction will occur prior to surface soil replacement as necessary to reduce soil bulk density. Identified locations will be decompacted to a minimum depth of 6–12 inches.

The stockpiled topsoil/vegetation mixture will be re-spread after re-contouring is completed. In wetlands, the segregated top 1 foot of topsoil will be restored to its original location. The topsoil/vegetation mixture will provide seeds, vegetative propagules, and soil microbiota to facilitate vegetation establishment in temporary construction areas.

The transmission ROW, staging areas, laydown areas and other temporary construction areas, will be graded and contoured to blend within the surrounding landscape. Temporary roads used for pulling and tensioning of conductors and other construction activities and structure construction pads will be revegetated but not re-contoured unless they were subject to temporary fill or removal. Topsoil will be blended across the construction corridor, creating a roughened surface to capture precipitation, decrease erosion, and provide micro-habitats for

plant establishment. Contouring will emphasize restoration of existing drainage and landform patterns, to the greatest extent practicable.

Seedbed preparation will consist of grading/contouring, decompacting soils, and restoring surface soil as described above. Specific wetland Best Management Practices (BMPs) referenced in this plan will be employed in wetland areas to avoid rutting and damage from equipment. The seedbed will be firm but not compacted.

Soil erosion and sediment control will occur through establishing desirable wetland vegetation and adjacent upland/riparian vegetation using measures such as mulch, erosion and control blankets. The Project will establish a desirable wetland plant cover as quickly as possible to minimize soil erosion and control sedimentation. Mulch, certified weed-free erosion control blankets and sediment logs, and certified weed-free straw bales, and/or water bars may also be used as appropriate.

In general, the following construction BMPs for erosion and sediment control shall be followed:

- Exposed soils shall be stabilized during and after construction in order to prevent erosion and sedimentation.
- Filter bags, sediment fences, sediment traps or catch basins, leave strips or berms, or other measures shall be used to prevent movement of soil into waterways and wetlands.
- Compost berms, impervious materials or other equally effective methods, shall be used to protect stockpiled soil during rain events or when the stockpile site is not moved or reshaped for more than 48 hours.
- Where vegetation is used for erosion control on slopes steeper than 2:1, a tackified seed mulch shall be used so the seed does not wash away before germination and rooting.
- Dredged or other excavated material shall be placed on upland areas having stable slopes and shall be prevented from eroding back into waterways and wetlands.
- Erosion control measures shall be inspected and maintained as necessary to ensure their continued effectiveness until soils become stabilized.
- All erosion control structures shall be removed when the project is complete and soils are stabilized and vegetated.

A specific list of the type and timing for each BMP is described in the Erosion and Sediment Control Plan included as an attachment of the Joint Permit Application (JPA).

Soil amendments are intended to minimize soil erosion and subsequent sedimentation, conserve soil moisture, provide cover, and moderate temperatures to facilitate the germination of seeds.

2.3 Seed Planting Methods

Each site scheduled for rehabilitation will be evaluated to determine the most cost-effective means of establishing a suitable suite of plants as rapidly as possible. This evaluation will include a determination of how the site needs to be prepared to receive seeds and live plants, as well as what species to plant on the site. Planting will be done at the appropriate time of year to facilitate seed germination, based on weather conditions and the time of year when construction-related ground disturbance occurs. Choice of planting methods will be based on site-specific factors such as slope, erosion potential and the size of the site in need of

revegetation. Disturbed ground may require chemical or mechanical weed control before weeds have a chance to go to seed.

Drill and broadcasting seeding techniques will be used. Seeding will be done after ground-disturbing activities are complete and at the appropriate time of year (preferably in the fall or, if fall is not an option, the spring). If there is a lag time between the end of ground-disturbing activities and seeding, BMPs from the SWPPP will be implemented. Drill seeding will be the primary method for seeding. Drill seeding uses specialized equipment such as a rangeland seeder. The advantages of drill seeding are efficiency at placing seed at the proper soil depth and economy of bulk seed. Its disadvantages are terrain limitations such as slopes greater than 15 percent and rocky soils. Slopes that cannot be drill seeded will be broadcast seeded. Broadcast seeding distributes the seed on top of the soil surface using a hand-held spreader, all-terrain vehicle–mounted cyclone-type seed spreader, or seed blower. Broadcast seed is not as efficient as drill seeding because in this method seeds are not buried in the soil, and it requires approximately twice the bulk seed. Area where broadcast seeding is used will be hand-raked, or a harrow will be used to cover the seed.

Hydro-seeding and hydro-mulching will not be used in wetland areas or near water bodies. Should the water levels in the restoration areas rise above the hydro-seeded/mulched area prior to seed germination and establishment, the mulch, binder, and seed will float and wash away.

2.4 Seed and Plant Mixes by Ecoregion

The following sections provide information about each ecoregion crossed by the Project, and provide suggested species for use in planting mixes for each one. Each ecoregion has different climate and soil characteristics, requiring seed mixes and plants that will thrive under the site conditions. Species lists for planting presented here are not intended to be either exhaustive or limiting. They represent only a small fraction of species that may be suitable for use in the ecoregions and on a site by site basis.

The Project, from Boardman to Hemingway, crosses four Level III ecoregions, which can be further divided into ten Level IV ecoregions (Thorson *et al.* 2003). Table 1 describes these ecoregions.

Table 1. Precipitation and Land Cover and Land Use for Study Area[1] by Ecoregion

Ecoregion III	Ecoregion IV	Precipitation-Mean Annual (inches)	Land cover and land use
Columbia Plateau	10e, Pleistocene Lake Basins	7 to 10	Mostly cropland; some grassland. Nonirrigated winter wheat is grown using the crop– fallow rotation method. Irrigated land grows winter wheat, alfalfa, and barley.
Columbia Plateau	10c, Umatilla Plateau	9 to 15	Mostly cropland; some grassland. Nonirrigated winter wheat is grown using the crop– fallow rotation method. Irrigated land grows winter wheat, alfalfa, and barley.

Table 1. Precipitation and Land Cover and Land Use for Study Area by Ecoregion (continued)

Ecoregion III	Ecoregion IV	Precipitation-Mean Annual (inches)	Land cover and land use
Columbia Plateau	10n, Umatilla Dissected Uplands	15 to 25	Mostly grass-covered rangeland and wildlife habitat; on higher elevation, north-facing slopes: forest.
Blue Mountains.	11c, Maritime-Influenced Zone	20 to 40 97 to 116	Forested. Logging, grazing, wildlife habitat, and recreation.
Blue Mountains.	11l, Mesic Forest Zone	30-60. Mostly snow. Snow persists late into spring.	Forested. Logging, woodland livestock grazing, wildlife habitat, and recreation.
Blue Mountains.	11k, Blue Mountain Basins	Wallowa and Grande Ronde valleys: 13-25. Baker Valley: 10-16.	Irrigated pastureland, cropland, recreation, and commercial, residential, and rural residential development. Principal crops: alfalfa, peas, winter wheat, and grass seed. Most wetlands on floodplains have been drained for agriculture.
Blue Mountains.	11i, Continental Zone Foothills	9 to 18	Shrub- and grass-covered. Livestock grazing and wildlife habitat.
Snake River Plain	12j, Unwooded Alkaline Foothills	9 to 12	Shrub- and grass-covered rangeland and wildlife habitat; some irrigated hayland and pastureland near rivers.
Snake River Plain	12a, Treasure Valley	8 to 11	Irrigated cropland, pastureland, shrubland, grassland, and residential and commercial development. Primary crops: wheat, sugar beets, potatoes, onions, and alfalfa.
Northern Basin and Range	80f, Owyhee Uplands and Canyons	8 to 14	Mostly brush- and grass-covered rangeland and wildlife habitat; some hay and small grain farming. Cheatgrass has replaced depleted bunchgrasses in overgrazed areas.

Adapted from Thorson et al 2003.

[1] For the purpose of this table, which is to summarize climatic and vegetation information on a broad scale, study area can be considered synonymous with site boundary.

1

In Morrow County, nearly 80 percent of the study area is contained in ecoregion 10e, the Pleistocene Lake Basins of the Columbia Plateau. While roughly 20 percent of the eastern portion of the project is contained in ecoregion 10c, Umatilla Plateau.

In Umatilla County, the majority (approximately 60 percent) of the study area is contained in 10c, Umatilla Plateau of the Columbia Plateau, while 15 percent is in 10n, Umatilla Dissected Uplands of the Columbia Plateau, 15 percent is in 11c, Maritime-Influenced Zone of the Blue Mountains and less than 10 percent is in 11l, Mesic Forest Zone of the Blue Mountains.

In Union County, the study area is located entirely in the Level III Blue Mountains Ecoregion. The majority (approximately 49 percent) of the study area is contained in 11c, Maritime-Influenced Zone, 20 percent is in 11l, Mesic Forest Zone, 18 percent is in 11i, Continental Zone Foothills, and 13 percent is in 11k, Blue Mountain Basins.

In Baker County, the study area is located within the Level III Blue Mountains Ecoregion and the Level III Snake River Plain Ecoregion. The majority (approximately 93%) of the study area is contained in 11i, Continental Zone Foothills, and 3 percent is in 11k, Blue Mountain Basins of the Blue Mountains Ecoregions, while 4 percent in in 12j, Unwooded Alkaline Foothills of the Snake River Plain Ecoregion.

In Malheur County, the study area is located within the Level III Blue Mountains Ecoregion, Level III Snake River Plain Ecoregion, and the Level III Northern Basin and Range Ecoregion. Approximately 25 percent of the study area is contained in 11i, Continental Zone Foothills of the Blue Mountains Ecoregions, while 10 percent is in the 12a Treasure Valley and 35 percent is in 12j, Unwooded Alkaline Foothills of the Snake River Plain Ecoregion. The remaining 30 percent of the study area in Malheur County is located within 80f, Owyhee Uplands and Canyons of the Northern Basin and Range Ecoregion.

Table 2 shows the native trees, shrubs, and herbs that were documented during the 2012 wetland delineations by county that may be used for site revegetation. The choice of seed mixtures will be dependent on the existing vegetation types, the availability of commercial, weed-free live seed at the time of seeding, and landowner approval.

Table 2. Native Plants Documented During Delineations

Scientific Name	Common Name	Stratum	Wetland Indicator Status	County
Populus tremula	European aspen	Tree	FAC	Malheur
Elaeagnus angustifolia	Russian olive	Shrub	FAC	Malheur
Salix exigua	coyote willow	Shrub	OBL	Umatilla
Agrostis alba	Redtop	Herb	FACW	Malheur, Umatilla
Agrostis stolonifera	creeping bentgrass	Herb	FAC	Union, Malheur
Alopecurus pratensis	meadow foxtail	Herb	FACW	Baker

Table 2. Native Plants Documented During Delineations (continued)

Scientific Name	Common Name	Stratum	Wetland Indicator Status	County
Bidens cernua	nodding beggertick	Herb	FACW	Baker
Calamagrostis Canadensis	bluejoint reedgrass	Herb	FACW	Baker, Umatilla
Carex nebrascensis	Nebraska sedge	Herb	OBL	Union, Baker, Umatilla
Deschampsia cespitosa	tufted hairgrass	Herb	FACW	Baker
Distichlis spicata	saltgrass	Herb	FACW	Malheur
Eleocharis palustris	common spikerush	Herb	OBL	Union, Baker, Malheur, Umatilla
Hordeum brachyantherum	meadow barley	Herb	FACW	Malheur
Hordeum jubatum	foxtail barley	Herb	FAC	Malheur
Juncus balticus	baltic rush	Herb	OBL	Union, Baker, Malheur
Juncus patens	common rush	Herb	FACW	Umatilla
Juncus torreyi	Torrey's rush	Herb	FACW	Baker, Malheur
Mimulus guttatus	seep monkey flower	Herb	OBL	Malheur
Ranunculus aquatilis	white water-buttercup	Herb	OBL	Baker
Ranunculus sceleratus	cursed buttercup	Herb	OBL	Baker
Scirpus acutus	hardstem bulrush	Herb	OBL	Malheur
Scirpus americanus	three-square rush	Herb	OBL	Baker
Scirpus maritimus	alkali bulrush	Herb	OBL	Malheur
Scirpus validus	softstem rush	Herb	OBL	Morrow

2.5 Best Management Practices

Pertinent BMPs for wetland rehabilitation are included here for reference.

- Minimize the length of time that topsoil is segregated.
- Limit the operation of construction equipment within wetlands to that needed for clearing, facility installation, and restoration.
- Limit pulling of tree stumps and grading activities in wetlands to directly over the transmission line, except where necessary to ensure safety.
- Limit grading impacts in saturated or standing-water wetlands and/or in wetlands where rutting may occur by using low ground-weight construction equipment or by operating normal equipment on prefabricated timber or terra mats.
- Segregate the top 1 foot of topsoil from the area disturbed, except in areas where standing water is present or soils are saturated or frozen. Immediately after cleanup, restore the segregated topsoil to its original location.
- Prohibit storage of hazardous materials, chemicals, fuels, and lubricating oils within 100 feet of a wetland boundary unless infeasible.
- Prohibit the refueling of equipment within 100 feet of wetlands unless infeasible.
- Establish stable surface and drainage conditions and the use of erosion control devices to minimize soil erosion and sedimentation. Sediment barriers shall be installed prior to initial disturbance in wetlands and adjacent uplands to prevent sediment transport into the wetland.
- Re-establish terrain compatible with the surrounding landscape.
- Use native plant species for revegetation unless it is determined that: (1) suitable native species are not available; and (2) analysis of the site indicates that native species are unable to compete with invasive weeds;

3.0 DRAFT MONITORING PLAN

The purpose of monitoring is to evaluate vegetative survival and establishment, soil moisture, sustaining hydrology, and occurrence of noxious weeds and to identify corrective measures that may be required to ensure successful restoration

3.1 Performance Standards for Rehabilitation

Goal 1: Restore wetland hydrology.

Objective 1: Restore pre-construction soil contours.

Performance standard 1: Restored soil contours match existing contours of undisturbed soil surface adjacent to the disturbance site.

Objective 2: Restore pre-construction soil texture.

Performance standard 1: Restored soil has drainage characteristics like undisturbed soil adjacent to the disturbance site; e.g., does not exhibit inappropriate ponding characteristic of compacted soil.

Goal 2: Establish wetland vegetation similar to the native plant component of the temporarily impacted wetlands.

Objective 1: Achieve similar densities of native vegetation at the temporary impact site as were present pre-construction.

Performance standard 1: Meet or exceed woody stem counts per acre as determined from pre-disturbance conditions.

Performance standard 2: Three years post-construction, vegetation communities will have relative cover of tree, shrub and herbaceous species within ten percent of similar adjacent or nearby wetlands.

3.2 Monitoring Schedule and Methodology

IPC will monitor temporary impact sites for three years. In years 1, 2, and 3, vegetation will be monitored by visually estimating and recording aerial cover of native vs. non-native species. Monitoring events will occur annually during the growing season.

