US Army Corps of Engineers ®
Walla Walla District
BUILDING STRONG®

DWORSHAK PROJECT
VEGETATION MANAGEMENT

Dworshak Dam and Reservoir
Ahsahka, Idaho

ENVIRONMENTAL ASSESSMENT

ADMINISTRATIVE RECORD – DO NOT DESTROY

PROJECT FILE NUMBER: PM-EC-2010-0065

September 2015

Table of Contents

List of Figures

List of Tables

List of Appendices

SECTION 1.0 – INTRODUCTION

1.1 Introduction

The Walla Walla District of the US Army Corps of Engineers (Corps) is proposing to implement vegetation management projects identified in the Dworshak Five Year Vegetation Management Plan (FY 2015-2020) (VMP) to improve general ecosystem health/restoration and maintaining/creating elk habitat on lands surrounding the Dworshak Dam and Reservoir (Project) (Figure 1) . Four categories of projects have been identified in the VMP to achieve management needs of addresing ecosystem health/restoration needs and maintaining/creating elk habitat: 1) General Forest Health, 2) Ecosystem Restoration, 3) Elk Habitat Enhancement, and 4) Vegetation Planting/Seeding and Plant Protection. These projects are proposed for implementation from FY 2015-2020 (see Appendix A).

Figure 1. Dworshak Dam and Reservoir Vicinity Map

This Environmental Assessment (EA) is being prepared pursuant to the National Environmental Policy Act (NEPA) of 1969 to determine whether the proposed action constitutes a major Federal action significantly affecting the quality of the human environment and whether an environmental impact statement is required.

The proposed action would manage vegetation at the Dworshak Project in accordance with ecosystem management principles to improve forest health and elk habitat, while maintaining protection of important resources and adhering to federal land management regulations. A project specific approach is used to evaluate 20 proposed vegetation management projects in the VMP. Two projects in the VMP, East Dent Salvage 1 and Ahsahka, have previously undergone NEPA review and are not part of this EA.

1.2 Purpose and Need for Action

The purpose of the proposed action is to effectively manage vegetation on Corps managed federal lands at the Dworshak Project from FY 2015-2020 for authorized purposes, using ecosystem management principles to address general ecosystem health/restoration concerns and to maintain/create elk habitat. The VMP (Appendix A), an addition to the Dworshak Operational Management Plan (OMP), focuses on projects to address the following two primary needs on Project lands:

1. **General Ecosystem Health/Restoration.** Unhealthy forest stands are present in some areas due to root rot, insect infestations, storm blowdown, overstocking, and related issues. Some forest stands exhibit a considerable departure from the historical range of variability with respect to species composition, stand density, stand structure, age, and fire regime. Wildfire, a natural ecosystem disturbance process, has been virtually eliminated from the landscape over the past 95 years due to effective suppression efforts, resulting in unnatural stand conditions, making many forest stands more susceptible to insect and disease problems and reduced habitat for many organisms. There is a need to treat forested ecosystems with insect and disease caused mortality to restore healthy forest conditions in these areas.

2. **Elk Habitat Maintenance/Creation**. The original goals and objectives developed for the Dworshak Elk Mitigation Area, one of the land classifications designated in the Dworshak Master Plan, recommend optimum elk habitat consisting of 60% openings and 40% cover. Many of the mitigation areas treated in the 1970s and 1980s to create openings with forage, as required under the Fish and Wildlife Coordination Act, have changed from openings to forest cover, resulting in a less than optimum opening/cover ratio. Many existing openings within the Dworshak Elk Mitigation Area are not producing adequate winter elk forage due primarily to herbivory of young plants by ungulates, lagomorphs, and rodents, as well as harsh winter conditions reducing forage abundance and quality. Planting/seeding and protection of browse plant species is needed to maintain elk forage.

Vegetation management projects identified in the VMP must not conflict with other land or natural resources management program goals/requirements (e.g., recreation, pest management, etc.).

1.3 Background

The Project was authorized in the 1962 Flood Control Act (P.L. 87-874). The 717 foot tall structure is a hydroelectric, concrete gravity dam located at river mile 1.9 on the North Fork Clearwater River (NFCR). The dam is located 4 miles northwest of the city of Orofino, Idaho and 47 miles east of Lewiston, Idaho. The drainage area is 2,440 square miles (mi^2), and the maximum operating pool is at 1,600 feet above mean sea level.

The total number of acres located within the Project is about 50,800 acres, including 21 acres used for the operation of the Dworshak Fish Hatchery in Ahshaka, Idaho and lands inundated by the reservoir. The Project reservoir is surrounded by 29,318 acres of federal land which the Corps manages (Figure 2). An additional flowage easement of approximately 1760 acres was obtained from the Clearwater National Forest.

The Corps has recently updated the land classification units for the Project in the Dworshak Master Plan (US Army Corps of Engineers (USACE) 2015), as shown in Table 1 and Figure 2. The land classification units identify the primary management focus of the lands so designated, as well as other permitted secondary uses.

Table 1. Project Land Classification Units

Primary Class	Description	Acres
Environmentally Sensitive Area	Lands where important scientific, ecological, cultural, or aesthetic features have been identified.	3,101
Mitigation	Lands specifically designated to offset elk habitat losses associated with the development of the Project.	6,935
Multiple Resource Management	Includes the following four subclasses	18,140
Recreation – Future Development	Lands where recreation areas are planned for the future, or lands that contain existing recreation areas that are temporarily closed.	860
Recreation – Low Density	Lands emphasizing opportunities for dispersed or low-impact recreation use	1,930
Wildlife Management	Lands designated for wildlife management, although all Project lands are managed for fish and wildlife habitat in conjunction with other land uses.	15,350
Vegetation Management	Lands focus on the protection and development of forest resources and vegetative cover, although all Project lands are primarily managed to protect and develop vegetative cover in conjunction with other land uses. The Corps chose not to designate any Project lands in this classification unit as the Recreation and Wildlife Management units contains the primary areas where vegetation management would occur.	0
Flowage Easement	US Forest Service (USFS) lands for which the Corps does not hold fee title, but has acquired the right to enter onto the property in connection with the operation of the project	1,760
Project Operations	Lands required for the dam and associated structures, administrative offices, maintenance compounds, and other areas used to operate and maintain the Project.	231
Recreation – High Density	Lands designated for intensive recreational use to accommodate and support the recreational needs and desires of project visitors.	1,087

The VMP has identified specific proposed projects that have been developed to address Project needs. Two projects in the VMP, East Dent Salvage 1 and Ahsahka, have already undergone environmental review. This EA evaluates the remaining VMP projects, and associated alternatives, to guide vegetation management.

The analysis area for the proposed actions includes projects identified in the VMP in Clearwater County Idaho. The analysis area for each project is shown in individual maps in Appendix A.

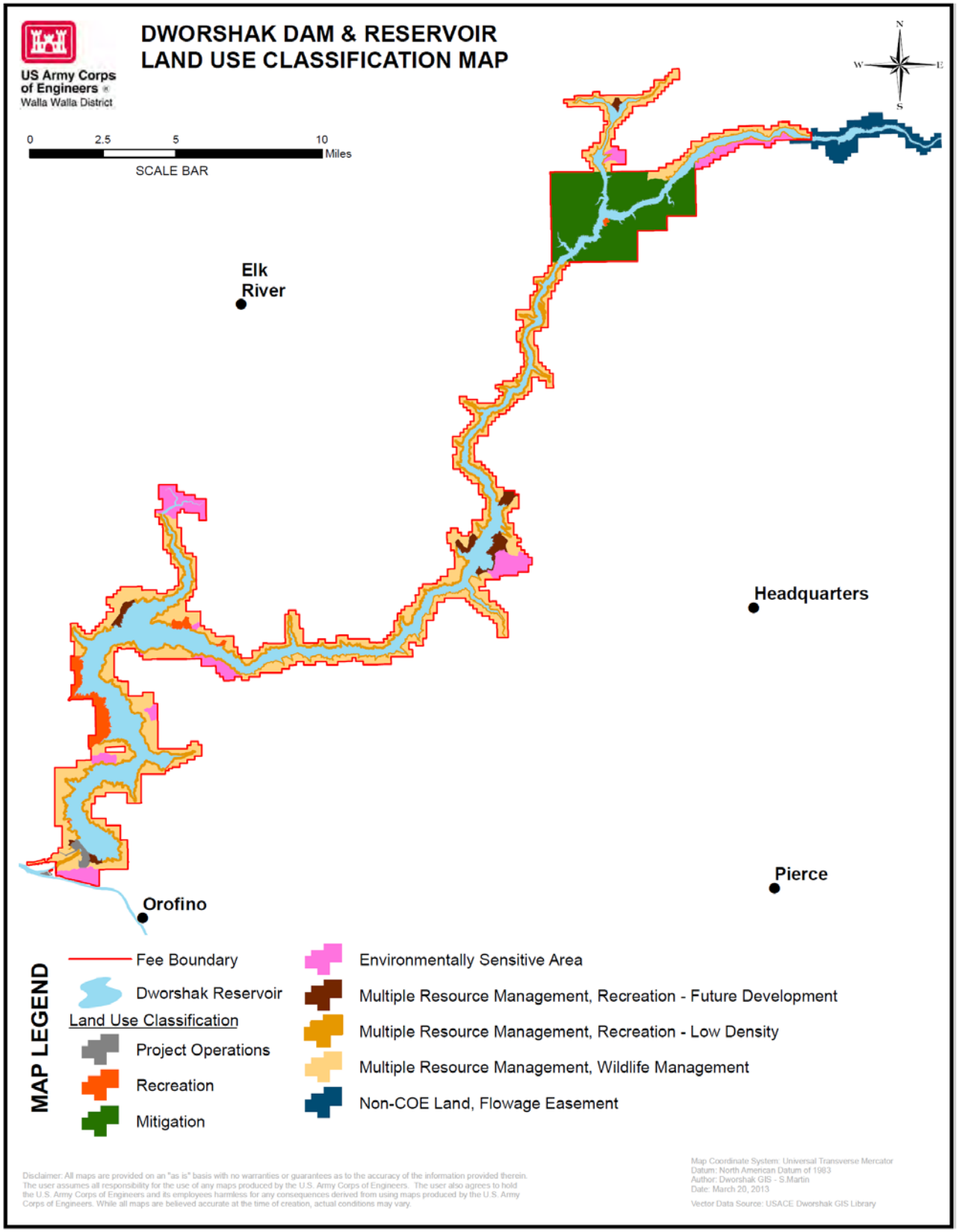


Figure 2. Project Land Classifications

1.4 Authority

The Project has five congressionally authorized purposes: Navigation, Flood Control, Hydropower, Fish and Wildlife, and Recreation. Various Federal laws and regulations guide how natural resources are to be managed on Corps Projects.

The construction of the Project was authorized in 1962 for flood control and other purposes under Section 201 of the Flood Control Act of 1962, Public Law (PL) 87-874. 16 U.S. Code § 460d (PL 113-86) established recreation as a Project purpose. The Project was originally authorized to provide navigation for the movement of harvested timber from the upper North Fork Clearwater River basin. The regional logging industry no longer transports timber using this method; however this remains an authorized project purpose.

In accordance with a plan developed under the Fish and Wildlife Coordination Act (PL 85-624), Design Memorandum No. 15, Plan for Development of Rocky Mountain Elk Habitat (DM-15) (USACE 1977) presented a plan for the development and maintenance of winter range for elk at the Project. This Plan established the requirement for elk mitigation lands. The Corps is still obligated to annually maintain the Wildlife Mitigation Area for its designated purposes.

The Forest Cover Act (PL 86-717) requires Project lands be "developed and maintained so as to encourage, promote, and assure fully adequate and dependable future resources of readily available timber, through sustained yield programs, reforestation and accepted conservation practices, and to increase the value of such areas for conservation, recreation, and other beneficial uses: Provided, that such development and management shall be accomplished to the extent practicable and compatible with other uses of the project."

Engineering Regulation 1130-2-540, Management of Natural Resource and Outdoor Recreation at Civil Works Water Resource Projects, contains guidance for forest and woodland management, fish and wildlife management, and wetlands management.

SECTION 2.0 - PROPOSED ACTION AND ALTERNATIVES

2.1 Vegetation Management Planning

The Proposed Action and alternatives were developed by assessing various vegetation management actions. Management actions identified in the VMP focus on specific vegetation management projects to achieve management goals to meet the purpose and need, with strategies refined by land classification. Ecosystem health/restoration and maintaining/creating elk habitat were the principal issues driving alternative development. This section briefly describes the specific vegetation management needs, strategies by land classification, and the associated methods/tools that are being proposed to address the vegetation management needs that inform alternatives developed. Vegetation management projects are intended to compliment, not conflict with, other land and natural resources management program goals/requirements. (e.g., pest management).

2.1.1 Vegetation Management Project Categories, Strategies and Methods:

Vegetation management includes management actions to achieve the Project needs of ecosystem health/restoration and elk habitat creation/maintenance. The Master Plan (USACE 2015) provides general planning direction for vegetation management at a broad scale. The following sections provide a description of project categories, strategies, and methods that inform the alternatives formulation and analysis.

2.1.1.1 Vegetation Management Project Categories

The Corps seeks to manage vegetation at the Project to provide for timber, fish, wildlife, soils, recreation, water quality, and other beneficial uses utilizing ecosystem management principles to ensure ecosystem integrity. All forest management actions shall be designed so that ecosystem management principles are applied, aesthetics are preserved, and environmental degradation is minimized to preserve forest health. The Dworshak VMP identifies the following project categories to achieve Project needs:

1. **General Forest Health** (8 VMP projects). There are a variety of forest health problems to be addressed on forestland to enhance aesthetic value, improve forest health, and reduce safety hazards. Problems range from insect and disease outbreaks, storm blow down, overstocking, or a combination of these and other forest health related conditions.
2. **Ecosystem Restoration** (1 VMP project). Some forestlands are considerably outside the historical range of variability for their forest type, age, location, and fire regime. Wildfire, a natural ecosystem process, was virtually eliminated from the landscape over the past 95 years, resulting in unnatural forest types, distributions, and stand structures. Wildlife habitat, ecosystem integrity, and forest health would improve through the restoration of historical forest conditions.
3. **Elk Habitat Enhancement** (2 VMP projects). Elk habitat has deteriorated in some locations due to fire suppression, plant succession, overbrowsing, and other causes. Elk habitat improvements can be achieved through vegetation management tools to improve forage/cover ratios, plant species composition, and browse vigor. There is a need to maintain the elk mitigation area for its intended purposes as identified in DM-15.
4. **Vegetation Planting/Seeding and Plant Protection** (9 VMP projects). Fire suppression, herbivory, and plant succession has reduced wildlife forage. Diverse plant populations

for wildlife habitat, ecosystem integrity, and forage can be restored through vegetation planting/seeding and plant protection actions.

2.1.1.2 Vegetation Management Strategies by Land Classification

Projects identified in the VMP would vary based on the specific resource needs and objectives for the Project land classification units that were previously described in Section 1.3. Appendix C-1 contains maps showing land classification units for each specific project identified in the VMP. The vegetation management strategies to meet these needs within the various land use classification areas present in the proposed VMP are presented below. .

1. **Environmentally Sensitive Area Strategies:** The strategy relative to environmentally sensitive areas (3,101 acres) is primarily protection or enhancement of existing resources. See 'Priority Habitats' under Multiple Resource Management Areas – Wildlife Management, below for related important habitat strategies.

2. **Mitigation Area Strategies:** The mitigation goals for vegetative management developed in 1977 through DM-15 primarily focused on browse production versus a broader view of elk habitat needs at a landscape level. Forest management on mitigation lands (6,935 acres) would be guided from both a watershed scale and a forest stand scale.

3. **Multiple Resource Management Areas (MRMA) Strategies:** Lands classified as Multiple Resource Management (18,140 acres) must address and balance a variety of resource objectives including wildlife habitat, forest health, ecosystem integrity, and recreation.
   - **MRMA - Recreation – Future Development Strategies:** It is anticipated that areas designated as future development for recreation (860 acres) under the MRMA would be managed in a way identical to low-density recreation described below.
   - **MRMA - Recreation – Low Density Strategies:** A variety of low density recreation occurs within this land use designation (1,930 acres) (e.g. hiking and hunting), but camping at minicamps is expected to have periodic forest management actions required. Hazard trees in, or in close proximity to, minicamps would be identified and marked by the ranger staff during annual inspections.
   - **MRMA - Wildlife Management Strategies:** Maintaining forest resources in such a way as to provide habitat for native wildlife species (15, 350 acres) is a key component of the Corps natural resource management mission. Four "Priority Habitats" have been identified as focus areas for management actions:
     - Ponderosa Pine (PIPO) Ecosystems
     - Old Growth Forest Communities
     - Western White Pine Communities
     - Wetland Communities

4. **Recreation – High Density Strategies:** Forest management actions in support of high density recreation facilities (1,087 acres) would be primarily designed to improve aesthetics and remove hazard trees to ensure public safety. These actions would generally be small in scale and focused due to the small size of most recreation areas.

2.1.1.3 Vegetation Management Methods

To accomplish the vegetation management needs for the proposed VMP through the strategies listed in the sections above, the following methods/tools would be used.

1. **Timber Harvest.** Including selective harvest, salvage harvest, and pre-commercial thinning to alter forest composition and structure. A variety of yarding methods would be employed dependent on project specific conditions.
2. **Slashing and Pruning.** Cutting of woody trees and/or brush and leaving them lie on site.
3. **Prescribed Burning.** Broadcast and/or pile burning to improve site conditions and/or reduce slash levels.
4. **Vegetation Planting/Seeding.** Planting/seeding of shrub species to improve forage production for wildlife.
5. **Plant Protection.** Use of wire baskets and/or fencing to reduce herbivory of browse species.
6. **Road Treatments.** Transportation system to access proposed 2015-2020 projects. Includes new road construction, road reconstruction, and road maintenance.