3.3 Reporting and Documentation

IPC will provide a post-construction report demonstrating as-built conditions 90 days from Project completion. It will include representative photographs of completed restoration areas, documentation of plant and seed materials received from the commercial sources, documentation of soil amendments used, and a summary of pertinent issues encountered during the implementation of the Plan.

For annual reporting, IPC will document the monitoring results in an annual report. Annual reports are described in Section 6.0, below.

4.0 MAINTENANCE PLAN

Maintenance of plantings and seeded areas during the establishment period (i.e., the 24 months following construction) is an essential component of the rehabilitation plan, especially for areas receiving less than 20 inches of average annual precipitation. The objectives of post-installation maintenance are to prevent soil erosion, ensure establishment of trees and shrubs, and remove non-native vegetation that could inhibit native herbaceous plant establishment.

After each monitoring visit, a qualified investigator will report to the Project proponent regarding the revegetation progress of each restored site. The investigator will make recommendations for reseeding or other remedial measures for sites that are not showing sufficient progress toward achieving revegetation success. Appropriate action to meet the objectives of this revegetation plan will be made.

5.0 CONTINGENCY PLAN

Where initial restoration and plant establishment efforts fail to meet plant establishment standards, reseeding, replanting, live cuttings, and/or transplanting may be required to ensure restoration success. Contingency measures that may be implemented include:

- Harvesting and transplanting herbaceous plugs, shrubs, and trees;
- Live cutting collection, storage, and planting; and
- Planting of commercially grown herbaceous plugs or potted shrubs and trees.

Given the 24-month timeframe associated with rehabilitation of temporary impacts, IPC will make a determination of the requirement for contingency measures at the end of the first growing season based on monitoring results.

6.0 REPORTING

IPC will document the monitoring results in an annual report. It is expected that a single annual report will be prepared for the entire Project length, and that this report will be submitted to each of the applicable federal or state agencies. The reports will provide a summary of Project reclamation activities and observations, progress towards or achievement of success, identify any specific problem areas along the Project, and will include recommendations for additional corrective actions if necessary.

7.0 PLAN UPDATES

Once IPC has received a Site Certificate from the State of Oregon and necessary authorizations from the federal agencies, it will do final engineering on the final Project location. At this time, IPC will prepare a final Site Rehabilitation Plan for submittal to state and federal agencies. . The final Site Rehabilitation Plan will be updated prior to the submittal of the JPA.

8.0 REFERENCES

ODSL. 2011a. Oregon State Archives. Oregon Administrative Rules. Division 85. Administrative Rules Governing the Issuance and Enforcement of Removal-Fill Authorizations within Waters of Oregon Including Wetlands. Available at: http://arcweb.sos.state.or.us/pages/rules/oars_100/oar_141/141_085.html.

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Thorson, T.D., Bryce, S.A., Lammers, D.A., Woods, A.J., Omernik, J.M., Kagan, J., Pater, D.E., and Comstock, J.A., 2003. Ecoregions of Oregon (color poster with figure, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (figure scale 1:1,500,000). Available online at http://www.epa.gov/wed/pages/ecoregions/or_eco.htm. Accessed November 2012.

Attachment R, Compensatory Wetland and Non-Wetland Mitigation Plan

A draft compensatory wetland and non-wetland mitigation plan is attached as a separate document.

Draft Compensatory Wetland And Non-Wetland Mitigation Plan

Boardman to Hemingway Transmission Line Project

Anderson Perry & Associates, Inc.

Civil Engineers

La Grande, Oregon

Walla Walla, Washington

Job No. 81-40

February 2013

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1.0 COMPENSATORY WETLAND AND NON-WETLAND MITIGATION PLAN (CWNWMP) OVERVIEW

1.1 Description of CWNWMP Concept

Idaho Power Company (IPC) proposes construction of the Boardman to Hemingway Transmission Line Project (B2H). In Oregon, the B2H project extends approximately 282 miles from the city of Boardman in Morrow County to the vicinity of the city of Nyssa in Malheur County. As described in detail in IPC's Application for Site Certificate (ASC) to the Oregon Energy Facility Siting Council (EFSC), IPC anticipates small- scale wetland and non-wetland impacts from the B2H project across various wetland and waterway types and in a number of hydrologic units. IPC has prepared a Joint Permit Application (JPA) for submission to the Oregon Department of State Lands (DSL) and the U.S. Army Corps of Engineers (USACE) in order to obtain removal-fill permits for impacts to wetland and non-wetland features associated with B2H construction.

The concept of this CWNWMP is to provide mitigation for wetland and non-wetland impacts at various sites along the proposed transmission line project site boundary for EFSC through the creation of similar functioning wetlands and enhancement of non-wetland habitat at a single mitigation site in Union County, Oregon; referred to as the Catherine Creek Mitigation Project (CCMP). The CCMP area will be graded to create hydrologic connectivity through the site, covered with topsoil, seeded, and planted with native wetland species such as grass, sedge, rush, and woody wetland/riparian species adapted to site physical properties, soils, and hydrologic conditions. Non-wetland habitat will be enhanced by restoring surface hydrologic connectivity to an abandoned oxbow in Catherine Creek, constructing seven woody debris structures for fish habitat, and enhancing stream shading attributes of the site with the creation and enhancement of stream-side forested and scrub-shrub wetlands.

1.2 Ecological Goals and Objectives

The CCMP encompasses approximately 28.5 acres adjacent to Catherine Creek in Union County, Oregon (see Figure 1, Location and Vicinity Maps). The CCMP will involve the relocation of an existing levee to restore surface connectivity to an abandoned oxbow of the creek. In addition, approximately 28.5 acres of seasonally flooded wetland habitat, within the oxbow and immediately adjacent to Catherine Creek, will be created or enhanced. Seven woody debris structures will be strategically located and constructed within the oxbow to provide in-stream fish habitat.

The CCMP will increase local wetland and non-wetland habitat, totaling 18.77 acres and 5,760 linear feet of mitigation credits, respectively, critical to many wetland and freshwater aquatic species, including Endangered Species Act (ESA) listed spring Chinook salmon, summer steelhead, and bull trout that utilize the channel at various stages of their life cycle. Juvenile Chinook salmon and steelhead utilize Catherine Creek reaches where the proposed CCMP site is located for overwintering habitat. Overwintering habitat has been identified in the Draft Northeast Oregon Management Unit Plan for Spring/Summer Chinook and Steelhead Recovery Plan (2010) as a habitat limitation. Due to their low survival rates during the winter months, overwintering habitat for juvenile Chinook salmon in Catherine Creek has recently become a high priority for the Grande Ronde Model Watershed (GRMW), which coordinates habitat restoration projects on both public and privates lands within the Grande Ronde Basin. The reach of Catherine Creek for the proposed CCMP site is also a migratory corridor for juvenile and adult fish of all three ESA listed fish species.

The CCMP will provide connectivity between the channel and floodplain, improving water quality through sediment trapping and filtration of pollutants; provide backwater and rearing habitat for aquatic species; and provide critical wetland habitat for a variety of bird species that utilize wetland habitat for breeding, rearing, nesting, and migratory rest stops. Local aquatic and terrestrial biodiversity will increase, improving resilience of the local ecosystem in response to disturbance (e.g., invasive species).

Ecological goals and objectives are categorized as wetland or non-wetland and summarized in Sections 1.2.1 and 1.2.2 of this document, respectively.

1.2.1 Wetland Ecological Goals and Objectives

The types of wetlands permanently impacted by the B2H project, totaling a maximum area of approximately 2.25 acres (see Appendix A for the wetland impact site summary), vary in terms of their Cowardin and hydrogeomorphic (HGM) classification. The wetland goal of this CWNWMP is as follows:

Goal No. 1: Create at least 25 acres of wetland and enhance approximately 0.8 acre of wetland at the CCMP site in concurrence with construction of the B2H transmission line to replace lost functions and values of impacted wetlands.

Objectives for achieving this goal are as follows:

Objective No. 1: Lower a portion of the existing levee between Catherine Creek and the CCMP site to provide hydrologic connection at 1.5-year flow events and greater.

Objective No. 2: Excavate the CCMP site to the specified grade of the engineered site design to increase floodplain connectivity.

Objective No. 3: Plant the CCMP site with a wetland seed mix and wetland shrub and tree species to mitigate erosion, enhance sediment trapping, provide future recruitment of large wood and cover, and provide shading to reduce stream temperature. This is also anticipated to increase volume and duration of cool water release during low flow periods typically observed during the late summer season, mitigating warmer stream temperatures.

Objective No. 4: Monitor the CCMP site to ensure the goal is met.

1.2.2 Non-Wetland Ecological Goals and Objectives

The B2H project is anticipated to permanently impact approximately 705 linear feet of stream frontage at 25 locations. The non-wetland goals of this CWNWMP are as follows:

Goal No. 1: Reconnect the oxbow and enhance over 5,700 linear feet of fish habitat in the oxbow and along the main creek channel in concurrence with construction of the B2H transmission line to allow improved access for aquatic species and restore Catherine Creek's natural processes.

Goal No. 2: Reduce stream temperature at or near the CCMP site.

Goal No. 3: Mitigate sedimentation of Catherine Creek.

Objectives for achieving this goal are outlined as follows:

Objective No. 1: Install a wood structure at the inlet of the oxbow.

Objective No. 2: Excavate the oxbow channel as required to allow hydrologic connection at 1.5-year flow events and greater to provide high flow refugia for juvenile fish.

Objective No. 3: Install seven large wood structures throughout the newly connected oxbow to increase habitat complexity.

Objective No. 4: Plant shrub and tree species in the palustrine scrub-shrub wetland zones surrounding the oxbow to mitigate erosion, enhance sediment trapping, provide future recruitment of large wood and cover, and provide shading to reduce stream temperature. This is also anticipated to increase volume and duration of cool water release during low flow periods typically observed during the late summer season, mitigating warmer stream temperatures.

Objective No. 5: Monitor the CCMP site to ensure the goals are met.

1.3 Summary of Impacts and Mitigation

This section summarizes the anticipated impacts to wetland and non-wetland resources occurring from construction and operation of the B2H project. Impacts associated with the B2H project are also described in the JPA with this CWNWMP. Wetland mitigation associated with this CWNWMP is intended to meet federal and state regulatory requirements developed under DSL guidance. As stated in

Chapter 8: Compensatory Mitigation for Wetlands and Tidal Waters of DSL's Guide to the Removal- Fill Permit Process, DSL rules and regulations meet USACE standards for wetland mitigation, which are based on the 2008 federal mitigation rule (33 CFR). Oregon's stream mitigation regulations are currently under development by the USACE, U.S. Environmental Protection Agency (EPA), and Willamette Partnership. Non-wetland mitigation associated with this CWNWMP is intended to meet the DSL's interim draft guidance standards for stream mitigation.

1.3.1 Summary of Wetland Impacts and Mitigation

The B2H project is anticipated to permanently impact approximately 2.25 acres of wetland habitat encompassing 40 different sites ranging in size from approximately 0.001 acre to approximately 0.374 acre and averaging approximately 0.056 acre per site, thus requiring compensatory mitigation of this impact by creation, enhancement, and/or restoration of wetland habitat at another location. The total permanent wetland impact acres include additional adjustments and contingency planning acreage (see Appendix A for impacted wetland data). Temporary wetland impacts associated with the B2H project are anticipated to be rectified within 24 months from the initial impact date and, therefore, are presumed not to require mitigation.

In order to mitigate for permanent impacts, approximately 27.75 acres of new wetlands are proposed to be created adjacent to and within a disconnected oxbow of Catherine Creek in the Grande Ronde Basin of Union County, Oregon. In addition, approximately 0.82 acre of existing wetland within the oxbow will be enhanced as part of the project; enhancing wetland hydrology via reconnection of the oxbow to the main channel and removal of invasive species to be replanted with appropriate native vegetation is anticipated to improve the process and function of the existing wetlands. Utilizing DSL's compensatory wetland mitigation ratios for created and enhanced wetlands, combined acreages equate to approximately 18.77 acres of compensatory wetland mitigation credit. Table 1A below summarizes impacted wetland site acreages by HGM and Cowardin classifications along with mitigation acreages and credits. Table 1B provides a summary of representative wetland sites where Oregon Rapid Wetland Assessment Protocol (ORWAP) data were gathered in each of the impacted watersheds, following DSL guidance for

large linear projects. See Appendix B for representative impact and mitigation sites ORWAP data. See Figure 2 for ORWAP site locations.

Existing wetlands within the oxbow can be classified as degraded due to hydrologic manipulation of the site. The existing levee eliminates surface hydrologic connectivity of the oxbow to the main channel, with the exception of an existing head gate. In the past, this head gate was opened during high flows to fill the oxbow. The stored water was then utilized for irrigation purposes. The pump has since been removed, the head gate is kept closed, and the oxbow is not managed at this time.

Existing wetlands within the CCMP site have an over-abundance of weedy species, such as Canada thistle (*Cirsium arvense*), and a general absence of adequate woody species considering they should dominate a scrub-shrub or forested wetland ecosystem. Establishment of surface flow hydrologic processes will reverse degraded hydrology and allow self-sustaining recruitment of native woody species for site occupation. These processes, in combination with invasive species removal and control measures, as well as planting and seeding of native wetland stock, will enhance the site by improving wetland functions and values (see Section 6.0 for a functions and values assessment).

Table 1A. Wetland Mitigation Summary (Approximate Acreage)

Impact Sites				CCMP Site					
ORWAP ID	**HGM**	**Cowardin**	**Acres**	**Mitigation Method**	**Acres**	**HGM**	**Cowardin**	**Mitigation Ratio**	**Credits Gained**
	Depressional	PAB[1]	0.02	Create other type	N/A	N/A	N/A	N/A	**0**
See Table 1B	Riverine	PEM	1.11	Create	24.95	Riverine	PEMA[2]	1.5:1	**16.63**
See Table 1B	Slope	PEM	0.19						
See Table 1B	Depressional	PEM	0.02						
	Unknown	PEM	0.05						
See Table 1B	Riverine	PFO	0.05	Create	0.40	Riverine	PFO[3]	1.5:1	**0.27**
See Table 1B	Riverine	PSS	0.02	Create	2.40	Riverine	PSS	1.5:1	**1.60[5]**
	Slope/Unknown	PSS	0.80	Enhance	0.82	Riverine	PEM/PSS[4]	3:1	**0.27**
Total			**2.26[6]**		**28.57**				**18.77**

[1] Palustrine Aquatic Bed
The Palustrine System includes all non-tidal wetlands dominated by trees, shrubs, emergents, mosses, or lichens.

[2] Palustrine Emergent, Temporary Flooded
Emergent is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants. Modifier – A (Water Regime Temporary Flooded): Surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface for most of the growing season. Plants that grow both in uplands and wetlands may be characteristic of this water regime.

[3] Palustrine Forested, Temporary Flooded
Forested wetlands are characterized by woody vegetation that is approximately 20 feet tall or taller.

[4] Palustrine Scrub-Shrub, Temporary Flooded
Scrub-Shrub includes areas dominated by woody vegetation less than 20 feet tall.