Additional information regarding the vegetation management methods/tools is provided in the VMP (Appendix A).

2.2 Alternative Development

The alternatives for this EA were developed by evaluating proposed projects from the VMP, the Dworshak Master Plan, and applicable environmental laws and regulations. Individual project proposals in the VMP were developed by Dworshak and District NRM staff to be implemented during the FY 2015-2020 time period. This EA evaluates the potential project specific environmental impacts of these projects, with similar projects being grouped together by objective to develop the alternatives.

Four alternatives have been identified for the Project by combining proposed projects from the VMP as shown in Table 2. The four alternatives are:

- **Alternative 1 (No Action Alternative):** Projects involving timber harvest, planting/seeding, or plant protection would not occur.
- **Alternative 2 (General Ecosystem Health/Restoration Emphasis):** Proposed action would focus on proposed VMP projects that would address general ecosystem health and restoration concerns.
- **Alternative 3 (Elk Habitat Maintenance/Creation Emphasis):** Proposed action would focus on proposed VMP projects that address elk habitat maintenance/creation concerns.
- **Alternative 4 (Combined-Preferred Alternative):** Proposed action would focus on proposed VMP projects that would address general ecosystem health/restoration and elk habitat maintenance/creation concerns.

The alternatives differ primarily in their primary focus on general ecosystem health/restoration projects or elk habitat maintenance/creation projects. The potential treatment methods vary by alternative due to different management objectives (see project specific maps in Appendix C-1).

Table 2. Proposed Projects from Five Year Vegetation Management Plan by Alternative

Project	FY	Project Type	Alternative			
			1	2	3	4
East Dent Salvage 2	2016	Forest Health		X		X
Canyon Creek	2015	Forest Health		X		X
Dent Point Salvage	2016	Forest Health		X		X
Long Creek J	2016	Forest Health		X		X
Cold Springs Salvage	2017	Forest Health		X		X
West Cranberry	2017	Forest Health		X		X
Swamp Creek	2018	Forest Health		X		X
Upper Elk Creek Salvage	2018	Forest Health		X		X
Big Eddy North Restoration	2018/2019	Ecosystem Restoration		X		X
Benton Creek	2019	Elk Habitat Enhancement			X	X
Hughes Point	2020	Elk Habitat Enhancement			X	X
Benton Creek Q	2016	Vegetation Plant			X	X
Robinson Creek	2016	Vegetation Plant			X	X
Long Creek	2017	Vegetation Plant			X	X
Hughes Point	2017/2018	Vegetation Plant/Seed			X	X
Boehls	2017/2018	Vegetation Plant/Seed			X	X
Benton Creek Q	2016	Plant Protection			X	X
Robinson Creek	2015/2016	Plant Protection			X	X
Long Creek	2017/2018	Plant Protection			X	X
Hughes Point	2019	Plant Protection			X	X

Table 3 shows specific information for each project related to treatment area and land classifications.

Table 3. Land Classification, Treatment Area, and Project Type for Proposed Projects from Five Year Vegetation Management Plan

Project	Alternatives present	Project Type	Treatment Area (acres or #)	Land Classification[1] (% of area)
East Dent Salvage 2	2,4	Forest Health	511	MRMW-86.6% MRMRLD-13.4%
Canyon Creek	2,4	Forest Health	84	MRMW-88.8% REC-7.5% MRMRLD-3.8%
Dent Point Salvage	2,4	Forest Health	643	MRMW-75.8% REC-13.3% MRMRLD-6.8% ESA-4.0%
Long Creek J	2,4	Forest Health	57	MIT-100%
Cold Springs Salvage	2,4	Forest Health	691	MRMW-49.0% ESA-43.4% MRMRLD-7.5%
West Cranberry	2,4	Forest Health	116	MRMW-85.5% MRMRLD-14.5%
Swamp Creek	2,4	Forest Health	630	MRMW-75.9% MRMRFD-18.9% MRMRLD-8.7%
Upper Elk Creek Salvage	2,4	Forest Health	278	ESA-99.9% MRMW-0.1%
Big Eddy North Restoration	2,4	Ecosystem Restoration	922	MRMW-75.8% ESA-16.8% MRMRLD-7.3%
Benton Creek	3,4	Elk Habitat Enhancement	212	MIT-100.0%
Hughes Point	3,4	Elk Habitat Enhancement	560	MIT-100.0%
Benton Creek Q	3,4	Vegetation Plant	Plant 2500 seedlings	MIT-100.0%
Robinson Creek	3,4	Vegetation Plant	Plant 5000 seedlings	MIT-100.0%
Long Creek	3,4	Vegetation Plant	Plant 5000 seedlings	MIT-100.0%
Hughes Point	3,4	Vegetation Plant/Seed	Plant 5000 seedlings/Seed	MIT-100.0%

[1] Land Classification: ESA=Environmentally Sensitive Area, MRMW=Multiple Resource Management: Wildlife Management, MRMRLD=Multiple Resource Management: Recreation-Low Density, MRMRFD=Multiple Resource Management: Recreation-Future Development, MIT=Mitigation(elk), REC=Recreation-High Density

Project	Alternatives present	Project Type	Treatment Area (acres or #)	Land Classification[1] (% of area)
Boehls	3,4	Vegetation Plant/Seed	Plant 5000 seedlings/Seed	MRMW-83.2% MIT-16.8%
Benton Creek Q	3,4	Plant Protection	50 wire baskets	MIT-100.0%
Robinson Creek	3,4	Plant Protection	3 exclosures, 100 wire baskets	MIT-100.0%
Long Creek	3,4	Plant Protection	1 exclosure, 50 wire baskets	MIT-100.0%
Hughes Point	3,4	Plant Protection	100 wire baskets	MIT-100.0%

2.2.1 Alternative 1 (No Action Alternative)

The No Action Alternative would not propose any vegetation management projects involving timber harvest, planting/seeding, or plant protection. The No Action Alternative is prescribed by the Council of Environmental Quality (CEQ) Regulations to serve as the baseline against which all other alternatives are analyzed.

2.2.2 Alternative 2 (General Ecosystem Health/Restoration Emphasis)

Alternative 2 would implement nine vegetation management projects identified in the VMP on Project lands to improve general ecosystem health/restoration. This alternative emphasizes vegetative management projects to deal with forest health issues in eight areas with insect/disease outbreaks and one ecosystem restoration area.

The projects in this alternative were developed by Dworshak and Walla Walla District NRM staffs for inclusion in the VMP to address Project ecosystem health/restoration concerns. The projects were developed in cooperation with state agencies, other federal agencies, private landowners, and input from the public. The projects would use timber harvest and prescribed burning as the primary management tools.

2.2.3 Alternative 3 (Elk Habitat Maintenance/Creation Emphasis)

Alternative 3 would implement eleven vegetation management projects identified in the VMP on lands at Dworshak Reservoir to address elk habitat maintenance/creation concerns. This alternative emphasizes vegetative management projects dealing with declining elk habitat in eleven areas with reduced browse and habitat conditions.

The projects in this alternative were developed by Dworshak and Walla Walla District NRM staffs for inclusion in the VMP, to address Project elk forage and habitat concerns through

vegetation plantings and plant protection. The projects were developed in cooperation with state agencies, other federal agencies, private landowners, and input from the public. The projects would use timber harvest, prescribed burning, vegetation planting/seeding, and plant protection as the primary management tools.

2.2.4 Alternative 4 (Combined-Preferred Alternative)

Alternative 4, the Preferred Alternative, would implement twenty vegetation management projects identified in the VMP on lands near Dworshak Reservoir to address general ecosystem health/restoration and elk habitat maintenance/creation concerns. This alternative emphasizes vegetative management projects to deal with declining elk habitat in eleven areas with reduced browse and habitat conditions, forest health issues in eight areas with insect/disease outbreaks, and one ecosystem restoration area.

The projects in this alternative were developed by Dworshak and Walla Walla District NRM staffs for inclusion in the VMP, to address Project ecosystem health/restoration, and elk habitat maintenance/creation concerns. The projects were developed in cooperation with state agencies, other federal agencies, private landowners, and input from the public. The projects would use timber harvest, prescribed burning, vegetation planting/seeding, and plant protection as the primary management tools.

2.3 Alternative Comparison

Criteria related to the Project purpose and need were developed to compare the alternatives. Alternatives were evaluated based on the following criteria:

1. Effectively manage vegetation on Corps managed federal lands at the Dworshak Project from FY 2015-2020 for authorized purposes..
2. Address the identified Project need of general ecosystem health/restoration.
3. Address the identified Project need of elk habitat maintenance/creation to meet the mitigation requirements of DM No. 15-Plan for the Development of Rocky Mountain Elk Habitat.
4. Does not conflict with other land and natural resources management program goals/requirements. (e.g., recreation, pest management, etc.)

Table 4 evaluates the alternatives against the screening criteria to meet the Project Purpose and Need.

Table 4. Alternative Screening Evaluation

	Alternative Screening Criteria			
Alternatives	**Manage Vegetation for Authorized Purposes**	**Address Ecosystem Health/ Restoration Needs**	**Address Elk Habitat Maintenance/ Creation Needs**	**Does Not Conflict with other Land/Natural Resource Goals/Requirements**
1-No Action	No	No	No	No
2-Ecosystem Health	Yes	Yes	Partial	No
3-Elk Habitat	Yes	Partial	Yes	No
4-Combined	Yes	Yes	Yes	Yes

Alternative 1 would fail to meet the Corp's desire to manage vegetation for authorized purposes, would not address ecosystem health/restoration and elk habitat maintenance/creation needs, and it conflicts with other land/natural resource goals/requirements.

Alternative 2 would meet the Corp's desire to manage vegetation for authorized purposes and address ecosystem health/restoration needs, but only partially addresses elk habitat maintenance/creation needs. It does conflict with other land/natural resource goals/requirements.

Alternative 3 would meet the Corp's desire to manage vegetation for authorized purposes and address elk habitat maintenance/creation needs, but only partially addresses ecosystem health/restoration needs. It does conflict with other land/natural resource goals/requirements.

Alternative 4 would meet the Corp's desire to manage vegetation for authorized purposes, would address ecosystem health/restoration and elk habitat maintenance/creation needs, and would not conflict with other land/natural resource goals/requirements.

Based on the alternative comparison against the four screening criteria, Alternatives 2 and 3 are eliminated from further consideration because they do not meet the Project purpose and need. Alterative 4 meets the conditions of the Project purpose and need, and is carried forward as the Preferred Alternative in Section 3. CEQ regulations require an analysis of the No Action Alternative for the evaluation of environmental effects of the alternatives on the affected environment, so it is also carried forward in Section 3.

SECTION 3.0 - AFFECTED ENVIRONMENT - ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This section describes the existing affected environment (existing condition of resources) and evaluates potential environmental effects on those resources for each alternative. Alternative 1 (No Action) and Alternative 4 (Preferred) were carried forward for analysis. Alternative 1 does not propose any specific vegetation management actions, while Alternative 4 proposes project specific management actions identified in the VMP for specific time frames at specific locations. The discussion of environmental consequences evaluates potential effects of those Alternative 4 projects on various resources. Pertinent conservation measures, both impact minimization measures (IMMs) and best management practices (BMPs) (see Appendix D), would be fully implemented for all specific VMP projects, as appropriate. Although only relevant resource areas are specifically evaluated for impacts, the Corps did consider all resources in the proposed project area and made a determination as to which ones to evaluate. Those resources considered but not evaluated further are shown in Table 5.

Table 5. Environmental Resources not Evaluated Further.

Environmental Component	Explanation
Environmental Justice	The proposed action would have no negative impacts (e.g. economically) on any minority/ethnic group or social class.
Noise	The project area is located in rural Clearwater County and will occur in the confines of noise-reducing forest habitats. No sensitive receptors will be significantly impacted.

3.2 Geology and Soils

3.2.1 Affected Environment

Dworshak is located within the Clearwater River watershed, a subbasin of the lower Snake River watershed. There are two major tributaries on the north bank: Elk Creek and Little North Fork. Dworshak is formed in the steep-sided North Fork and Little North Fork Valleys. Rising abruptly from the reservoir's full pool elevation of 1,600 feet mean sea level (msl), the neighboring mountains and ridges reach elevations of over 5,000 feet msl. Steep slopes dominate the shoreline and Corps lands. Relatively few flat or low-slope areas exist.

The geology for the majority (over 60%) of the basin is a contact zone of schist and gneiss, which is located in the central, north, and northwestern parts of the basin. This contact zone is susceptible to erosional processes resulting in a high occurrence of mass failures. The basin is on the northern edge of the Idaho Batholith as granitic formations are located along the southeastern portion of the basin. Along the north and northeast edge of the basin are metasedimentary rocks of the Belt Series. To the west and southwest of the basin are Columbia River basalt flows.

The soils derived from metasedimentary rocks generally weather to finer textured soils with varying amounts of course fragments. Granitics weather rapidly to grus, which are sandy and

excessively well drained in composition. Basalt rock has a tendency to weather into large cobble size material. Soils from the contact zone exhibit considerable structural and weathering variability due to the different pressure and temperatures the parent rocks were subject to. These contact areas tend to result in areas with a higher percentage of mass failures. In most of the basin the soils include a layer of ash from the explosion of Mount Mazama that can be up to 20 inches thick. This layer of volcanic ash contributes substantially to the water and nutrient holding capacity of the soils and is the significant reason for the high productivity of the soils in the basin. This ash has been eroded primarily on south to west facing slopes and in areas denuded by fire.

The most common surface soil textures are: silt loams, loams, and sandy loams with some clay accumulation with depth. Because of the natural forest conditions predominating, organic materials have accumulated on the soil surface. Soils are generally acidic due to the forest vegetation present. Soil below the surface is low in organic matter but does support moderate to heavy stands of coniferous timber and understory vegetation on Corps lands (Corps 1996a). Table 6 shows soil capability and classes for specific projects in the VMP while Appendices C-2 and C-3 contain detailed, site-specific soil capability and slope class maps for each project which were used to design proposed project units.

Table 6. Project Specific Soil Capability and Slope Classes

Project	Soil Capability Classes[2]	Slope Classes (% of area)				
		0-15%	15-35%	35-55%	55-70%	70%+
East Dent Salvage 2 – FY 2016	7-100.0%	0.3%	6.4%	28.2%	33.2%	31.8%
Canyon Creek – FY 2015	4-82.7%, 7-17.3%	10.5%	51.3%	25.2%	8.3%	4.6%
Dent Point Salvage – FY 2016	6-54.3% 7-29.3% 8-7.9% RO-6.5% 4-2.0%	8.7%	57.3%	26.0%	5.2%	2.8%
Long Creek J – FY 2016	7-66.1% 6-33.9%	3.7%	31.3%	53.4%	10.4%	1.2%
Cold Springs Salvage – FY 2017	6-46.3% 7-39.1% 4-12.1% 3-1.9% 8-0.6%	20.0%	38.7%	25.0%	10.1%	6.3%

[2] **Soil Capability Classes:** 1=Soils have slight limitations that restrict their use, 2=Soils have moderate limitations that reduce choice of plants or require moderate conservation measures, 3= Soils have severe limitations that reduce choice of plants and/or require special conservation measures, 4=Soils have severe limitations that restrict the choice of plants and/or require very careful management, 5=Soils have little or no hazard of erosion but have other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover, 6=Soils have severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover, 7=Soils have severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife, 8=Soils and miscellaneous areas have limitations that preclude their use for commercial food production and limit their use to recreation, wildlife, or water supply or for aesthetic purposes, RO=Rock Outcrop.

Project	Soil Capability Classes[2]	Slope Classes (% of area)				
		0-15%	15-35%	35-55%	55-70%	70%+
West Cranberry – FY 2017	7-86.3% 6-12.7% 4-1.0%	2.0%	19.9%	48.5%	24.8%	4.8%
Swamp Creek - FY 2018	7-37.2% 6-19.3% 8-18.7% 4-16.5% RO-8.3%	17.4%	39.3%	23.3%	13.2%	6.8%
Upper Elk Creek Salvage – FY 2018	7-81.1% 6-12.4% 4-5.7% 8-0.8%	1.5%	15.2%	29.8%	26.0%	27.5%
Big Eddy North Restoration – FY 2018/2019	7-56.8%, RO-41.6%, 6-1.9%	1.9%	18.3%	41.5%	25.3%	13.0%
Benton Creek – FY 2019	7-100%	0.7%	4.5%	24.3%	34.7%	35.8%
Hughes Point – FY 2020	7-68.8% 8-19.7% 6-11.5% 4-0.1%	2.2%	36.1%	33.3%	18.0%	10.3%
Benton Creek Q – FY 2016	7-80.8% 4-19.2%	3.6%	17.6%	44.1%	24.0%	10.8%
Robinson Creek– FY 2016	4-42.2% 6-22.8% 7-20.8% 8-14.2%	12.2%	33.6%	36.8%	15.0%	2.4%
Long Creek-FY 2017	6-75.1% 7-24.9%	8.8%	66.3%	22.8%	2.1%	0.0%
Hughes Point – FY 2017/2018	8-53.1% 7-43.9% 4-1.9% 6-1.1%	1.9%	8.6%	26.4%	42.1%	21.0%
Boehls – FY 2017/2018	7-57.6% 4-42.4%	1.0%	37.7%	57.9%	3.0%	0.4%
Benton Creek Q – FY 2016	7-80.8% 4-19.2%	3.6%	17.6%	44.1%	24.0%	10.8%
Robinson Creek – FY 2016	4-32.1% 8-29.5% 6-22.4% 7-16.0%	12.2%	33.6%	36.8%	15.0%	2.4%
Long Creek – FY 2017/2018	6-76.0% 7-24.0%	8.8%	66.3%	22.8%	2.1%	0.0%
Hughes Point – FY 2019	8-53.1% 7-43.9% 4-1.9% 6-1.1%	1.9%	8.6%	26.4%	42.1%	21.0%