[5] Acreage also applies to PSS Slope/Unknown mitigation credits.

[6] Total acreage reported in Block 3 of the JPA is 2.25 acres. This includes 1.353 acres calculated from Geographic Information Systems analysis, an adjustment to extrapolate impacts for areas not yet surveyed, and a 25 percent contingency. The 2.26 acres reported here is due to rounding. See Appendix A for specific site impact summaries.

Table 1B. Representative ORWAP Wetland ID

ORWAP ID	Delineated Acres	Cowardin	HGM
UM_G_82	0.183	PEM	Riverine
BA_G_115-117	0.153	PEM	Riverine
BA_G_148	0.005	PEM	Riverine
BA_G_210.1	0.011	PEM	Riverine
BApro_594	0.018	PEM	Riverine
MA_G_232	0.009	PEM	Riverine
MA_G_269.2	0.001	PEM	Riverine
MA_G_207	0.123	PEM	Depressional
MAL1-Alkaline	0.561	PEM	Slope
UM_G_105	0.205	PEM	Slope
Clover Creek	4.597	PEM	Slope
BA_G_145	0.019	PEM	Slope
MA_G_228	0.283	PFO	Slope
MA_G_269.1	0.007	PFO	Slope
MalWIlwCrk_370	0.005	PSS	Riverine

1.3.2 Summary of Non-Wetland Impacts and Mitigation

It is anticipated that the B2H project construction and implementation will permanently impact approximately 705 linear feet of stream habitat at 25 locations throughout the entire project corridor and associated transmission line access infrastructure. To mitigate for these anticipated impacts, the CCMP will incorporate in-stream aquatic habitat improvements along approximately 3,300 linear feet of stream channel frontage paralleling a reconnected oxbow of the project site and the enhancement and creation of approximately 5,760 linear feet of forested/scrub-shrub wetland paralleling the stream. This restoration will include construction of approximately seven engineered log jams to provide in-stream habitat for aquatic species. The reconnection of the oxbow to the main channel during periods of high stream flow is anticipated to provide backwater and rearing habitat for fish. Specifically, these non-wetland habitat improvements will provide essential habitat for ESA listed spring Chinook salmon, summer steelhead, and bull trout known to utilize Catherine Creek for overwintering habitat and a migratory corridor for juvenile and adult fish of all three ESA listed fish species.

Table 2 provides a summary of permanently impacted non-wetland sites and Appendix A provides specific site summary information for non-wetland impacts. See Figure 3 for non-wetland impact site locations.

Table 2. Summary of B2H Non-Wetland Permanent Impacts and Mitigation

Impact Sites						CCMP Site		
Stream Type	**Number of Sites**	**Avg. Width (feet)**	**Removal/ Fill (cubic yards)**	**Acres**	**Linear Feet**	**Approximate Oxbow/Main Channel Width (feet)**	**Acres***	**Linear Feet**
Perennial	5	0.30	13/58	0.08	106.30	100/40	**1.32**	**5,760**
Intermittent	20	0.86	144/279	0.15	598.60			
			Total	**0.23**	**704.9**			

*Assumed width of 10 feet for enhanced/created stream habitat

The reconnected oxbow is anticipated to act as a side channel during high flows, and aquatic species will be able to utilize the engineered log jams during these periods. The log jams will be spaced along the outside meander of the oxbow. The engineered log jams will be constructed of appropriately sized trees along with other woody debris and will be designed to withstand flood flow events. The structures will protrude into the channel and create cover for fish from predators and will act as a food supply for fish by providing an environment in which macroinvertebrates can thrive. Trees will be pinned together and anchored with ballast rocks to ensure stability (see selected plan sheets in Appendix C for further detail). Design information described on the selected plan sheets supersedes any design information described in this document that may differ.

1.4 Summary of Function and Value Gains and Losses

This section summarizes the function and value gains and losses anticipated for both wetland and non-wetland components of the B2H project construction and operation.

1.4.1 Summary of Wetland Function and Value Gains and Losses

The ORWAP was used to assess the functions and values of representative wetland sites and results applied to those anticipated to be impacted during B2H project construction and operation. Representative site evaluation was utilized per DSL guidance for large linear projects. The project traverses three Hydrologic Unit Code (HUC) 4 watersheds, each having ORWAP data collected at a representative impacted wetland site. The CCMP site was also evaluated using ORWAP (see Appendix B). There will be a loss of wetland functions and values as a result of the proposed construction of the B2H project, with these losses offset by the anticipated gain in functions and values from the proposed CCMP site. The anticipated outcome of the proposed CCMP site is to have no net loss of wetland function as a result of the proposed construction. The CCMP site offers an abundance of mitigation credits for the impacted wetland and non-wetland sites, which total approximately 2.25 acres and 705 linear feet of wetland and non-wetland, respectively. The CCMP site provides approximately 18.77 acres of wetland mitigation credit and 5,760 linear feet of stream mitigation credit. For details of each attribute's function and value, please see Section 6.0.

1.4.2 Summary of Non-Wetland Function and Value Gains and Losses

There will be a loss of stream functions and values as a result of the proposed construction of the B2H project, with these losses offset by the anticipated gain in functions and values from the proposed CCMP site. A draft functional assessment of streams proposed for permanent impacts is included in Appendix D. The anticipated outcome of the proposed CCMP site is to have no net loss of stream function as a result of the proposed construction. It is anticipated that stream function at the CCMP site will be improved over existing condition and provide a net gain in function on a regional scale. This improvement and gain is anticipated to be achieved by the following:

- Improved stream habitat specifically benefiting ESA listed spring Chinook salmon, summer steelhead, and bull trout.
- Improved hydrologic function of Catherine Creek with reconnection of the stream and floodplain, improving sediment trapping, filtration, and riparian/wetland species recruitment to the site.
- Mitigation of sedimentation due to enhancement of existing and creation of forested and scrub-shrub wetlands and improving riparian function and bank stability.

- Improved thermal regulation of the stream channel due to increased channel shading provided from woody wetland tree and shrub species.

The B2H project traverses three HUC 4 watersheds and benefits of the above-listed functions are anticipated to be of greater ecological value than what would be produced with comparatively small, spatially isolated stream improvement projects completed over the large landscape of eastern Oregon (see Figure 3 for non-wetland impact site locations). Stream values, such as the ecological benefit to ESA listed spring Chinook salmon, summer steelhead, and bull trout, are also anticipated to increase. Again, values of the overall stream mitigation are likely to be greater than the net change in value associated with relatively small, isolated stream improvement and restoration projects. Additionally, anadromous fish species do not occur in any of the impacted streams, thus the proposed CCMP site is anticipated to provide a substantial net gain in both function and value of the non-wetland component.

2.0 BASIN WATER QUALITY MANAGEMENT PLAN GOALS AND OBJECTIVES

Under the DSL's Compensatory Wetland Mitigation program, replacement of impacted wetland type with the same type, per Cowardin system and class and by HGM class/subclass, is required. One exception to this requirement follows: the alternative compensatory wetland mitigation replaces functions and values that address problems that are identified in a watershed management plan or a water quality management plan. Though some of the wetland types will not be directly replaced with the same HGM association, the benefits granted to the watershed and greater Pacific Northwest Hydrologic Unit with the outlined wetland types described in Table 1A will be of greater value than those lost. Additionally, the stream mitigation protocols proposed in this document will address issues outlined in the following water quality management and salmon recovery plans relating to habitat quality of ESA listed spring Chinook salmon, summer steelhead, and bull trout fish species present in Catherine Creek and the Upper Grande Ronde Subbasin.

2.1 Upper Grande Ronde Subbasin Water Quality Management Plan

The Upper Grande Ronde Subbasin Water Quality Management Plan (2000) has identified specific goals and watershed attributes to improve water quality for the watershed. The following sections identify stream water quality and habitat limitations described in the Water Quality Management Plan and outlines how this proposed CWNWMP will address these issues.

2.1.1 Grande Ronde Valley Downstream to Rondowa Reach

According to the management plan, the salmon producing capacity of Catherine Creek has been severely reduced, especially the lower 40 miles. The proposed CCMP site lies within this reach of Catherine Creek. Temperature and sediment are the primary water quality parameters responsible for the reduction. The CWNWMP will address these water quality factors by:

- Increasing stream shading with the creation and enhancement of approximately 3.62 acres of scrub-shrub and forested wetlands paralleling the creek. This, along with the increased release of cool groundwater from the wetland area during late season flow periods, will mitigate increased temperatures of the stream system.

- The project will also mitigate sedimentation of the stream channel by reducing stream velocities during high flows and improving sediment trapping by reconnecting Catherine Creek to the floodplain.

2.1.2 Basin Management Category Priority Areas

The Upper Grande Ronde Subbasin high and medium priority management categories, as discussed in the Upper Grande Ronde Subbasin Water Quality Management Plan, along with the proposed CWNWMP attributes that address these management category priorities, are summarized in the following table.

Table 3. Basin Management Category Priority Areas

Management Category	Priority	CWNWMP Attribute(s)
Riparian Vegetation (Restore to Site Potential)	High	Implements active restoration, weed control, planting, and active management.
Manage/Remove Existing Disturbances	High	Results in the conversion of agricultural land to wetland.
Increase Channel Stability (Horizontal and Vertical)	High	Reduces stream flow velocity along the straightened channel paralleling the site, especially during high flows, and establishes greater channel stability in the oxbow with the construction of seven woody debris structures.
Floodplain Reconnection	Medium	Connects Catherine Creek to the wetland site, providing for increased floodplain connectivity.
Increase Groundwater Storage for Late Season Flow	Medium	Increases water storage via floodplain connectivity, allowing for reduced flow velocities, which will increase sediment trapping and water filtration and provide greater water storage potential for the system.

2.1.3 Water Quality Management Plan Objective

The Upper Grande Ronde Subbasin Water Quality Management Plan identifies the following objective in achieving the goal of improving overall water quality within the basin.

> Objective 1.6: Reduce Non-Point Source Pollution from Agricultural Sources by Implementation of an Agricultural Water Quality Management Area

Implementation of this CWNWMP will result in approximately 22.5 acres of currently farmed land being converted to wetlands, assisting in this goal.

2.2 Upper Grande Ronde River Basin Agricultural Water Quality Management Plan Progress Report June 2005

The Upper Grande Ronde River Basin Agricultural Water Quality Management Plan Progress Report June 2005 summarizes the original Upper Grande Ronde Agricultural Water Quality Management Area Plan (1999) and outlines the following primary goal and associated objectives, along with one of the Area Rules that may be implemented by the Oregon Department of Agriculture (ODA) as mitigation of agricultural production impacts on the watershed that will be addressed with the proposed CWNWMP. The primary goal, sustain and improve water quality, and associated objectives outlined in the Upper Grande Ronde River

Basin Agricultural Water Quality Management Plan Progress Report are summarized in the following table, along with the CWNWMP attributes that assist in achieving the area Plan goals.

Table 4. Primary Goal: Sustain and Improve Water Quality

Objective	CWNWMP Attribute
Improve Bank Stability	Reduces stream velocity during high flows and improves stability of the oxbow with the construction of seven woody debris structures.
Reduce Soil Erosion from Agricultural Land	Converts approximately 22.5 acres of currently farmed land into wetland.
Improve Riparian Condition	Results in the creation or enhancement of approximately 3.62 acres of scrub-shrub and forested wetlands bordering Catherine Creek, increasing riparian process and function of the site and the watershed as a whole.
Improve Nutrient Management	Results in the reduction of non-point source pollution from agricultural lands by converting approximately 22.5 acres of such land into wetlands.

Implementation of the proposed CWNWMP will assist in improving water quality of the watershed. In addition, the improvements in wildlife habitat will include the creation of approximately 24.95 acres of habitat critical to local and migratory bird species, amphibians, and others. Improvements in stream habitat will assist in fish restoration efforts for ESA listed spring Chinook salmon, summer steelhead, and bull trout.

2.3 Grande Ronde Subbasin Plan

The Grande Ronde Subbasin Plan (GRSBP) (2004) was developed in cooperation with a multitude of federal and state entities, including the Grande Ronde Model Watershed Foundation (GRMWF), the lead entity for the preparation of the GRSBP. As stated in the GRSBP, "The GRMWF is the fiscal entity for the Grande Ronde Model Watershed Program (GRMWP). The Northwest Power Planning Council selected the Grande Ronde Subbasin as the model watershed for Oregon in 1992, creating the GRMWP. The Governor's office certified the program. A fourteen member Board of Directors, representing the diversity of interests in the subbasin oversees program activities. The GRMWP goal for habitat recovery is to take a total ecosystem approach, from ridge-top to ridge-top using a combination of active and passive restoration strategies. The project focuses on ecosystem restoration, activity and program coordination, educational outreach and private landowner involvement to promote species recovery in the Grande Ronde subbasin."

The GRSBP describes several key benefits afforded to the watershed by implementing a project such as that proposed in this document. The following list is derived from the GRSBP and highlights the benefits of implementing this CWNWMP.

- The Columbia spotted frog, great blue heron, yellow warbler, and American beaver are listed as focal species that will benefit from improved wetland conditions.
- The GRSBP describes a net loss of 56,017 acres of wetland in the Grande Ronde Subbasin from historic levels, mostly of herbaceous and riparian wetland. The implementation of this CWNWMP will be a step toward recovering lost wetland acreage.

- The GRSBP identifies five priority limiting factors for aquatic species in Catherine Creek: habitat diversity, habitat quantity, sediment, flow, and temperature. The implementation of this CWNWMP will address these five limiting factors by:
    - Increasing habitat diversity and quantity with the enhancement of wetland and stream condition and the construction of woody debris structures within the oxbow.
    - Reducing sedimentation by improving bank stability and reducing stream velocity by proving increased channel sinuosity during higher flow periods.
    - Increasing low flow volumes by reducing agricultural water requirements (taking approximately 22.5 acres out of production) and improving water storage by creating and enhancing wetlands.
    - Reducing stream temperature with improved water storage and release during low flow periods and increasing stream shading.
- The GRSBP states that the objective for wetlands in the Grande Ronde Subbasin is to "protect existing wetlands and reestablish wetland and wet meadow complexes where feasible." The following strategies listed in the GRSBP for achieving this objective will be addressed with the implementation of this CWNWMP.
    - Fund and coordinate weed control efforts on both public and private lands.
    - Work with soil and water conservation districts, Natural Resources Conservation Service, Farm Service Agency, landowners, et al., to implement best management practices (BMPs) in wetland and riparian areas.
    - Restore wetland function through re-establishment of native plant communities where practical and cost effective.
    - Restore riparian area function through livestock management, in-channel improvements, vegetative enhancement, and removal of channel confinement structures.
    - Restore historic or near-historic stream channels, where feasible.