3.2.2 Environmental Consequences

Alternative 1: No Action
There would be no vegetation management activities associated with the No Action Alternative so there would be no direct effects to soil/geology resources. However, due to the lack of vegetation management actions, it is likely that fuel loadings would increase in some project areas as forest health issues continue, raising the potential for indirect effects to soils and the underlying geologic materials. Fuel loadings would continue to increase in these areas raising the potential for stand-replacing wildfires, which could potentially have a substantial negative effect on soil health and productivity. A wildfire could potentially remove all vegetation creating hydrophobic soil conditions which could result in severe erosion and subsequent sedimentation from some project areas into the reservoir and adjacent streams. The potential indirect effects to the soil/geology resources are estimated to be low to moderate due to the low likelihood of wildfires, effective current fire suppression programs, and the filtering effects of vegetative buffers. Cumulatively, higher fuel loadings on Corps lands resulting from the no action alternative would slightly increase overall detrimental effects to soil/geology resources.

Alternative 4: Preferred Alternative
The vegetation management activities associated with specific Alternative 4 VMP projects would have the potential for soil loss and soil compaction caused by ground-disturbing activities, such as operation of yarding and skidding equipment, prescribed burning, roadwork, development and use of log landing sites, etc. However, minimal direct effects on the geology and soil resources would be expected due to the implementation of proposed minimization/avoidance measures (see Appendix D) for each specific VMP project. Projects with timber harvest actions would be conducted to limit ground disturbance by the use of yarding methods which minimize the amount of area impacted, potentially causing soil displacement, compaction, or other detrimental effects. Projects with prescribed burning activities would be conducted under specific soil moisture and weather conditions to minimize detrimental effects. Planting and plant protection projects would cause minimal impacts to soil and geological resources. Table 7 shows specific information for proposed projects in the VMP related to harvest type, yarding method, and proposed road treatments.

Vegetation management activities associated with all Alternative 4 VMP projects would be designed to protect the geologic and soil resources. The project specific proposed road locations identified in Table 7 were developed based on an analysis of the slope and soil characteristics identified in Table 6. All road treatments would be conducted using all pertinent minimization/avoidance measures, both Impact Minimization Measures (IMMs) and Best Management Practices (BMPs) (see Appendix D), to minimize detrimental impacts.

Due to the implementation of specific ecosystem health/restoration VMP projects, it is likely that fuel loadings would decrease in high fire risk portions of the Project area, reducing the potential for indirect soil and geologic resource effects. Lower fuel loadings in high fire risk locations would reduce the potential for stand-replacing wildfires, which would maintain soil health and productivity. The potential indirect effects to soils/geology are estimated to be low due to the reduction of wildfire hazards. Cumulatively, impacts associated with Alternative 4 VMP project activities on Corps land would minimize detrimental effects to soil and geologic resources.

Table 7. Vegetation Management Project Specific Harvest and Yarding Methods and Road Treatments.

Project	Harvest Type	Yarding Method	Proposed Road Treatments (miles)		
			New	Reconstruction	Maintenance[3]
East Dent Salvage 2 – FY 2016	Salvage	Cable-100.0%	1.61	0.31	34.61
Canyon Creek - FY2015	Salvage	Tractor-100.0%	0.12	0.71	1.73
Dent Point Salvage – FY 2016	Salvage	Cable-59.5% Tractor-40.5%	2.79	4.33	2.95
Long Creek J – FY 2016	Salvage	Cable-100%	0.32	0.14	2.21
Cold Springs Salvage – FY 2017	Salvage	Cable-50.4% Tractor-49.6%	3.68	2.18	13.31
West Cranberry – FY 2017	Salvage	Cable-100.0%	0.87	1.38	10.96
Swamp Creek - FY 2018	Salvage	Cable-50.4% Tractor-49.6%	4.06	4.06	29.44
Upper Elk Creek Salvage – FY 2018	Salvage	Cable-87.4% Tractor-12.6%	2.32	0.00	4.87
Big Eddy North Restoration – FY 2018/2019	Selective	Cable-87.9% Tractor-12.1%	4.90	11.12	1.89
Benton Creek – FY 2019	Selective/ Prescribed Burn	Cable-100.0%	0.15	0.57	27.01
Hughes Point – FY 2020	Selective/ Prescribed Burn	Cable-82.5% Tractor-17.5%	0.91	5.96	2.88
Benton Creek Q – FY 2015	Planting-2500 seedlings	N/A	0.00	0.00	3.62
Robinson Creek – FY2016	Planting-5000 seedlings	N/A	0.00	0.00	7.17
Long Creek – FY2017	Planting-5000 seedlings	N/A	0.00	0.00	4.54
Hughes Point – FY2018	Planting-5000 seedlings	N/A	0.00	0.00	7.53
Boehls – FY 2018	Planting-5000 seedlings	N/A	0.00	0.00	5.26
Benton Creek Q – FY 2015	50 wire baskets	N/A	0.00	0.00	3.62
Robinson Creek – FY 2015/2016	3 exclosures 100 wire baskets	N/A	0.00	0.00	7.17
Long Creek – FY 2017/2018	1 exclosure 50 wire baskets	N/A	0.00	0.00	4.54

[3] **Maintenance** includes treatments to rural and service roads that are not publicly maintained, so they would be suitable to transport logs to mills and/or deliver other resources to/from treatment units.

Project	Harvest Type	Yarding Method	Proposed Road Treatments (miles)		
			New	Reconstruction	Maintenance[3]
Hughes Point – FY 2019	100 wire baskets	N/A	0.00	0.00	7.53

3.3 Hydrology/Limnology

3.3.1 Affected Environment

The Clearwater River Basin encompasses approximately 9,600 mi^2 in North Central Idaho. Elk Creek and the Little North Fork are the two major tributaries. The majority of annual runoff for the Clearwater River Basin is derived from a combination of winter rains and spring snowmelt floods. The streamflow pattern in the North Fork Clearwater River is characterized by low flows from late July through February, increasing flows during March, high flows from April through May or June, and receding flows in late June and July. The magnitude of flows generated by spring runoff would vary with the amount of snow accumulated, temperatures, and the amount of rainfall received in the area.

Dworshak Reservoir is narrow and reaches depths of 600 feet near the forebay area of the dam. Consequently, the lake thermally stratifies every year with a thermocline, the middle layer of water in thermal stratification, at a depth of approximately 40 to 50 feet. Deep-water (below 40 to 50 feet) temperatures remain consistent throughout the year at an approximate 39 degrees Fahrenheit (ºF) to 41 ºF. The reservoir has been characterized as oligotrophic, which constitutes low productivity and nutrient limited. The oligotrophic characterization of the reservoir indicates exceptional water quality that is low in dissolved solids and devoid of inorganic contaminants (U.S. Department of Energy 1996).

No permanent or serious water quality problems have been observed in Dworshak Reservoir since it was completely filled in 1973. The reservoir is approaching equilibrium as a cold, nutrient-poor lake with high water quality, low watershed nutrient contribution, and lack of point sources of pollution. The reservoir's cooling trend, noted in the post-impoundment study, has apparently stabilized. Oxygen depletion and hydrogen sulfide concentrations in the colder non circulating water, brought about by the decomposition of organics in the first few years after filling, are not expected to reoccur (USACE 1986).

3.3.2 Environmental Consequences

Alternative 1: No Action

There would be no vegetation management activities associated with the No Action Alternative so there would be no direct effects to hydrology/limnology resources. However, due to the lack of vegetation management actions, it is likely that fuel loadings would increase in some project areas as forest health issues continue, raising the potential for indirect effects to streams and the reservoir. Fuel loadings would continue to increase in these areas raising the potential for stand-replacing wildfires, which could potentially have a substantial negative effect on soils. A wildfire could potentially remove all vegetation creating hydrophobic soil conditions which could result in severe erosion and subsequent sedimentation from some project areas into the reservoir and adjacent streams. The potential indirect effects to the hydrology/limnology

resources are estimated to be low to moderate due to the low likelihood of wildfire, effective current fire suppression programs, and the filtering effects of vegetative buffers. Cumulatively, higher fuel loadings on Corps lands resulting from the no action alternative would slightly increase overall detrimental effects to hydrology/limnology resources.