2.4 Draft Northeast Oregon Management Unit Plan for Spring/Summer Chinook and Steelhead Recovery Plan

As stated in the Draft Northeast Oregon Management Unit Plan for Spring/Summer Chinook and Steelhead Recovery Plan (RP) (2010), also referred to as the Draft Recovery Plan for Oregon Spring/Summer Chinook Salmon and Steelhead Populations in the Snake River Chinook Salmon Evolutionary Significant Unit and Snake River Steelhead Distinct Population Segment, "NOAA's National Marine Fisheries Service (NMFS) is required, pursuant to Section 4(f) of the Endangered Species Act of 1973 (ESA), to develop recovery plans for species listed under the ESA. Recovery plans identify actions needed to restore threatened and endangered species to the point where they are again self-sustaining elements of their ecosystems and no longer need the protections of the ESA."

The following limiting factors and habitat limitations for ESA listed species identified in the RP will be addressed with the implementation of this CWNWMP.

- The RP lists five limiting factors (Chinook and steelhead specific) as excess fine sediment, water quality (temperature), water quantity (summer flows), habitat quantity/diversity,

and degraded riparian condition. These factors will be addressed through the CWNWMP exactly as described in Section 2.3 above.

- The RP lists improving summer/winter rearing habitat with an emphasis on lower Catherine Creek, where the CCMP site is located. This will be accomplished with the implementation of this CWNWMP by enhancing stream habitat of the site through the reconnection of stream flow to the oxbow and constructing seven woody debris structures for fish habitat.

- The RP describes the importance of improving overwintering habitat in Catherine Creek. The off-channel habitat created in the oxbow with the implementation of this CWNWMP will provide such limited habitat for endangered fish species.

3.0 CCMP SITE INFORMATION

3.1 Site Owner Information

The CCMP site is located on Tax Lot 5603 of Township 2 South, Range 39 East in Union County, Oregon (see Figure 1, Location and Vicinity Maps, and Figure 4, Tax Lot Map). Owner information is as follows:

Owner:	Duane Fleet, Trustee
	Ralph D. and Khris K. Wilson (Contact)
	64198 Grays Corner Road
	Cove, Oregon 97824
Phone:	541-805-9000

IPC will enter into a long-term (perpetual) lease with the owner for the use of the property as part of IPC's long-term maintenance plan (see Section 9.3). Based on a cooperative agreement, GRMW will be responsible for operation of the site and maintenance of the mitigation area. Contact information for IPC is as follows:

Contact:	Zach Funkhouser
Phone:	208-388-5375
Fax:	208-388-6902
E-mail:	zfunkhouser@idahopower.com

3.2 Physical Location Information

The CCMP site is located approximately five miles east of Oregon State Route 82, off Market Lane (approximately one-half mile east) in Township 2 South, Range 39 East, spanning the south central and north central portions of Sections 13 and 24, respectively, in Tax Lot 5603.

The center of the mitigation wetland is at latitude 45.3840 and longitude -117.8804. Location and vicinity maps are shown on Figure 1, and an aerial photo of the proposed project site is shown on Figure 5.

4.0 DESCRIPTION OF HOW THE CWNWMP ADDRESSES THE PRINCIPAL OBJECTIVES

This section explains how the CWNWMP will achieve the ecological goals and objectives described in Section 1.2 of this document for both wetland and non-wetland components of the CWNWMP. CWNWMP ecological goals and objectives are summarized in the following table.

Table 5. CWNWMP Ecological Goals and Objectives

Component	Goal(s)	Objectives
Wetland	Create at least 25 acres of wetland and enhance approximately 0.8 acre of wetland at the CCMP site to replace lost functions and values of impacted wetlands.	Lower a portion of the existing levee between Catherine Creek and the CCMP site to provide hydrologic connection at 1.5-year flow events and greater.
		Excavate the CCMP site to the specified grade of the engineered site design to increase floodplain connectivity.
		Plant the CCMP site with a wetland seed mix and wetland shrub and tree species to mitigate erosion, enhance sediment trapping, provide future recruitment of large wood and cover, and provide shading to reduce stream temperature. This is also anticipated to increase volume and duration of cool water release during low flow periods typically observed during the late summer season, mitigating warmer stream temperatures.
		Monitor the CCMP site to ensure the goal is met.
Non-Wetland	1) Reconnect the oxbow and enhance over 5,700 linear feet of fish habitat in the oxbow and along the main creek channel at the CCMP site to allow improved access for aquatic species and restore Catherine Creek's natural processes. 2) Reduce stream temperature at or near the CCMP site. 3) Mitigate sedimentation of Catherine Creek.	Install a wood structure at the inlet of the oxbow.
		Excavate the oxbow channel as required to allow hydrologic connection at 1.5-year flow events and greater to provide high flow refugia for juvenile fish.
		Install seven large wood structures throughout the newly connected oxbow to increase habitat complexity.
		Plant the CCMP site with a wetland seed mix and wetland shrub and tree species to mitigate erosion, enhance sediment trapping, provide future recruitment of large wood and cover, and provide shading to reduce stream temperature. This is also anticipated to increase volume and duration of cool water release during low flow periods typically observed during the late summer season, mitigating warmer stream temperatures.
		Monitor the CCMP site to ensure the goal is met.

4.1 Function and Value Replacement

The proposed CCMP site will provide similar functions and values as the impacted wetlands and provide critically valuable habitat for ESA listed spring Chinook salmon, summer steelhead, and bull trout fish species. This section describes the replacement of impacted wetland and non-wetland function and value with the construction of the CCMP site.

4.1.1 Wetland Function and Value Replacement

The impacted wetlands are classified as PAB and Depressional HGM; PEM and Slope, Riverine, or Depressional HGM ; PFO and Riverine HGM; and PSS and Riverine or Slope HGM. Refer to Tables 1A for a summary of specific impact site classifications and acreages. It is anticipated that the functions and values of the CCMP site will be similar to the impacted area, as the existing wetlands occurring at the CCMP site are classified as PEM/PSS and Riverine, and created wetlands are a proposed combination of PEM and Riverine, PFO and Riverine, and PSS and Riverine. Refer to Table 1A for CCMP site wetland type and acreage summaries. The hydrologic regime under the proposed CWNWMP is anticipate to produce a period of inundation of at least 14 days, on average, occurring approximately between April and June, during high flow and water table periods typically observed in early spring during the growing season.

4.1.2 Non-Wetland Function and Value Replacement

Values of the overall stream mitigation are likely to be greater than the net change in value associated with relatively small, isolated stream improvement and restoration projects. Additionally, anadromous fish species do not occur in any of the impacted streams, thus the proposed CCMP site is anticipated to provide a substantial net gain in both function and value of the non-wetland component.

Twenty-five stream sites will be permanently impacted by B2H transmission line construction and operation. Five of these streams are perennial, totaling approximately 106 linear feet and averaging approximately 0.3 feet wide. Twenty-two intermittent stream sites will be permanently impacted, totaling approximately 598 linear feet and averaging approximately 0.86 feet wide. Approximately 5,760 linear feet of stream mitigation will be applied to a major tributary of the Grande Ronde River, Catherine Creek, which is an anadromous fish-bearing stream. ESA listed spring Chinook salmon, summer steelhead, and bull trout are known to inhabit this stream system.

Improvements to stream habitat and wetland function of the CCMP site will provide greater benefit to the region in terms of overall watershed and stream health, being that the site provides a gross abundance of wetland and stream mitigation credits than required by regulation for units of impact. Section 2.0 outlines specific benefits of this CWNWMP to the basin and region. Specifically, the improvements to water quality and stream habitat address key issues outlined in the basin's water quality management plans.

4.2 Self-Sustaining/Minimum Maintenance Needs

This section describes the maintenance needs and requirements of wetland and non-wetland CWNWMP components.

4.2.1 Wetland Self-Sustaining/Minimum Maintenance Needs

The CCMP site will receive water input that currently sustains the existing wetlands; it will be graded so that it will receive appropriate water to be self-sustaining. Excavation of the levee will provide for natural wetland vegetation recruitment and appropriate hydrology (seasonal

flooding) for created wetland types at the CCMP site during seasonal high flow events. Future maintenance needs may include periodic weed control.

4.2.2 Non-Wetland Self-Sustaining/Minimum Maintenance Needs

Stream and aquatic habitat improvements will require no maintenance as woody debris structures are designed to be maintenance-free and long lasting. Excavation of the levee to re-establish surface hydrologic and floodplain connectivity will be required only during construction of the CCMP site. Re-establishing surface hydrologic connectivity will provide for natural riparian vegetation recruitment, thus sustaining proper riparian function and process, which enhances stream function and aquatic habitat, and improves bank stability and stream shading.

4.3 Siting Considerations

The CCMP has been sited and designed to maximize stream and wetland processes, functions, and existing ecological enhancement to the extent possible at a comparatively large mitigation site relative to impact sites.

IPC explored several mitigation options available to them, including an 80 acre parcel located in the Middle Snake HUC 4 watershed, a parcel located in Baker County, Oregon, and multiple restoration opportunities with the GRMW in the Upper Grande Ronde River Subbasin. The 80-acre parcel located in the Middle Snake HUC 4 watershed had potential as a floodplain restoration and water quality improvement project. The Baker County parcel is located in the Lower Snake HUC 4 watershed near Baker City, Oregon. Both of these properties are privately held and mitigation plan development would lack the guidance of watershed scale needs, planning, and project implementation experience, such as that provided by an organization like the GRMW. In addition, neither site would provide benefit for ESA listed fish species due to their location upstream of the Oxbow Dam on the Snake River. The Oxbow Dam blocks migration corridors historically utilized by native ESA listed fish species.

The GRMW began coordinating restoration projects in 1994 within the Grande Ronde Basin. According to the GRMW's website, "In April of 1992, the Grande Ronde Basin was selected by the Northwest Power Planning Council as the model watershed project in Oregon. This selection was reviewed and agreed upon by the Strategic Water Management Group and certified by the Office of the Governor. The Model Watershed is to serve as an example for the establishment of watershed management partnerships among local residents, state and federal agency staffs, and public interest groups concerned with the management of a particular watershed. The central strategy of the approach is based upon the belief that a locally based effort to improve coordination, integration and implementation of existing local, state, and federal programs can effectively protect, enhance, and restore a regional watershed area" (http://www.grmw.org/about/).

Approximately 368 projects have been implemented through the GRMW through 2010. Projects have addressed nearly every component of watershed health including water quality, water quantity, in-stream habitat complexity, riparian condition, streambank stability, and fish passage. With this valuable resource available to aid in project planning, implementation, and management, IPC selected one of several mitigation project options with the GRMW. The preferred alternative was selected, among six analyzed for this specific site, based on these considerations as well as stream habitat and water quality enhancement potential and cost/benefit returns. This site provides ample mitigation opportunities for both wetland and non-wetland impacts associated with B2H transmission line construction and will be implemented and managed with local watershed knowledge and experience provided by the GRMW.

4.4 Minimize Temporal Loss

The mitigation area is anticipated to be created in conjunction with construction of the B2H transmission line construction impacts associated with transmission line wetland impacts. Disturbance of existing wetlands within the oxbow will be mitigated by marking existing wetland boundaries to limit equipment intrusion during excavation of created wetlands. Construction of the relocated levee and engineered log jams will occur on the opposite side of the oxbow from existing wetlands and will have no adverse impact.

5.0 CCMP Existing Site Conditions

This section describes the existing site conditions of both wetland and non-wetland categories associated with the proposed project. Existing conditions of site wetlands are described in Section 5.1 and existing non-wetland conditions are described in Section 5.2.

5.1 Existing Wetland Conditions

5.1.1 Wetland Delineation and Determination Results

The wetland delineation performed by Tetra Tech in October 2012 classified the wetlands occurring within the project site as Palustrine Emergent/Palustrine Scrub-Shrub totaling approximately 0.82 acre. The wetlands can be classified as Riverine according to HGM classification guidelines. The Tetra Tech wetland delineation report, titled Wetland Delineation: Wilson Property Proposed Mitigation Site Union County, Oregon, was submitted to and reviewed by the DSL, and concurrence with the delimitation is anticipated to be received by the DSL in 2013. See Figure 5 for the wetland delineation area associated with the proposed CCMP site.

5.1.2 Existing HGM and Cowardin Classes on Site

See Section 4.1.1 above. Photographs of the wetland mitigation area are shown on Figure 6.

Table 6. Existing Wetlands at Site as Delineated by Tetra Tech

Existing Cowardin	Existing HGM	Acres
PEM/PSS	Riverine	0.82

5.1.3 Description of Existing and Proposed Hydrology

The existing site receives hydrologic input from Catherine Creek as well as from precipitation. The existing site is currently inundated at approximately a 25-year flood event when the water over-tops the levee. Catherine Creek parallels the site, running generally north/northwest, and a disconnected oxbow encircles the majority of the proposed wetland mitigation area on the east side of Catherine Creek. Catherine Creek is a perennial stream and a main tributary of the Grande Ronde River in the Upper Grande Ronde Subbasin, providing year-round surface flow and seasonal flooding potential, with proposed levee modifications, beneficial to wetland habitat construction and restoration.

The proposed CCMP will enhance the hydrologic regime, as the site will have direct connection to the main creek channel during periods of high flow. A portion of an existing levee will be excavated to approximate ordinary high water elevations (OHWEs) to allow flow into the oxbow during periods of such water levels. The CCMP site will be graded to elevations similar to that of the existing wetland on site in order to produce a wetland hydrologic regime for the newly

created wetlands. The hydrologic regime under the proposed CWNWMP is anticipated to produce a period of inundation, on average, of at least 14 days, occurring approximately between April and June, during high flow and water table periods typically observed in early spring during the growing season.

5.1.4 Existing Plant Communities

The majority of the CCMP area is currently utilized for agricultural production. This includes approximately 15 and 7.5 acres within the oxbow and bordering the southern edge of the oxbow, respectively. The existing plant community surrounding the cropped oxbow acreage identified in Tetra Tech's wetland delineation report consists of a variety of herbaceous, grass, and shrub species, both native and invasive. The existing plant community identified in the wetland delineation is summarized in Table 7 below. The existing plant community paralleling Catherine Creek along the northwest extent of the CCMP site consists of an over-story of black hawthorn, several species of willow with a mixed understory of herbaceous wetland and weedy species not dissimilar to those surrounding the cropped oxbow.

Table 7. CCMP Site Existing Plant Community

Scientific Name	Common Name[1]	Invasive (I) / Native (N) Status
Amaranthus powellii	Powell's amaranth	N
Amorpha fruticosa	false indigo bush	N
Asclepias speciosa	showy milkweed	N
Eleocharis palustris	common spikerush	N
Epilobium palustre	marsh willowherb	N
Salix sp.	willow species	N
Xanthium strumarium	cocklebur	N
Chenopodium album	lambsquarters	I
Cirsium arvense	Canada thistle	I
Phalaris arundinacea	reed canarygrass	I
Polygonum hydropiper	Marshpepper knotweed	I
Sisymbrium altissimum	Tall tumblemustard	I

[1]Information obtained from the USDA Natural Resources Conservation Service Plants Database.

5.1.5 Site Constraints or Limitations

Constraints at the proposed CCMP site include the existing levee that cuts off the oxbow from Catherine Creek and the existence of wetlands within the proposed wetland creation area of the oxbow. The levee will require excavation to approximate OHWE between the creek channel and oxbow. A proposed new levee will be constructed around the perimeter of the disconnected oxbow, tying into the existing levee on both the north and south ends of the proposed wetland mitigation area (see Figure 5). Existing wetlands will be disturbed to the least extent possible during excavation by marking existing wetland boundaries within excavation zones to limit equipment intrusion.

5.2 Existing Non-Wetland Conditions

The site borders Catherine Creek, a major perennial tributary of the Grande Ronde River in the Upper Grande Ronde River Subbasin. This stream, along with the Grande Ronde River, is considered Essential Salmon Habitat (ESH) as classified by the Oregon Department of Fish and Wildlife (ODFW). The ODFW defines ESH as "the habitat that is necessary to prevent the

depletion of indigenous anadromous salmonid species during their history stages of spawning and rearing." Additionally, Catherine Creek, along with much of the Grande Ronde River Basin, is classified as Critical Bull Trout Habitat. Anadromous salmonid species and bull trout are protected under the ESA. Recovery plans for listed bull trout and salmonid species have been developed which seek to restore fish populations and their habitat to sustainable levels.

The Draft Northeast Oregon Management Unit Plan for Spring/Summer Chinook and Steelhead and the Grande Ronde Subbasin Plan both identify lower Catherine Creek as an important reach for overwintering juvenile spring Chinook salmon and summer steelhead. Habitat quantity and quality are both considered key limiting factors in lower Catherine Creek, where the CCMP site is located. Overwintering juvenile Chinook salmon prefer deep, slow velocity water near cover. This type of habitat is lacking in lower Catherine Creek due to anthropogenic influences. Historical accounts by early settlers indicate that lower Catherine Creek was a slow, deep, and meandering river with abundant riparian cover for fish. These accounts will help to guide stream mitigation efforts at the proposed CCMP site.

5.2.1 Summary of Existing Conditions

Existing non-wetland site conditions are summarized in the following table; the concept is derived from Oregon's stream mitigation framework currently under development by the USACE, EPA, and the Willamette Partnership. The following table was developed from DSL's Guidance for Assessing Stream Functions and Values Under the Oregon Removal-Fill Program.

Table 8. Existing Non-Wetland Site Function Attributes, Functions They Represent, and the Functions' Status

Function Attribute		**Overbank Flow**	**Effective Discharge**	**Base Flow**	**Groundwater Flux**	**Bed Mobility**	**Sediment Character**	**Bank Stability**	**Hydraulic Variability**	**Stream Habitat**	**Riparian Structure and Composition**	**Aquatic Species' Structure and Composition**	**Water Quality**	**Water Temperature**	**Sedimentation**
Functional Group	**Function**	**Status**													
Hydrologic Functions	Surface water storage	L		P							L				
	Sub/surface transfer				A						L				
	Flow variation	L	A	P	A						L				
Geomorphic Function	Sediment continuity	L	A			L		L							
	Substrate mobility	L	A			L	L		L						
Biological Functions	Maintain biodiversity										L	A			
	Create habitat	L	A	P		L	L	L	L	L	L	A			L
	Sustain trophic structure										L	A	L		
Chemical	Nutrient cycling	L			A			L			L		L		

Function Attribute		Overbank Flow	Effective Discharge	Base Flow	Groundwater Flux	Bed Mobility	Sediment Character	Bank Stability	Hydraulic Variability	Stream Habitat	Riparian Structure and Composition	Aquatic Species' Structure and Composition	Water Quality	Water Temperature	Sedimentation
and Nutrient Functions	Chemical regulation												L		
	Thermal regulation		A								L			L	

Table Legend: A = Adequate; L = Limited; P = Perennial

Absence of status indicator for attribute in specific function rows indicates the attribute is not associated with that specific function.

5.2.2 Rationale for Function Attribute Status Classification

Catherine Creek is a perennial stream system, as indicated on Table 8: Existing Non-Wetland Site Function Attributes, Functions They Represent, and the Functions' Status. As such, the inclusion of this attribute in the summary is intended to indicate its effect on stream systems and the functions with which it corresponds. The base flow of the system will not change with the implementation of the proposed CWNWMP.

Following is the explanation of an adequate status rating for effective discharge, groundwater flux, and aquatic species structure and composition attributes. Effective discharge is currently produced by the stream indicated by the seasonal variation in stream flow where spring flows generally transport the greatest volume of sediment. The functions of sediment continuity, substrate mobility, creation of habitat, and thermal regulation are limited by anthropogenic modifications of the channel, while natural flow variations remain relatively undisturbed. Groundwater flux of the system is currently adequate to sustain perennial flow of the stream, meeting both anthropogenic demands and wildlife habitat requirements, and contributes to nutrient cycling, flow variations, and sub-surface transfer. Aquatic species, structure, and composition are adequately maintained within the local system as functions of biodiversity, trophic structure, and habitat are influenced to a greater degree by regional anthropogenic impacts, such as dam construction. Though these attributes have been assigned an adequate rating, it is anticipated these attributes will be improved upon with the implementation of the proposed CWNWMP, thus contributing to the improved function of the stream system as a whole.

6.0 FUNCTIONS AND VALUES ASSESSMENT

This section describes the rationale behind functions and values assessments of wetland and non-wetland components of this CWNWMP.

6.1 Rationale for Method Used in Wetland Assessment

Since the impacted wetlands are not tidal or located in the Willamette Valley, ORWAP analysis was used, as required by the DSL. This analysis was conducted on representative wetland sites, not the wetland sites specifically impacted by the construction of the B2H transmission line. A representative site evaluation was utilized per DSL guidance for large linear projects, such as the B2H project. The ORWAP data sheets from this evaluation are provided in Appendix B.

6.1.1 Summary of Expected Wetland Gains and Losses

Following is a summary of the existing and predicted values for the representative sites.

Table 9. Summary of Wetland Functions and Values[1]

Grouped Services		PEM Representative Sites		PFO/PSS Representative Sites		CCMP Site		
		Existing	Net[1] Change	Existing	Net Change	Existing[2] PEM/PSS	Predicted PEM/PSS	Net Change PEM/PSS
Hydrologic Function	Function	2.09	**-2.09**	0.90	**-0.90**	0/3.23	3.78	**3.78/0.55**
	Value	3.25	**-3.25**	3.42	**-3.42**	0/6.88	7.71	**7.71/0.83**
Water Quality	Function	7.12	**-7.12**	7.59	**-7.59**	0/5.37	6.78	**6.78/1.41**
	Value	5.54	**-5.54**	5.51	**-5.51**	0/7.5	7.50	**7.50/0**
Carbon Sequestration	Function	2.50	**-2.50**	2.60	**-2.60**	0/2.06	1.98	**2.06/-0.08**
	Value	-	**-**	-	**-**	-	-	**-**
Fish Support	Function	3.68	**-3.68**	4.06	**-4.06**	0/5.67	8.18	**8.18/2.51**
	Value	4.10	**-4.10**	3.74	**-3.74**	0/10.0	10.0	**10.0/0**
Aquatic Support	Function	6.60	**-6.60**	6.79	**-6.79**	0/4.92	7.27	**7.27/2.35**
	Value	8.14	**-8.14**	7.98	**-7.98**	0/8.0	8.18	**8.18/0.18**
Terrestrial Support	Function	5.80	**-5.80**	5.58	**-5.58**	0/4.16	6.14	**6.14/1.98**
	Value	7.73		7.89	**-7.89**	0/8.0	8.0	**8.0/0**

[1] Predicted functions and values of the representative wetland impact sites are assumed to be 0, as the impacted sites they represent will no longer be wetlands. Many of the representative sites, as with the actual impact sites, are very small portions of larger wetlands, which will continue to function at current levels.
[2] Existing functions and values associated with the PEM wetland type of the CCMP site are assumed to be 0, as the site is currently utilized for agricultural production and classified as wetland.

6.1.2 Considerations to Address Expected Wetland Losses

All expected losses to the functions and values of the impacted wetlands will be addressed through the creation of a similar wetland area.

6.2 Rationale for Method Used in Non-Wetland Assessment

Oregon's stream mitigation framework is currently under development by the USACE, EPA, and Willamette Partnership. As such, professional judgment of Tetra Tech personnel and local expertise provided by the GRMW were utilized in assessing impact and CCMP sites' stream function and values. A quantification of stream impacts compared to stream mitigation is summarized below. This provides a basis for comparison and assessment of non-wetland impacts and mitigation.

Table 10. Summary of Non-Wetland Impact and Mitigation Length and Width

Impact Sites						CCMP Site		
Stream Type	**Max. Length (feet)**	**Avg. Length (feet)**	**Max. Width (feet)**	**Avg. Width (feet)**	**Total Length (feet)**	**Stream Type**	**Approximate Avg. Width (feet)**	**Approximate Length (feet)**
Permanent Impacts								
Perennial	33.40	21.26	1.50	0.3	106.30			
Intermittent	96.54	27.21	4	0.86	598.60			
				Subtotal	704.90			
Temporary Impacts						Perennial	70	**5,760**
Perennial	38.84	26.63	1.50	0.30	118.14			
Intermittent	462.63	79.37	4	0.70	1,825.53			
				Subtotal	1,943.67			
				Total	**2,648.57**			

6.2.1 Summary of Expected Non-Wetland Gains and Losses

Impact sites associated with B2H project construction and operation are comparatively small and occur predominantly on intermittent stream systems that are non-fish bearing. Conversely, the CCMP site equates to approximately 5,760 linear feet of enhanced and created stream habitat in a major anadromous fish habitat watershed. Many of the impact sites occur above a point where anadromous fish passage is blocked by the Oxbow Dam on the Snake River. Tributaries above this point of the Snake River system cannot provide for endangered anadromous fish migration. The volume of enhanced and created habitat and its location provide a major benefit to endangered species.

Referencing Table 8: Existing Non-Wetland Site Function Attributes, Functions They Represent, and the Functions' Status, stream functional groups, including hydrologic, geomorphic, biological, and chemical/nutrient functions, and their associated attributes, will be impacted predominantly on a temporary basis and restored to at least pre-disturbance function. The permanent and temporary impacts to stream function and value will be further mitigated by implementation of BMPs, and construction practices involving work below the OHWE will follow ODFW in-water work guidelines. The Draft Stream Functional Analysis for the B2H project, prepared by Idaho Power, is provided in Appendix D. This document was developed under DSL's interim stream mitigation framework and summarizes the analysis of anticipated permanent stream impacts associated with the B2H project.

In essence, the losses to stream function and value will be minimal at the impact sites and the creation and enhancement of the stream habitat at the CCMP site will preclude the minimal degradation of the impact stream sites. The magnitude of stream mitigation relative to stream impacts of the B2H project along with the benefits provided for ESA listed spring Chinook salmon, summer steelhead, and bull trout fish species equates to a net gain in ecological process and function. Stream function attributes of the CCMP site (Table 8) are anticipated to improve to at least an "adequate" rating.

6.2.2 Considerations to Address Expected Non-Wetland Losses

All expected losses to the functions and values of impacted streams will be addressed through the enhancement of an anadromous fish-bearing stream.

7.0 CCMP Construction Maps and Drawings

7.1 Grading Plan Objectives

The objective of the plan is to grade the CCMP site to an elevation sufficient to produce wetland hydrology, support wetland vegetation, and allow hydric soil preservation and development. A draft of the CCMP site design plans are provided in Appendix C. See Figure 5 for minimum wetland ratio type locations.

7.2 Planting List and Rationale

To help with establishing the CCMP site, the following seed mix and woody species plantings will be applied:

Recommended Species List: Species selection based on ecological characteristics of site; soils (pH, texture, and hydrology); hydrology (flooding susceptibility and occurrence); elevation; and precipitation. Native species best suited to the ecological site characteristics and project objectives are listed below.

Table 11. PSS Wetland Woody Species

	Species	Stock Type	Age	Size	Spacing	Number	Wetland Ind. Status
1	Coyote Willow (*Salix exigua* Nsutt.)	Cuttings	2 years	3/4-inch minimum diameter	4x4 feet	5,225	FACW
2	Peachleaf Willow (*Salix amygdaloides* Anderrs.)	Cuttings	2 years	3/4-inch minimum diameter	10x10 feet	1,145	FACW
3	Golden Currant (*Ribes aureum* Pursh.)	Seedling	1 to 2 years	18 to 24 inches	6x6 feet	2,630	FAC
4	Wood's Rose (*Rosa woodsii* Lindl.)	Seedling	1 to 2 years	18 to 24 inches	6x6 feet	2,630	FACU
5	Black Cottonwood (*Populus balsamifera*)	Cuttings	2 years	3/4-inch minimum diameter	10x10 feet	1,145	FAC
Total (Approximately 4,900 Linear Feet of Streambank to be Planted and 1.5 landlocked acres)						**12,775**	

Ensure stem cuttings for willow and cottonwood species are long enough to reach 8 to 12 inches below the lowest water table elevations of the year.

Plant all species in rows at the average spacing listed above by species, planting facultative and facultative wetland species closer to channel's edge/lower elevations and facultative upland species furthest from channel's edge/higher elevations. Alternate the planting of peachleaf and black cottonwood cuttings. Alternate the planting of golden currant and wood's rose seedlings.

Seek best soil for each planting spot (microsite), which takes precedence over spacing guidelines.

Control competing grass in each planting spot by applying herbicide in a 6-foot diameter circle prior to planting.