Alternative 4: Preferred Alternative
The vegetation management activities associated with specific Alternative 4 VMP projects would have the potential for sedimentation caused by ground-disturbing activities, such as operation of yarding and skidding equipment, prescribed burning, roadwork, development and use of log landing sites, etc. However, minimal direct effects on the hydrology and limnology resources would be expected due to the implementation of proposed minimization/avoidance measures (see Appendix D) for each specific VMP project. Projects with timber harvest actions would be conducted to limit ground disturbance by the use of yarding methods which minimize the amount of area impacted, potentially causing sedimentation, reduced infiltration, or other detrimental effects. Projects with prescribed burning activities would be conducted under specific soil moisture and weather conditions to minimize detrimental effects. Planting and plant protection projects would cause minimal impacts to hydrologic/limnological resources. The implementation of vegetative buffers for each project would minimize the likelihood of sediment reaching the reservoir or streams.

Vegetation management activities associated with all Alternative 4 VMP projects would be designed to protect the hydrologic and limnological resources. Due to the implementation of specific ecosystem health/restoration VMP projects, it is likely that fuel loadings would decrease in high fire risk portions of the Project area, reducing the potential for indirect hydrology/limnology resource effects. Lower fuel loadings in high fire risk locations would reduce the potential for stand-replacing wildfires, which would maintain water infiltration capacity of soils. The potential indirect effects to hydrology/limnology are estimated to be low due to the reduction of wildfire hazards. Cumulatively, impacts associated with Alternative 4 VMP project activities on Corps land would minimize detrimental effects to hydrologic and limnological resources.

3.4 Air Quality

3.4.1 Affected Environment
The Aleutian Low and Pacific High weather patterns strongly influence local climates. The Pacific High dominates during the summer months, resulting in hot and dry weather. Locally, all major river canyons are subject to temperature inversions that can pool smoke in drainage bottoms. Air quality, in the analysis area, is predominantly rated “good” and meets guidelines established by Idaho air quality laws and the Clean Air Act (USACE 1997).

In general, air quality in Clearwater County is very good. Smoke from controlled and uncontrolled forest fires is the most significant source of air pollution in the area, although agricultural field burning contributes as well. In 1990, the North Idaho Airshed Group was formed to minimize and prevent the accumulation of smoke in order to meet state and federal ambient air quality standards when prescribed burning is necessary. At its conception this group consisted of four timber companies, the Nez Perce Tribe and nine public agencies and now is a

member of the larger Montana/Idaho Airshed Group. In addition, the North Idaho Cooperative Smoke Management Plan was developed to report and coordinate burning operations on all forest and range lands in the state.

Periodically, air quality may be degraded and minor amounts of pollutants may occur from the following: (1) wildfires; (2) prescribed burning; (3) internal combustion engines; and (4) dust from road use. Activities that affect air quality are generally of short duration, lasting from one day to several weeks.

3.4.2 Environmental Consequences

Alternative 1: No Action
There would be no vegetation management activities associated with the No Action Alternative so there would be no direct effects to air quality. However, due to the lack of vegetation management actions, it is likely that fuel loadings would increase in some project areas as forest health issues continue, raising the potential for indirect effects to air quality in the future. Fuel loadings would continue to increase in these areas, raising the potential for stand-replacing wildfires, which could potentially have a substantial negative effect on local and regional air quality. The potential indirect effects to air quality are estimated to be low to moderate due to the low likelihood of wildfire and effective current fire suppression programs. Cumulatively, higher fuel loadings on Corps lands resulting from the No Action Alternative would slightly increase overall detrimental effects to air quality.

Alternative 4: Preferred Alternative
The vegetation management activities associated with specific Alternative 4 VMP projects would have minimal direct effects on air quality due to the localized nature of these activities. Limited input of particulates and pollutants produced by mechanized equipment would occur, and detrimental effects would be limited to the immediate area and be of short duration. The potential effects of prescribed burning activities associated with Alternative 4 VMP vegetation management projects, including pile burning and broadcast burning, include short term increases of particulate matter in the smoke produced from these activities for a low to moderate impact. These effects would be minimized by implementing project burns under carefully determined prescriptions.

Long-term, indirect effects associated with the activities of Alternative 4 VMP projects include reduced potential for smoke and particulate matter from wildfires that would be less likely to occur due to the implementation of these projects. As specific Alternative 4 VMP projects are implemented, fuel loadings would decrease in high fire risk portions of the Project area, resulting in a reduced potential for large scale, stand-replacing wildfires with corresponding detrimental air quality effects. The potential indirect effects to air quality are estimated to be low due to the reduction of fuel loadings from Alternative 4 VMP projects and current fire suppression management actions. Cumulatively, effects on Corps lands from Alternative 4 VMP projects would result in low effects on air quality.

3.5 Vegetation

3.5.1 Affected Environment

The Project vegetation is dominated by coniferous forests, which is typical of steep lands in north central Idaho. Grand fir (*Abies grandis*), Douglas-fir (*Pseudotsuga menziesii*), and western redcedar (*Thuja plicata*) are the most common trees species. Less common tree species include: ponderosa pine (*Pinus ponderosa*), western larch (*Larix occidentales*), western white pine (*Pinus monticola*), and western hemlock (*Tsuga heterophylla*). Alder (*Alnu*s spp.), birch (*Betula* spp.), and cottonwoods (*Populus* spp.). Mixed forbs and shrubs have vegetated some areas subjected to severe forest fires. Bunchgrass steppe vegetation extends into the lower reaches of the canyon on warm aspects, and elements of Palouse prairie flora, including several regional endemic species, merge with those of moist, western red cedar (*Thuja plicata*) forests of the Clearwater Mountains. Drier forest types are found in the downstream end of the Dworshak Reservoir, while mesic and wetter forest types are increasingly encountered farther up the pool.

Four "Priority Habitats" have been identified in the Dworshak MP within the Project area:

- **Ponderosa Pine Ecosystems:** These ecosystems are threatened throughout Idaho and provide habitat for numerous wildlife species. Restoring these ecosystems not only provides wildlife habitat benefit, but is the primary focus of the ecosystem integrity component of the Project forest management.
- **Old Growth Forest Communities:** Wildlife species which utilize mature and old-growth forests are associated with characteristic components of these stands, including canopy cover, mistletoe brooms, dead parts of live trees, exfoliating bark, snags, downed wood, litter and duff, fire processes, and insect outbreaks. Management strategies are to protect and conserve these forest communities.
- **Western White Pine Communities:** Historically, western white pine was a prominent component of western forests, including the Project lands. White pine blister rust, a disease, introduced to the west coast in 1910, has eliminated over 90% of the western white pines from the landscape. Management strategies include identifying areas that formerly supported western white pine and work to re-introduce rust-resistant strains of western white pine.
- **Wetland Communities:** With the creation of the reservoir and subsequent water level fluctuations, many wetland habitats were eliminated or are no longer capable of supporting wetland species. Many native wildlife species are dependent on wetland communities. Strategies for wetland priority habitat include location, classification and mapping existing wetlands, as well as inventorying and documenting species use of wetlands and the protection and/or enhancement of known wetlands.

Wildfire was historically the most dramatic ecological process to shape North Idaho forests. The effects of fire to an ecosystem are dependent on the localized fire regime. The exclusion of fire from fire-adapted ecosystems can alter forest composition, form and structure, nutrient cycling, soil properties, erosion potential, and fish and wildlife habitat. There has been a significant reduction in the frequency of low-severity fire regimes (ground fires) in the drier forest types, resulting in altered composition, form, and structure of these forests. Table 8 shows fire regime characteristics for forest habitat types found in the Project. Forest habitat types represent the potential climax vegetation that can occur on a specific location.

Table 8. Fire Regime Characteristics for Dworshak Project Habitat Types

Habitat Types[1]	Fire Group[2]	Average Fire Interval (years)[3]				Fire Regime Frequency	Fire Type	Early Seral Tree Species[4]
		All Fires	Surface	Mixed	Stand Replacement			
PIPO/FEID	1	6	8	35	125	5-25 years	Cool underburns	PP
PIPO/SYAL								
PSME/SYAL								
PSME/PHMA	2	21	35	60	300	7-25 years	Cool underburns	PP WL
ABGR/PHMA						repeated	Underburns	PP DF
ABGR/LIBO	7	69	--	100	220	repeated	Underburns	DF GF
ABGR/CLUN								
ABGR/ASCA								
THPL/CLUN	8	80	--	133	200	Major factor	Mosaic	DF GF WL
THPL/ASCA								
THPL/GYDR								
TSHE/CLUN								DF WL WWP
TSHE/ASCA								
THPL/ADPE	9	334		2500	385	Major factor	Mosaic	GF

[1] **Forest Habitat Types:** ABGR/ASCA=Grand Fir/Wild Ginger, ABGR/CLUN=Grand Fir/Queencup Beadlily, ABGR/PHMA=Grand Fir/Ninebark, ABGR/LIBO=Grand Fir/Twinflower, PIPO/FEID=Ponderosa Pine/Idaho Fescue, PIPO/SYAL=Ponderosa Pine/Common Snowberry, PSME/PHMA=Douglas-fir/Ninebark, PSME/SYAL=Douglas-fir/ Common Snowberry, THPL/ADPE=Western Redcedar/Lady Fern, THPL/ASCA=Western Redcedar/Wild Ginger, THPL/CLUN=Western Redcedar/Queencup Beadlily, THPL/GYDR=Western Redcedar/Oakfern, TSHE/ASCA=Western Hemlock/Wild Ginger, TSHE/CLUN=Western Hemlock/Queencup Beadlily.