Table 12. PFO Wetland Woody Species

	Species	Stock Type	Age	Size	Spacing	Number	Wetland Ind. Status
1	Coyote Willow (*Salix exigua* Nsutt.)	Cuttings	2 years	3/4-inch minimum diameter	4x4 feet	215	FACW
2	Peachleaf Willow (*Salix amygdaloides* Anderrs.)	Cuttings	2 years	3/4-inch minimum diameter	10x10 feet	200	FACW
3	Golden Currant (*Ribes aureum* Pursh.)	Seedling	1 to 2 years	18 to 24 inches	6x6 feet	145	FAC
4	Wood's Rose (*Rosa woodsii* Lindl.)	Seedling	1 to 2 years	18 to 24 inches	6x6 feet	145	FACU
5	Black Cottonwood (*Populus balsamifera*)	Cuttings	2 years	3/4-inch minimum diameter	10x10 feet	200	FAC
Total (Approximately 860 Linear Feet of Streambank to be Planted – 0.40 acre)						**905**	

Table 13. Wetland Cover Establishment

Grass, Sedge, and Rush Species Seeding – PLS[1]						
Cultivar	**Species**	**% Mix**	**Rate PLS/Acre**	**Acres**	**Lbs. PLS**	**Wetland Indicator Status**
	Tufted Hairgrass *(Deschampsia cespitosa)*	10	1	24.95	24.95	FACW
Magna	Basin Wildrye *(Leymus cinereus)*	40	4	24.95	100	FAC
CJ Strike	Creeping Spikerush *(Eleocharis palustris* L.*)*	15	1.5	24.95	37.5	OBL
	Swordleaf Rush *(Juncus ensifolius* Wikstr.*)*	15	1.5	24.95	37.5	FACW
	Water Sedge *(Carex aquatilis* Wahlenb.*)*	20	2	24.95	50	OBL
Wetland Species Mat-Transplants[2]						
Cover Type (30 feet by 30 feet)		**% Total Cover**	**Number per Acre**	**Acres**	**Total Number**	**Total Square Feet**
Ladd Marsh Wetland Mat-Mix		4	2	28.5	57	51,300

1/ PLS = pure live seed
Seek best soil for each planting spot (microsite), which takes precedence over spacing guidelines.
Method of seeding: Drill 1/4 to 1/2 inch (grass seed); broadcast (sedge/rush species).
To be planted in between wetland mats.
2/ To be planted in conjunction with wetland cover establishment.
Method of seeding: Broadcast

Table 14. Native Grass Seed Mix – Levee Ground Cover Establishment

Cultivar	Species	% Mix	Rate PLS/Acre	Acres	Lbs. PLS	Wetland Indicator Status
Anatone, Goldar, or Secar	Bluebunch Wheatgrass *(Pseudoroegneria spicata)*	40	6	3	18	UPL
Joseph or Nezpurs	Idaho Fescue *(Festuca idahoensis)*	20	3	3	9	FACU
Magna	Basin Wildrye *(Leymus cinereus)*	10	2	3	6	FAC
Luna	*Agropyron trichophorum* (pubescent wheatgrass)	20	3	3	9	FACU
	Tufted Hairgrass *(Deschampsia cespitosa)*	10	2	3	6	FACW

Method of seeding: Drill 1/4- to 1/2-inch.

Seeding and planting with these species will mitigate erosion and stabilize the soil as the natural seed bank in the applied topsoil establishes. The combination of selected species will provide natural mitigation of weedy species encroachment and site occupation.

7.3 Construction Schedule

B2H project construction will begin once federal and state permitting processes have been completed. The mitigation area is anticipated to be created in conjunction with construction impacts associated with transmission line wetland impacts. Excavation of the CCMP site will be completed with excavators, dump trucks, and other heavy equipment as appropriate with excavated material stockpiled at an upland site for later use. Topsoil will be stockpiled separately to be reapplied before planting and seeding. Excess material will be disposed of on site in an adjacent upland field of the property as directed by the project engineer. The created wetlands will have substantial micro-grading to enhance biodiversity. The creation of many micro-sites spaced at random meter and centimeter scales creates micro-habitat areas more suited to specific wetland vegetation.

When the desired subgrade elevation is achieved, the site will be covered with a minimum of 12 inches of topsoil and then seeded. Site excavation will likely occur in the fall when water tables are at their lowest elevations in order to mitigate impacts of heavy equipment in saturated soil conditions, followed by seeding of grasses and planting of woody species. Sedge and rush species will be seeded and planted in the spring after high flows begin to subside.

Woody debris fish habitat structures will likely be constructed in the fall to coincide with lowest annual surface water elevations and the ODFW in-stream work window.

8.0 MONITORING PLAN

8.1 Proposed Performance Standards

Performance standards for evaluating the CCMP site will be developed in consultation with state and federal resource agencies before the ASC is submitted to the Oregon Department of Energy (ODOE).

8.2 Monitoring Method(s)

The following methods will be used on an annual basis to assess the condition of the CCMP site; Figure 7 illustrates the monitoring plan.

1. Photo points will be established to provide an overall assessment of the created wetland with photos taken in at least the four cardinal directions: north, south, east, and west.

2. Establishment of herbaceous plant species will be determined by sampling the created wetland and enhanced mitigation areas with plots. Approximately eight transects, spaced at approximately 35-meter intervals, with 1 square meter plots spaced at approximately 60- to 75-meter intervals, will be laid out along a southwest to northwest pattern for the created emergent wetland mitigation area. Enhanced and created scrub-shrub and forested wetland mitigation areas will be sampled with a single transect running through the approximate centerline (lengthwise), or a zigzag pattern, of these delineated areas. Enhanced and created scrub-shrub and forested wetland mitigation areas will be sampled using 65 square meter plots, with each of these large plots containing two additional randomly selected 1 square meter plots for sampling of herbaceous vegetation. Created shrub and forested CCMP plots will be located approximately one-quarter the total lengthwise distance from either end of the CCMP area's boundary. Enhanced CCMP area plots will be spaced in the same manner with a plot occurring approximately every 800 feet. Plots will be evaluated for percent cover of all species present.

Table 15. Sample Plot Summary

Vegetation Type	Acres	Number of Samples
Herbaceous	24.95	30
Shrub/Forested	3.62	10 + 20 herbaceous

3. Test pits will be dug in the approximate location of all photo points (shown on Figure 7) and examined for the presence of saturation (within the upper 12 inches), inundation, and other hydrologic indicators such as soil oxidation-reduction characteristics. Specifically, if the site is inundated for a period of at least 14 days during the growing season, wetland classification criteria will be considered satisfied, as outlined in the USACE 1987 Wetland Delineation Manual and the 2008 Arid West Regional Supplement.

In addition to the above steps, an unobtrusive monitoring method of observation will be utilized to evaluate the use of created/restored habitat for ESA listed spring Chinook salmon, summer steelhead, and bull trout fish species. Observations shall be conducted by the GRMW, who will prepare an annual report for submission to the ODFW and DSL on utilization and trends for a period of five years following project completion.

8.3 Monitoring Schedule

A post-construction report will be provided documenting the as-built condition of the site. A five-year monitoring program is proposed beginning the year following construction completion. Annually, during the early summer, the wetland component of the CCMP site will be evaluated and results will be compared to the success criteria that will be developed in conjunction with state and federal resource agencies. Notable conditions of the vegetation and site will be

recorded, and a report will be submitted to the DSL by December 31 of each year. Also included in the report will be an evaluation of the condition of existing wetlands within the oxbow. In addition, an annual report will be prepared for submission to the ODFW summarizing the utilization of created habitat for aquatic species.

8.4 Rationale for Plot and Photo-Documentation Locations

The sample plots will be located to provide a representative sampling of the vegetation in the mitigation area, and the photo point locations will be placed to provide good views of the CCMP site as a whole, with closer details as needed. Chosen sampling methods, described in Section 8.2, meet the DSL Routine Monitoring Guidance Standards for sample size based on vegetation type.

9.0 Long-Term Protection and Financial Security Instruments for CCMP Site

9.1 Description of Proposed Protection Instrument

IPC has engaged the landowner and is working to enter into a lease agreement. Copies of the lease agreement will be included in Appendix E of this CWNWMP once finalized. A long term maintenance plan has been developed for the CCMP site and will be followed in perpetuity (see Section 9.3). Modifications to the long term maintenance plan, as needed, will be negotiated between IPC, GRMW, and appropriate state and federal resource agencies.

9.2 Description of Proposed Financial Security Instrument

IPC's ASC for the B2H Project includes evidence demonstrating that IPC has both the organizational expertise (ASC Exhibit D) and the financial capability (ASC Exhibit M) to construct and operate the facility in compliance with the terms of its Site Certificate, which will include a condition requiring implementation of the CWNWMP as approved by the ODOE and DSL. The GRMW will be responsible for the long-term maintenance of the site with funding provided by IPC.

9.3 Long-Term Maintenance Plan

The CCMP site will be maintained by the GRMW as part of its agreement with IPC. The GRMW will be responsible for weed control or other remedial measures required at the CCMP site.

The restoration seeding and planting of the CCMP site is designed to mimic site conditions of local wetlands. It is expected that the natural seed band will establish in years one and two following construction.

Hydrology of the CCMP site will be the same as the flow that sustains the existing wetlands, but will be enhanced by the reconnection of the oxbow to the creek channel during high flows. Beneficial uses and functions of the site, including wildlife habitat and water quality, are anticipated to improve as a result of this project.

9.3.1 Noxious Weed and Invasive Species Management

The GRMW will be responsible for controlling weeds in the CCMP site. Each year the site will be monitored for noxious and invasive species. The GRMW will follow the recommendations of a licensed applicator to control weeds within the area.

9.3.2 Compatible Uses/Protection

Due to the isolation and private ownership of the site, it will be accessible only to the owner, the GRMW and others with explicit owner permission. There will be limited, if any, public access. Limited access provides protection from potential damage from trespass. The owner will maintain control of access to the site. The owner will grant the DSL and ODOE access to the site to conduct review and monitoring activities when requested.

The landowner may use the site for general enjoyment, but may not use the CCMP area for agricultural activities. This includes livestock grazing or any other activities not consistent with the goals of the CWNWMP. The site will provide ecological benefits including those related to water quality and wildlife habitat.

9.3.3 Maintenance and Monitoring

The GRMW will be responsible for all monitoring activities of the CCMP site, including annual monitoring reports (up to five years) to the DSL and ODFW and the delineation of the CCMP area no later than year five. The Monitoring Plan and associated methods are outlined in Section 8.0 of this CWNWMP.

The GRMW will be responsible for all maintenance activities at the CCMP site. Maintenance activities may include:

- Reseeding and planting
- Weed control

All costs associated with maintenance activities that pertain to the CCMP area are the responsibility of IPC.

10.0 CONTINGENCY PLAN

In the event post-construction monitoring finds the CCMP is not meeting identified restoration goals, corrective action will be implemented in order to produce desired project objectives. IPC will be responsible for financing and implementing contingency plans in the event of wetland and non-wetland establishment not meeting anticipated project objectives.

An investigation of the project will be conducted to identify causes and appropriate mitigation action to meet project goals. Analysis will include site factors and conditions such as soil, hydrology, variable climatic factors of the preceding year, stream flow characteristics, water table characteristics, and design and construction review including seeding and planting methods, condition of selected seed crop and planting sources, planting and seeding plan, and construction design and oversight during project implementation. Corrective action may include, but is not limited to:

1. Identifying limiting factor(s) in meeting project goals.
2. Implementing appropriate mitigation measures to improve project success.
    a. Further excavation of the levee between Catherine Creek and the oxbow.
    b. Replant and/or seed areas not meeting vegetation cover parameters.
    c. Implement an irrigation system to improve successful wetland vegetation establishment.

d. Implement aggressive weed control methods.

e. Construct a water control structure between the oxbow and the main creek channel in order to sustain adequate water table elevations for wetland hydrology to persist throughout the growing season and during low flow periods.

3. Increasing the monitoring frequency to identify lingering issues and project success after mitigation action has been implemented.

Possible Modes of Failure. Possible modes of failure include natural events beyond the control and liability of parties involved in the CWNWMP and implementation. An example of such an event would be catastrophic flooding associated with extreme precipitation and/or spring snow melt (e.g., 25- to 100-year event) that could potentially scour all planted wetland vegetation or damage wood structures. Seasonal climatic factors such as extreme cold, heat, and/or precipitation during the growing season or post planting and seeding could cause irreparable damage to the seed and planting crop.

An appropriate budget, developed in cooperation between the GRMW and IPC, strictly for the purpose of implementing contingency plans will be included in the overall project budget. Financial assurance for contingency planning is from the same source as the entire B2H project.

FIGURES

Job# 81-40-060 Jan. 28, 2013 lbauer

T.2 S., R.39 E., W.M.
1" = 2000'

PROJECT LOCATION

To Oregon Hwy. 82

To Cove

MARKET LANE

BOOTH LANE

HAMILTON

LOWER KERNS LOOP ROAD

GRANDE RONDE VALLEY

Catherine Creek

State Ditch

RUCKMAN ROAD

ALICEL LANE

MT HARRIS LOOP

4WD

Gravel Pit

Cem

BM 2681

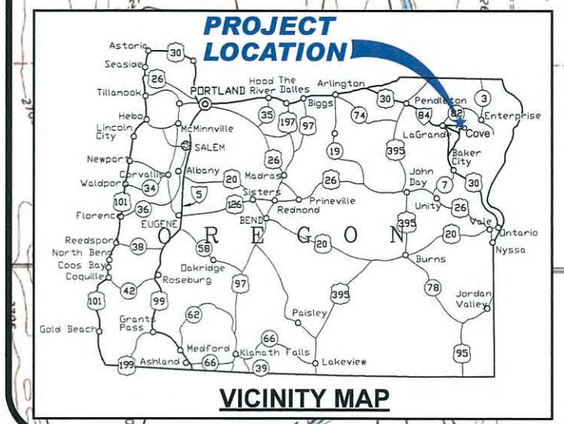
BM 2694

BM 2828

BR 2688

BR 2687

R 39 E
R 40 E



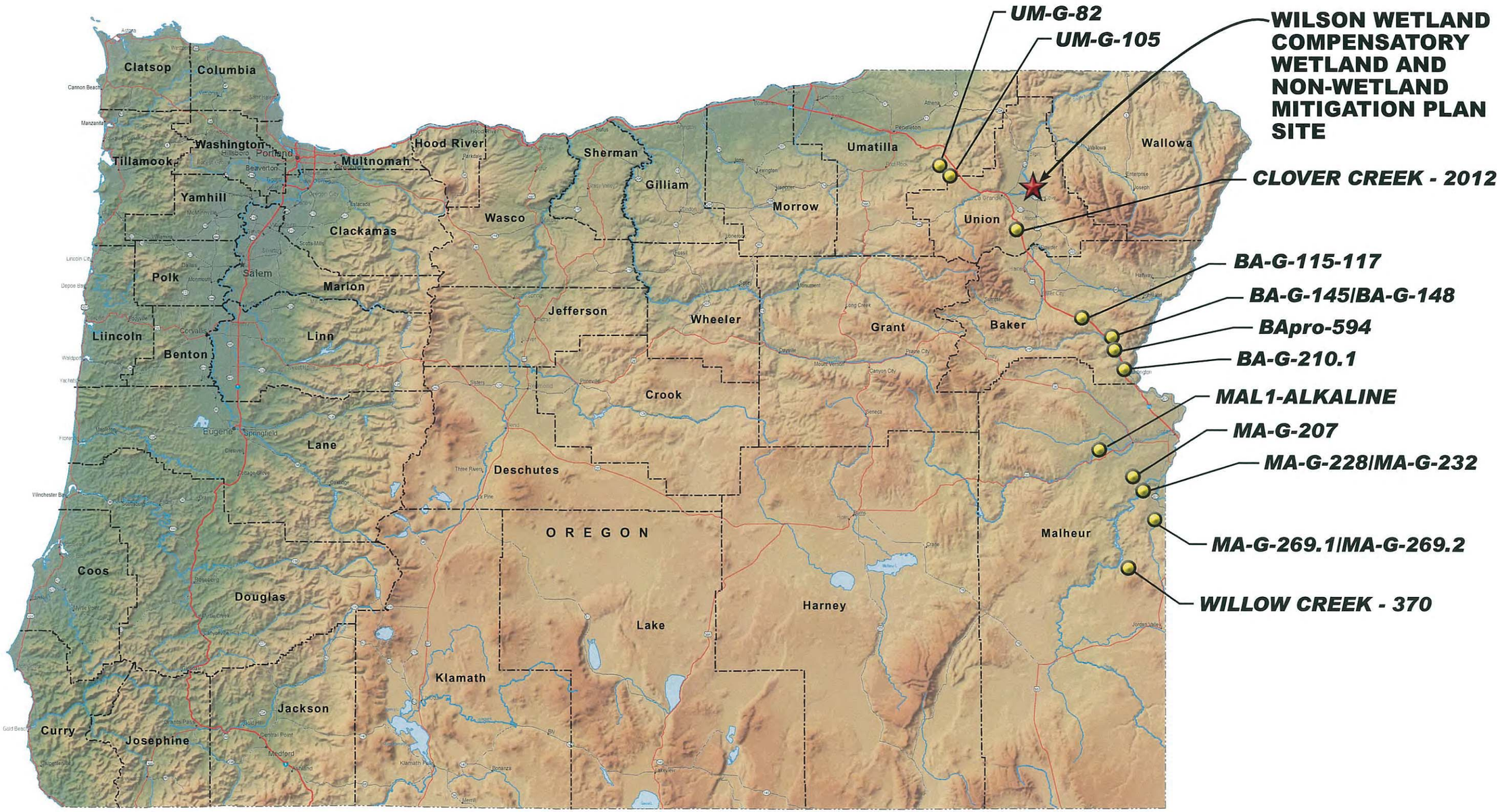
VICINITY MAP

anderson perry & associates, inc.

BOARDMAN TO HEMMINGWAY TRANSMISSION LINE PROJECT
COMPENSATORY WETLAND AND NON-WETLAND MITIGATION PLAN

LOCATION AND VICINITY MAPS

FIGURE 1



anderson perry & associates, inc.

BOARDMAN TO HEMMINGWAY TRANSMISSION LINE PROJECT
COMPENSATORY WETLAND AND NON-WETLAND MITIGATION PLAN

ORWAP SITES LOCATION MAP

FIGURE 2

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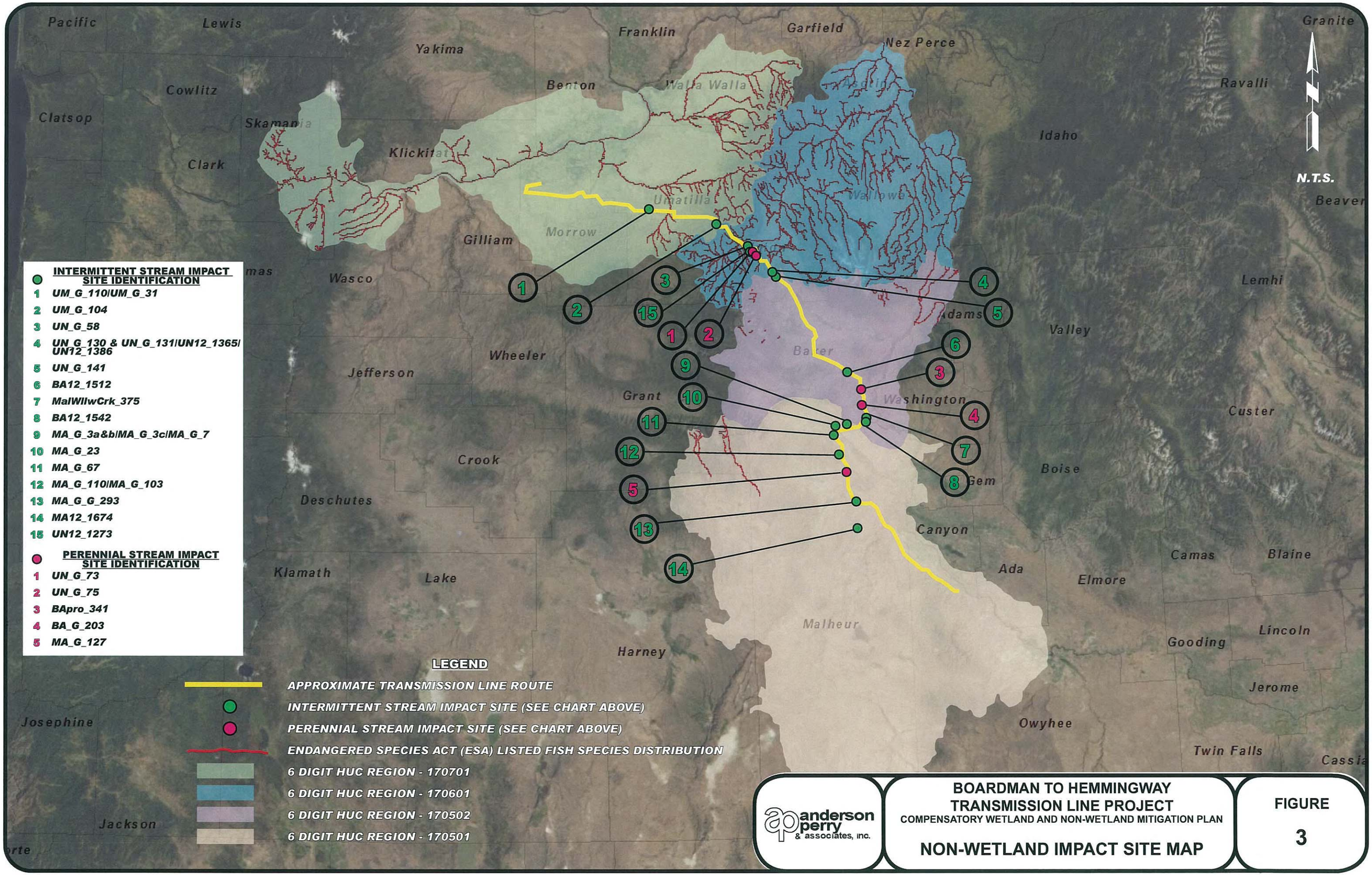


anderson perry & associates, inc.

BOARDMAN TO HEMMINGWAY TRANSMISSION LINE PROJECT
COMPENSATORY WETLAND AND NON-WETLAND MITIGATION PLAN

NON-WETLAND IMPACT SITE MAP

FIGURE 3

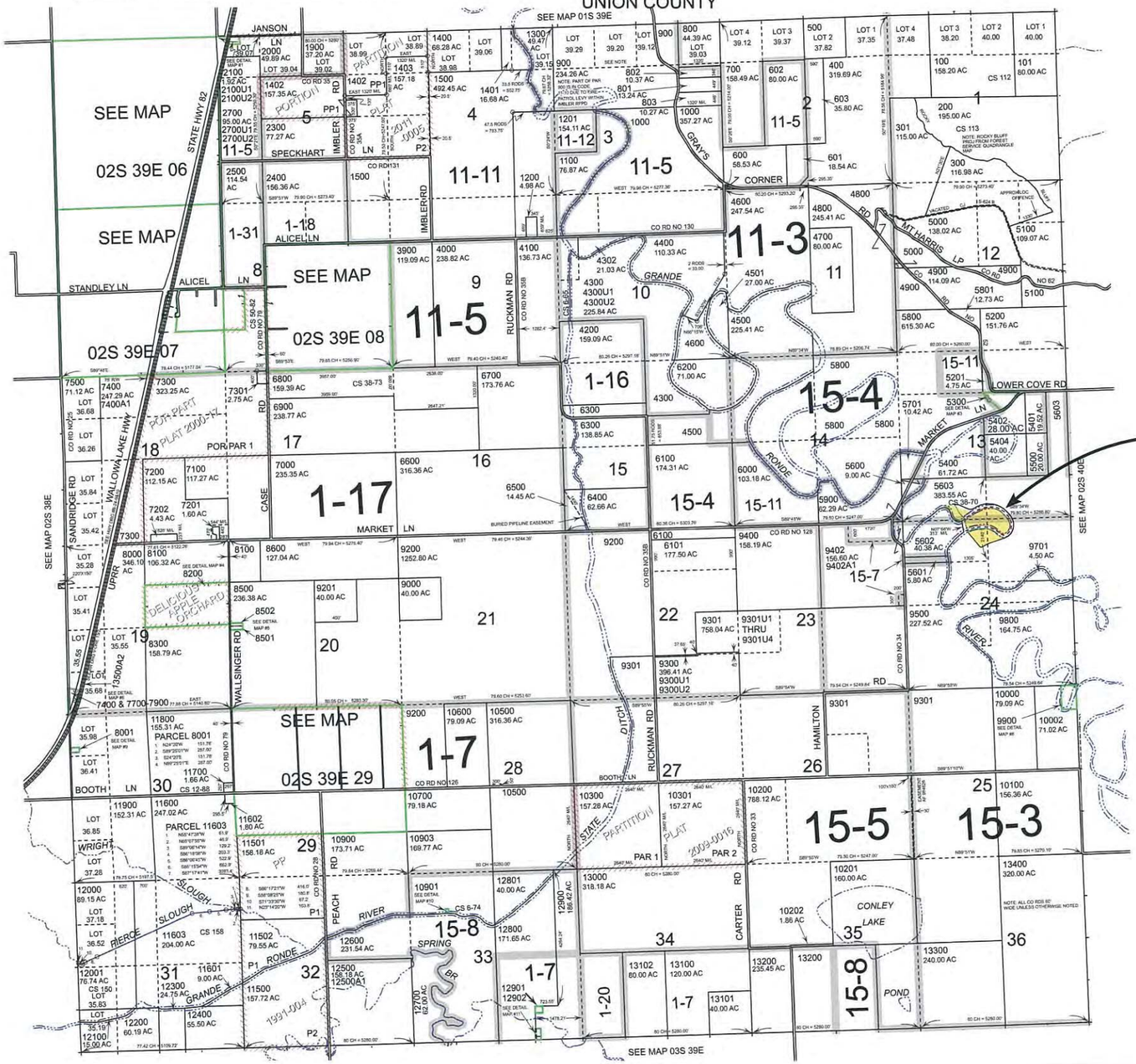
Job# 81-40-060 Jan. 28, 2013 lbauer

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 1,000 2,000 4,000 Feet

T.2S. R.39E. W.M.
UNION COUNTY

02S39E



CANCELLED:
100U1 & U2
601M1
700U1 & U2
1200M1
2001
2600 THRU
2605
2701
2800
2900
2901
2902
3000
3100
3200
3201
3300
3400
3500
3600
3700
3700U1 & U2
3701
3701U1 & U2
3702
3800
3800A1
4101
4102
4301
4600U1 & U2
4800A1
5100T1
5403
5405
5406
5501
5700
5901
6300U2 & U3
7401
7600
7601
8400
8700
8800
8900
9100
9300U3 THRU
9300U8
9301U5
9301U6
9302
9303
9304
9305
9305U1 THRU
9305U6
9306
9306U1 THRU
9306U6
9401
9501
9502
9503
9600
9700
10000U1
10000U2
10001
10001U1 THRU
10001U8
10400
10601
10602
10800
10902
11000
11100
11101
11102
11103
11200
11300
11300A1
11400
12000U1
12000U2
13200A1
13500A1

PROJECT LOCATION

Revised: SH
8/7/2012

02S39E

T.2 S., R.39 E., W.M.
1" = 4000'

Job# 81-40-060 Jan. 28, 2013 lbauer

anderson perry & associates, inc.

BOARDMAN TO HEMMINGWAY TRANSMISSION LINE PROJECT
COMPENSATORY WETLAND AND NON-WETLAND MITIGATION PLAN

TAX LOT MAP

FIGURE 4

PROPOSED CREATED SCRUB- SHRUB WETLANDS - 0.15 ACRES
(CREATION RATIO 1.5:1)

EXISTING SCRUB-SHRUB WETLAND DELINEATION BOUNDARY AS DETERMINED BY TETRA TECH - 0.82 ACRES
(ENHANCEMENT RATIO 3:1)

PROPOSED CREATED FORESTED WETLANDS - 0.40 ACRES
(CREATION RATIO 1.5:1)

EXISTING LEVEE TO BE LOWERED

EXISTING LEVEE

EXISTING LEVEE TO BE LOWERED

Catherine Creek

PROPOSED CREATED SCRUB- SHRUB WETLANDS - 0.25 ACRES, TYP. OF 5
(CREATION RATIO 1.5:1)

PROPOSED NEW LEVEE

PROPOSED CREATED SCRUB-SHRUB WETLANDS - 1.0 ACRES
(CREATION RATIO 1.5:1)

PROPOSED CREATED EMERGENT WETLANDS - 24.95 ACRES
(CREATION RATIO 1.5:1)

N

T.2 S., R.39 E., W.M.
1" = 200'

Job# 81-40-060 Jan. 28, 2013 lbauer

anderson perry & associates, inc.

BOARDMAN TO HEMMINGWAY TRANSMISSION LINE PROJECT
COMPENSATORY WETLAND AND NON-WETLAND MITIGATION PLAN

PROJECT AERIAL

FIGURE 5

PHOTOGRAPH 1 - Existing levee at the north end of the oxbow looking east/northeast. Photograph taken by Jeff Madsen on July 23, 2012.

PHOTOGRAPH 2 - Looking northwest from the east side of the oxbow toward the wetland mitigation area. Photograph taken by Chas Hutchins on February 2, 2012.

PHOTOGRAPH 3 - July water levels - main channel. Photograph taken by Jeff Madsen on July 24, 2012.