[2] **Fire Groups:** 1=Warm, Dry Douglas-fir and Ponderosa Pine, 2=Warm, Dry to Moderate Douglas-fir, Grand Fir, and Ponderosa Pine, 7=Moderate and Moist Grand Fir, 8=Moderate and Moist Western Hemlock and Western Redcedar, 9=Very Moist Western Redcedar. Derived from Smith and Fischer, 1997.

[3] Derived from LANDFIRE Biophysical Setting Models, 2013

[4] **Early Seral Tree Species:** DF=Douglas-fir, GF=Grand Fir, WL=Western Larch, WWP=Western White Pine

Forest type changes have occurred in the absence of fire when more moisture demanding, late seral species like grand fir and western redcedar increase in abundance in areas historically dominated by more fire tolerant species such as ponderosa pine and Douglas-fir. Reduced fire frequencies, due to effective fire suppression, have resulted in increased forest fuel loads as well, with more severe fires expected compared to historical conditions. In contrast, wetter forest types, where frequent, low-severity burns were uncommon, fire suppression has not significantly altered forest composition. Table 9 shows the forest cover types and forest habitat types for specific projects in the VMP while Appendices C-4 and C-5 contain detailed, site-specific forest cover type and habitat type maps for each VMP project.

3.5.2 Environmental Consequences

Alternative 1: No Action
There would be no vegetation management activities associated with the No Action Alternative so there would be no direct effects on vegetation resources. However, due to the lack of vegetation management actions, it is likely that forest health problems would continue and fuel loadings would increase, raising the potential for detrimental wildfires. A wildfire could potentially remove all vegetation from areas, creating hydrophobic soil conditions which could result in severe erosion and subsequent sedimentation resulting in a loss of long term site productivity. Even if a wildfire did not occur, undesirable changes in forest species composition, structure, and age class distribution would occur reducing habitat diversity and forest productivity.

The potential indirect effects to the vegetation resources are estimated to be moderate due to the changes in forest species composition, structure, and age class distribution that would occur with no vegetation management actions. A corresponding increase in the risk of wildfire due to increased fuel loadings would also result in detrimental indirect effects on vegetation resources, Cumulatively, effects on Corps lands resulting from the No Action Alternative would result in moderate detrimental effects to vegetation resources.

Alternative 4: Preferred Alternative
The vegetation management activities associated with specific Alternative 4 VMP projects would have the potential for major, direct beneficial effects on vegetation resources. Project specific forest management activities would change species composition, remove unhealthy and/or undesired trees, reduce understory ladder fuels, reduce fire hazards, and a variety of other benefits. Projects in the VMP have been specifically developed to address ecosystem health concerns and to benefit priority habitats, particularly ponderosa pine ecosystems.

Vegetation management activities associated with Alternative 4 VMP projects would be designed to benefit vegetation resources, and fuel loadings would decrease in projects located in areas with short fire return intervals. This would decrease the potential for stand-replacing wildfires, which would minimize damage to soils and maintain each project's productive capacity to produce vegetation. Wildfires would occur at lower intensities, resulting in minimal erosion rates, with little loss of soil productivity. This would maintain the historic, potential, natural communities within specific project locations and all the associated organisms dependant on those communities. The potential indirect effects on vegetation resources due to the proposed

Table 9. Vegetation Management Project Specific Forest Cover Types and Habitat Types.

Project	Forest Cover Types[1]	Forest Habitat Types[2]
East Dent Salvage 2 – FY 2016	GF-63.2% DF-29.0% PP-4.7% WRC-0.8%	THPL/CLUN-84.1% ABGR/PHMA-14.3% PSME/PHMA-1.2% ABGR/CLUN-0.3%
Canyon Creek - FY2015	GF-87.3% PP-11.2%	THPL/CLUN-100.0%
Dent Point Salvage – FY 2016	PP-44.0% GF-23.1% DF-16.6% HB-4.7% SH-3.7% WRC-3.1% SV-2.2% HW-1.4%	PSME/PHMA-55.7% THPL/CLUN-20.9% ABGR/PHMA-12.5% ROCK-6.5% ABGR/CLUN-2.4% PIPO/SYAL-1.7% WET MDW-0.3%
Long Creek J – FY 2016	GF-82.0% DF-10.3% SH-6.7% SV-1.0%	THPL/ASCA-49.0% TSHE/CLUN-43.6% THPL/ADPE-7.5%
Cold Springs Salvage – FY 2017	GF-66.5%, WRC-19.2% DF-7.4% PP-4.4%	THPL/CLUN-87.5% ABGR/PHMA-9.8% SEMIWET MDW-1.9% ABGR/CLUN-0.9%
West Cranberry – FY 2017	PP-46.4% DF-35.9% GF-10.4% HB-5.4%	ABGR/PHMA-49.1% PIPO/FEID-37.2% PSME/PHMA-12.7% PIPO/SYAL-1.0%
Swamp Creek - FY 2018	GF-63.9% DF-18.8% PP-9.9% HB-3.7% WRC-2.0%	THPL/CLUN-50.1% ABGR/CLUN-33.1% ABGR/PHMA-8.4% ROCK-8.3%
Upper Elk Creek Salvage – FY 2018	GF-89.2% WRC-6.4% DF-3.6%	THPL/CLUN-85.4% THPL/GYDR-7.0% ABGR/PHMA-5.5% THPL/ASCA-2.0%
Big Eddy North Restoration – FY 2018/2019	PP-64.6% DF-18.8% GF-11.8% WRC-2.1% HB-1.1%	ROCK-41.6% THPL/CLUN-24.3% ABGR/PHMA-16.4% PIPO/FEID-15.7% PSME/PHMA-1.9%
Benton Creek – FY 2019	GF-79.9% DF-7.2% HB-4.8% WRC-3.2% SH-2.8% HW-1.5% PP-0.6%	ABGR/PHMA-73.4% THPL/CLUN-26.6%

Project	Forest Cover Types[1]	Forest Habitat Types[2]
Hughes Point – FY 2020	GF-63.0% DF-19.5% SH-13.5% PP-2.4% HB-0.9%	ABGR/PHMA-33.6% ABGR/ASCA-24.8% TSHE/CLUN-23.9% THPL/ADPE-11.5% THPL/ASCA-6.1% THPL/CLUN-0.1%
Benton Creek Q – FY 2016	HB-67.7% SH-31.8% DF-0.5%	ABGR/PHMA-71.6% THPL/CLUN-28.4%
Robinson Creek– FY 2016	SH-61.4% HB-13.4% PP-12.7% GF-7.9% DF-4.5%	THPL/CLUN-74.8% ABGR/PHMA-14.2% THPL/ADPE-9.2% THPL/GYDR-1.4%
Long Creek-FY 2017	SH-55.5% HB-22.7% GF-14.4% PP-6.6% DF-0.8%	THPL/ASCA-52.5% THPL/ADPE-41.9% THPL/CLUN-4.8% TSHE/CLUN-0.7%
Hughes Point – FY 2017/2018	SH-88.0% HB-6.5% DF-3.4% GF-2.0%	ABGR/PHMA-62.9% ABGR/ASCA-35.7% THPL/ADPE-1.2%
Boehls – FY 2017/2018	SH-88.6% DF-7.0% GF-3.1%	AGBR/PHMA-40.4% THPL/CLUN-34.5% THPL/ASCA-24.9%
Benton Creek Q – FY 2016	HB-67.7% SH-31.8% DF-0.5%	ABGR/PHMA-71.6% THPL/CLUN-28.4%
Robinson Creek – FY 2016	SH-51.7% HB-19.0% PP-16.3% GF-7.0% DF-5.9%	THPL/CLUN-57.0% ABGR/PHMA-29.5% THPL/ADPE-7.0% THPL/GYDR-6.1%
Long Creek – FY 2017/2018	SH-56.7% HB-21.9% GF-13.8% PP-6.3% DF-1.1%	THPL/ASCA-54.2% THPL/ADPE-40.4% THPL/CLUN-4.6% TSHE/CLUN-4.6%
Hughes Point – FY 2019	SH-88.0% HB-6.5% DF-3.4% GF-2.0%	ABGR/PHMA-62.9% ABGR/ASCA-35.7% THPL/ADPE-1.2%

[1]**Forest Cover Types:** DF=Douglas-fir, HB=Herbaceous, HW=Hardwood Mix, GF=Grand Fir, PP=Ponderosa Pine, SH=Shrub, SV=Sparse Vegetation, WRC=Western Redcedar.