Job# 81-40-060 Jan. 28, 2013 lbauer

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BOARDMAN TO HEMMINGWAY TRANSMISSION LINE PROJECT
COMPENSATORY WETLAND AND NON-WETLAND MITIGATION PLAN

SITE PHOTOGRAPHS

FIGURE
6

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BOARDMAN TO HEMMINGWAY TRANSMISSION LINE PROJECT
COMPENSATORY WETLAND AND NON-WETLAND MITIGATION PLAN

MONITORING POINT LOCATIONS

FIGURE 7

Job# 81-40-060 Jan. 29, 2013 lbauer

APPENDIX A

Wetland and Non-Wetland Impact Sites Data Summary

Appendix A

Wetland Impact Summary - Data Provided By Tetra Tech									
				Permanent Impacts			Temporary Impacts		
County	Feature Name	Cowardin	HGM Code	Impact Acres	Removal cu yd	Fill cu yd	Impact Acres	Removal cu yd	Fill cu yd
Morrow	MO_G_64	PEM	Riverine	0.005	0	0			
Umatilla	UM_G_82	PEM	Riverine	0.230	3	9			
Umatilla	UM_W_0019	PEM	Unknown	0.005	0	0			
Umatilla	UMPRO 512 & UMPRO 563	PSSA	Unknown	0.048	0	0			
Union	UN_G_137	PEM	Slope	0.021	14	15			
Union	UN_G_41	PEM	Riverine	0.187	46	48			
Union	UN_G_46	PEM	Riverine	0.005	9	9			
Baker	BApro_326	PAB	Depressional	0.010	45	48			
Baker	23082012_1040_NK	PEM	Riverine	0.041	37	38			
Baker	BA_G_115	PEM	Slope-Canal	0.000	15	15			
Baker	BA_G_118	PEM	Riverine	0.005	14	15			
Baker	BA_G_132	PEM	Riverine	0.006	18	19			
Baker	BA_G_142	PEM	Riverine	0.005	13	14			
Baker	BA_G_144	PEM	Slope	0.000	13	14			
Baker	BA_G_147	PEM	Slope	0.004	13	14			
Baker	BA_G_186	PEM	Riverine	0.012	62	66			
Baker	BA_G_46	PEM	Riverine	0.003	32	34			
Baker	BA_G_48	PEM	Riverine	0.014	13	14			
Baker	BA_G_80	PEM	Riverine	0.006	18	19			
Baker	Bapro_324	PEM	Unknown	0.009	0	0			
Baker	BApro_594	PEM	Riverine	0.036	28	30			
Baker	BA_G_210	PFO	Riverine	0.029	32	34			
Baker	BA_G_166	PSSC	Riverine	0.012	14	15			
Malheur	08112012_1524_JRS	PEM	Slope	0.074	50	54			
Malheur	MA_G_12	PEM	Riverine	0.006	11	11			
Malheur	MA_G_128	PEM	Riverine	0.012	27	29			
Malheur	MA_G_19	PEM	Riverine	0.006	13	14			
Malheur	MA_G_24	PEM	Slope	0.006	15	16			
Malheur	MA_G_267	PEM	Riverine	0.007	18	19			
Malheur	MA_G_294	PEM	Unknown	0.007	0	0			
Malheur	MA_G_37	PEM	Riverine	0.062	60	65			
Malheur	MA_G_43	PEM	Depressional	0.013	13	0			
Malheur	Malpro_193	PEM	Unknown	0.007	15	16			
Malheur	Malpro_570	PEM	Slope	0.003	13	14			
Malheur	Malpro_576	PEM	Riverine	0.001	13	14			
Malheur	MalWllwCk_214	PEM	Riverine	0.003	21	23			
Malheur	MalWllwCrk_621	PEM	Riverine	0.015	15	16			
Malheur	MApro_446-NWI	PEM	Slope	0.003	35	38			
Malheur	MA_G_141	PSSB	Slope	0.374	101	111			
Malheur	Malpro_573	PSSB	Slope	0.061	40	43			
Morrow	MO_G_64	PEM	Riverine				0.137	221	221
Umatilla	UM_G_26	PEM	Riverine				0.007	11	11
Umatilla	UM_G_80	PEM	Slope				0.050	81	81
Umatilla	UM_G_82	PFO	Riverine				0.011	18	18
Union	UN_G_137	PEM	Slope				0.021	35	35
Union	UN_G_41	PEM	Riverine				0.187	301	301
Union	UN_G_46	PEM	Riverine				0.005	9	9
Union	UNpro_096C	PEM	Slope				0.021	22	44
Baker	BApro_326	PAB	Depressional				0.056	91	91
Baker	23082012_1040_NK- Baker	PEM	Riverine				0.114	183	183
Baker	BA_G_115	PEM	Slope				0.002	3	3
Baker	BA_G_118	PEM	Riverine				0.011	17	17
Baker	BA_G_132	PEM	Riverine				0.008	13	13
Baker	BA_G_142	PEM	Riverine				0.006	10	10
Baker	BA_G_178	PEM	Riverine				0.005	8	8
Baker	BA_G_186	PEM	Riverine				0.098	157	157
Baker	BA_G_222	PEM	Slope				0.006	9	9
Baker	BApro_594	PEM	Riverine				0.060	97	97
Baker	BApro_332	PSSB	Riverine				0.021	34	34

Malheur	08112012_1524_JRS- Malheur	PEM	Slope				0.085	138	138
Malheur	MA_G_12	PEM	Riverine				0.007	11	11
Malheur	MA_G_128	PEM	Riverine				0.008	12	12
Malheur	MA_G_19	PEM	Riverine				0.039	63	63
Malheur	MA_G_24	PEM	Riverine				0.015	24	24
Malheur	MA_G_267	PEM	Riverine				0.003	6	6
Malheur	MA_G_277	PEM	Slope				0.041	67	67
Malheur	MA_G_37	PEM	Riverine				0.100	161	161
Malheur	MA_G_43	PEM	Depressional				0.025	41	41
Malheur	MA_G_44	PEM	Riverine				0.029	46	46
Malheur	Malpro_225	PEM	Riverine				0.037	43	95
Malheur	Malpro_570	PEM	Slope				0.004	14	15
Malheur	Malpro_576	PEM	Riverine				0.001	2	2
Malheur	Malpro_578	PEM	Riverine				0.003	5	5
Malheur	MalWllwCk_214	PEM	Riverine				0.002	4	4
Malheur	MalWllwCrk_322	PEM	Riverine				0.124	32	39
Malheur	MalWllwCrk_621	PEM	Riverine				0.017	13	14
Malheur	MApro_134	PEM	Riverine				0.000	0	0
Malheur	MApro_446-NWI	PEM	Slope				0.001	2	2
Malheur	MApro_502	PEM	Riverine				0.008	13	13
Malheur	MApro_504	PEM	Riverine				0.006	10	10
Malheur	MA_G_141	PSSB	Slope				0.426	687	687
Malheur	MA_G_228	PSSB	Slope				0.097	156	156
Malheur	MA_G_269	PSSB	Slope				0.000	1	1
Malheur	Malpro_573	PSSB	Slope				0.561	60	72
Malheur	MA_G_203	PUS	Depressional				0.001	1	1
Totals				1.353	902	950	2.467	2932	3025
Add 33% NWI-NHD adjustment				1.800	1199	1264	3.281	3899	4024
Add 25% contingency				2.250	1499	1580	4.101	4874	5030

Permanent Wetland Impact Data Summary		
Cowardin/HGM Classification	Acreage	Adjustments/Contingency (Acres)
PAB/Depressional	0.010	0.016
PEM/Riverine	0.669	1.111
PEM/Slope	0.111	0.185
PEM/Depressional	0.013	0.022
PEM/Unknown	0.027	0.045
PFO/Riverine	0.029	0.047
PSS/Slope	0.435	0.724
PSS/Riverine	0.012	0.020
PSS/Unkonwn	0.048	0.079
Total	1.353	2.250
Average Site Acreage	0.034	0.056

Temporary Wetland Impact Data Summary	
Cowardin/HGM Classification	Acreage
PAB/Depressional	0.056
PEM/Riverine	1.069
PEM/Slope	0.231
PEM/Depressional	0.025
PFO/Riverine	0.011
PSS/Slope	1.084
PSS/Riverine	0.021
PUS/Depressional	0.001
Total	2.499
Average Site Acreage	0.055

Permanent Non-Wetland Impacts: Data Provided by Tetra Tech

Geographic ID #	Determinate	Stream Width	Source	Impact Acres	Removal/Fill Cubic Yards	Latitude	Longitude	Sum of Length (ft)
BA_G_203	Perennial Water	1.5	2011	0.002	1/7	44.39934	-117.339307	14.25
BA12_1512	Intermittent Water	3	2012 TVES	0.020	15/12	44.583945	-117.42187	20.79
BA12_1542	Intermittent Water	0	No Survey; NHD	0.003	5/7	44.302612	-117.292415	16.06
BApro_341	Perennial Water	0	2012	0.003	1/7	44.481823	-117.33418	24.15
MA_G_103	Intermittent Water	0	No Survey; NHD	0.004	1/7	44.125029	-117.522063	29.75
MA_G_110	Intermittent Water	1	2011	0.004	1/7	44.11496	-117.504313	14.1
MA_G_127	Perennial Water	0	2011 No Access; NHD	0.060	2/7	44.026343	-117.484285	17.23
MA_G_23	Intermittent Water	0	2012	0.003	1/7	44.285598	-117.535171	17.11
MA_G_293	Intermittent Water	0	2011 No Access; NHD	0.060	5/25	43.860023	-117.407232	22.06
MA_G_3a	Intermittent Water	0	2011	0.003	14/10	44.293353	-117.436221	39.24
MA_G_3b	Intermittent Water	0	2011	0.003	14/10	44.293353	-117.436221	15.66
MA_G_3c	Intermittent Water	0	2011	0.003	14/10	44.290866	-117.429284	14.75
MA_G_67*	Intermittent Water	3	2011	0.000	0/0	44.235276	-117.559217	17.8
MA_G_7	Intermittent Water	2	2012	0.001	1/7	44.295266	-117.456114	23.8
MalWllwCrk_375	Intermittent Water	4	2012	0.005	2/3	44.322002	-117.305573	21.77
UM_G_104	Intermittent Water	1	2011	0.002	1/7	45.439895	-118.422534	90.47
UM_G_110	Intermittent Water	3	2011	0.002	1/7	45.533881	-118.946901	30.84
UM_G_31	Intermittent Water	1	2011	0.003	1/7	45.533854	-118.947339	14.36
UN_G_130	Intermittent Water	0	2011 No Access; NHD	0.003	1/7	45.159266	-117.998061	16.26
UN_G_131	Intermittent Water	0	2011 No Access; NHD	0.005	1/7	45.155205	-117.989133	14
UN_G_141	Intermittent Water	0	2011 No Access; NHD	0.008	2/7	45.134679	-117.968675	24.69
UN_G_58	Intermittent Water	0	2011 No Access; NHD	0.005	2/7	45.309546	-118.17199	96.54
UN_G_73	Perennial Water	0	2011 No Access; NHD	0.010	2/7	45.270086	-118.163798	33.4
UN_G_75	Perennial Water	0	2011 No Access; NHD	0.008	2/7	45.256358	-118.138095	17.27
UN12_1273	Intermittent Water	0	No Survey; NHD	0.004	2/7	45.273669	-118.156862	16.21
UN12_1365	Intermittent Water	0	No Survey; NHD	0.010	3/7	45.145233	-117.984334	14.23
UN12_1386*	Intermittent Water	1	2012 TVES	0.000	0/0	45.139786	-117.978443	28.11
Grand Total				0.234	95/203			704.9
Add 33% NWI-NHD Adjustments				0.311	125/269			
Add 25% Contingency				0.388	156/337			

*These features were determined to be irrigation canals that meet OAR standards for exemption from jurisdiction of the Removal Fill Law (ORS 196.795-990). This determination was made during final preperation of the Application for Siting Certificate (submittal) Exhibit J and the JPA, too late in the process to remove them from all appropriate parts of the submittal. Therefore they have been left in the table to maintain consistency throughout the submittal, but impacts to them are not included in calculations.

Stream Type	Average Width (ft)	Total Length	Removal/Fill (cubic yds)	Maximum Length (ft)	Average Length (ft)	Acres
Perennial	0.300	106.30	13/58	33.40	21.26	0.083
Intermittent	0.864	598.60	144/279	96.54	27.21	0.151

Temporary Non-Wetland Impacts: Data Provided by Tetra Tech

Geographic ID #	Determinat	Stream Width	Source	Impact Acres	Removal/Fill cubic yards	Latitude	Longitude	Sum of Length (ft)
BA_G_203	Perennial Water	1.5	2011	0.002	1/7	44.39934	-117.339307	16.27
BA12_1512	Intermittent Water	0	2012 TVES	0.020	15/-	44.583945	-117.42187	23.57
BA12_1542	Intermittent Water	0	No Survey; NHD	0.003	5/12	44.302612	-117.292415	18.36
BApro_341	Perennial Water	0	2012	0.003	1/7	44.481823	-117.33418	26.66
MA_G_103	Intermittent Water	0	No Survey; NHD	0.004	1/7	44.125029	-117.522063	27.97
MA_G_110	Intermittent Water	1	2011	0.004	1/7	44.11496	-117.504313	16.19
MA_G_127	Perennial Water	0	2011 No Access; NHD	0.060	2/7	44.026343	-117.484285	16.63
MA_G_23	Intermittent Water	0	2012	0.003	1/7	44.285598	-117.535171	18.84
MA_G_293	Intermittent Water	0	2011 No Access; NHD	0.060	5/25	43.860023	-117.407232	29.23
MA_G_3a	Intermittent Water	0	2011	0.003	14/10	44.293353	-117.436221	49.51
MA_G_3b	Intermittent Water	0	2011	0.003	14/10	44.293353	-117.436221	17.9
MA_G_3c	Intermittent Water	0	2011	0.003	14/10	44.290866	-117.429284	16.86
MA_G_67	Intermittent Water	3	2011	0.000	0/0	44.235276	-117.559217	20.45
MA_G_7	Intermittent Water	2	2012	0.001	1/7	44.295266	-117.456114	21.1
MA12_1674	Intermittent Water	0	No Survey; NHD	0.002	1/7	43.710726	-117.402391	462.63
MalWllwCrk_375	Intermittent Water	4	2012	0.005	2/3	44.322002	-117.305573	25.84
UM_G_104	Intermittent Water	1	2011	0.002	1/7	45.439895	-118.422534	167.12
UM_G_110	Intermittent Water	3	2011	0.002	1/7	45.533881	-118.946901	34.69
UM_G_31	Intermittent Water	1	2011	0.003	1/7	45.533854	-118.947339	21.91
UN_G_130	Intermittent Water	0	2011 No Access; NHD	0.003	1/7	45.159266	-117.998061	18.58
UN_G_131	Intermittent Water	0	2011 No Access; NHD	0.005	1/7	45.155205	-117.989133	16
UN_G_141	Intermittent Water	0	2011 No Access; NHD	0.008	2/7	45.134679	-117.968675	459.06
UN_G_58	Intermittent Water	0	2011 No Access; NHD	0.005	2/7	45.309546	-118.17199	62.9
UN_G_73	Perennial Water	0	2011 No Access; NHD	0.010	2/7	45.270086	-118.163798	38.84
UN_G_75	Perennial Water	0	2011 No Access; NHD	0.008	2/7	45.256358	-118.138095	19.74
UN12_1273	Intermittent Water	0	No Survey; NHD	0.004	1/7	45.273669	-118.156862	18.52
UN12_1365	Intermittent Water	0	No Survey; NHD	0.010	3/7	45.145233	-117.984334	16.26
UN12_1386*	Intermittent Water	1	2012 TVES	0.000	0/0	45.139786	-117.978443	262.04
Grand Total				0.236	95/203			1,943.67
Add 33% NWI-NHD Adjustments				0.313	125/269			
Add 25% Contingency				0.392	157/337			

*These features were determined to be irrigation canals that meet OAR standards for exemption from jurisdiction of the Removal Fill Law (ORS 196.795-990). This determination was made during final preperation of the Application for Siting Certificate (submittal) Exhibit J and the JPA, too late in the process to remove them from all appropriate parts of the submittal. Therefore they have been left in the table to maintain consistency throughout the submittal, but impacts to them are not included in calculations.

Stream Type	Avgerage Width (ft)	Total Length (ft)	Removal/Fill (cubic yds)	Maximum Impact Length (ft)	Average Length (ft)	Acres
Perennial	0.300	118.14	13/58	38.84	23.63	0.083
Intermittentent	0.696	1825.53	144/279	462.63	79.37	0.153