[2]**Forest Habitat Types:** ABGR/ASCA=Grand Fir/Wild Ginger, ABGR/CLUN=Grand Fir/Queencup Beadlily, ABGR/PHMA=Grand Fir/Ninebark, PIPO/FEID=Ponderosa Pine/Idaho Fescue, PIPO/SYAL=Ponderosa Pine/Common Snowberry, PSME/PHMA=Douglas-fir/Ninebark, ROCK=Rock Outcrop, SEMIWET MDW=Semi-wet Meadow, THPL/ASCA=Western Redcedar/Wild Ginger, THPL/CLUN=Western Redcedar/Queencup Beadlily, THPL/GYDR=Western Redcedar/Oakfern, TSHE/CLUN=Western Hemlock/Queencup Beadlily, WET MDW=Wet Meadow.

project impacts are estimated to be moderate and positive due to targeting specific vegetative stands most in need of treatment. Cumulatively, the effects on Corps lands from Alternative 4 VMP projects would result in moderate beneficial effects on vegetation resources.

3.6 Wildlife

3.6.1 Affected Environment

The diverse habitats in the Project are reflected in a wide variety of wildlife species including mammals, birds, amphibians and reptiles.

Mammals

Moose (*Alces alces*), white-tailed deer (*Odocoilius virginianus*), Rocky Mountian elk (*Cervus elaphus*), and American black bear (*Ursus americanus*) occur on Project lands. The reservoir, when originally filled, flooded areas of big game winter range. Efforts to mitigate for the lost habitat have primarily focused on the replacement of elk winter range.

Thirty-nine species of mammals, excluding domestic species, were documented during IDFG surveys at Dworshak (Bowers and Nadeau 2002). Those include small mammals (14), bats (7), mid-sized mammals (3), furbearers and carnivores (11), cervids (4), and domestic species. Undocumented sightings of fisher (*Martes pennanti*) and wolverine (*Gulo gulo*) have also been reported to Dworshak staff.

Aquatic furbearers on Dworshak lands include beaver (*Castor canadensis*), American mink (*Mustela vison*), and river otter (*Lutra canadensis*). Terrestrial furbearers include coyote (*Canis latrans*), bobcat (*Felis rufus*), badger (*Meles meles*), raccoon (*Procyon lotor*), gray wolf (*Canis lupus*), red fox (*Vulpes vulpes),* black bear (*Ursus americanus*), pine marten (*Mustela americana*), short-tailed weasel (*Mustela erminea*), striped skunk (*Mephitis mephitis*), mountain lion (*Felis concolor*), and bobcat (*Felis rufus*) (Asherin and Orme 1978, Bowers and Nadeau 2002).

Asherin and Orme (1978) trapped 20 species of small mammals, representing eight families along Dworshak Reservoir. The deer mouse (*Peromyscus maniculatus*) was the most common small mammal encountered. Asherin and Orme (1978) also reported six species of bats along the reservoir, with the little brown bat (*Myotis lucifugus*) occurring most abundantly.

Birds

A total of 42 waterfowl and shorebird species were observed at the Project during terrestrial resource surveys conducted by IDFG (Bowers and Nadeau, 2002). Six of these species are known to nest along the reservoir: Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), wood duck (*Aix sponsa*), green-winged teal (*Anas crecca*), common merganser (*Mergus merganser*), and spotted sandpiper (*Actitus macularia*). However, Dworshak Reservoir is primarily used by waterfowl and shorebirds as a loafing area during the spring and fall migratory periods, with peak waterfowl usage occurring during late fall, winter, and spring. Some feeding by geese and puddle ducks occurs along the exposed shoreline during the winter drawdown. Twenty-two species of waterfowl and shorebirds are currently listed as “Species of Greatest Conservation Need” (Table 10).

Table 10. Project Bird Species of Greatest Conservation Need.

Common Name	Scientific Name
Trumpeter Swan	*Cygnus buccinators*
Northern Pintail	*Anas acuta*
Lesser Scaup	*Aythya affins*
Harlequin Duck	*Histrionicus histrionicus*
Hooded Merganser	*Lophodytes cucullatus*
Mountain Quail	*Oreortyx pictus*
Common Loon	*Gavia immer*
Red-Necked Grebe	*Podiceps grisegena*
Western Grebe	*Aechmophorus occidentalis*
Clark's Grebe	*Aechmophorus clarkii*
American White Pelican	*Pelecanus erythrorhynchos*
Bald Eagle	*Haliaeetus leucocephalus*
Swainson's Hawk	*Buteo swainsoni*
Merlin	*Falco columbarius*
American Avocet	*Recurvirostra Americana*
Franklin's Gull	*Larus pipixcan*
California Gull	*Larus californicus*
Caspian Tern	*Sterna caspia*
Flammulated Owl	*Otus flammeolus*
Lewis's Woodpecker	*Melenerpes lewis*
Pygmy Nuthatch	*Sitta pygmaea*
Lesser Goldfinch	*Carduelis psaltria*

Sixteen raptors species were documented as occurring at the Project by IDFG (Bowers and Nadeau, 2002). Among these are eagles, hawks, ospreys, falcons, and owls. A large population of bald eagles winter on the reservoir, but only five nests have been documented. Over 150 osprey nests have been documented at the project.

Six upland game bird species were documented during IDFG surveys (Bowers and Nadeau 2002): mourning dove (*Zenaida macroura*), California quail (*Callipepla californica*), ruffed grouse (*Bonasa umbellus*), blue grouse (*Dendragapus obscurus*), spruce grouse (*Dendragapus canadensis*), and wild turkey (*Meleagris gallopavo*). Mountain quail have been reported at Magnus Bay and near Reeds Creek. Of these species, only the mountain quail is classified as a special status species in Idaho.

Numerous land birds use Project lands for breeding, foraging, and/or over-wintering habitat. Most land birds are protected under the Migratory Bird Treaty Act, and all except the American crow (*Corvus brachyrhynchos*) are considered protected non-game species in Idaho. Eighty-seven land bird species, including seven woodpeckers, were detected during IDFG surveys.

Amphibians and Reptiles

Eight amphibian species were detected on Project lands during IDFG surveys (Bowers and Nadeau 2002). Three of these species have special status in Idaho: the Idaho giant salamander (*Dicamptodon aterrimus*), the Coeur d'Alene salamander (*Plethodon idahoensis*) and the

Columbia spotted frog (*Rana luteiventris*). All amphibians documented as occurring in and around Dworshak require moist sites for reproduction and development of their young. Several amphibian species, including the Columbia spotted frogs, utilize standing water, ranging from ephemeral pools to permanent wetlands and shallow margins of the reservoir. Isolated wetlands located throughout Project lands provide valuable habitats for amphibian reproduction.

Six species of reptiles occur on Project lands, as documented in IDFG surveys (Bowers and Nadeau 2002). These include the rubber boa (*Charina bottae*), gopher snake (*Pituophis melanole*), western terrestrial garter snake (*Thamnophis elegans*), common garter snake (*T. sirtalis*), western skink (*Eumeces skiltonians*), and northern alligator lizard. The western yellow-bellied racer (*Coluber constrictor mormon*) is likely to occur in the open forests and meadows below Dent Bridge, but has not been documented recently.

3.6.2 Environmental Consequences

Alternative 1: No Action
There would be no vegetation management activities associated with the No Action Alternative so there would be no direct effects on wildlife resources. However, due to the lack of vegetation management actions, it is likely that fuel loadings would increase in some project areas as forest health issues continue, raising the potential for indirect effects to wildlife habitat. Fuel loadings would continue to increase in these areas raising the potential for stand-replacing wildfires, which could potentially have a substantial negative effect on soil health and productivity. A wildfire could potentially remove all vegetation creating hydrophobic soil conditions which could result in severe erosion resulting in reduced productivity and browse growth for wildlife species. The potential indirect effects to the wildlife resources are estimated to be low to moderate due to the low likelihood of wildfire and effective current fire suppression programs. Cumulatively, higher fuel loadings on Corps lands resulting from the No Action Alternative would slightly increase overall detrimental effects to wildlife resources.

Alternative 4: Preferred Alternative
The vegetation management activities associated with specific Alternative 4 VMP projects would have the potential for moderate, direct and indirect wildlife effects. Project specific forest management actions would change forest composition, remove structural habitat components, create successional stage diversity, and other effects. Forest stand species composition, structure, age class distribution, and other characteristics would change due to specific project activities. Conditions and habitat for nesting bird species including eagles, raptors, and migratory birds would be protected through the implementation of proposed minimization/avoidance measures (see Appendix D) for each specific VMP project.

Vegetation management activities associated with Alternative 4 VMP projects would be designed to minimize detrimental wildlife effects and produce positive habitat conditions for many species, especially elk. The implementation of Alternative 4 VMP projects would integrate historic vegetation and fire patterns into the Project landscape, creating beneficial conditions for many wildlife species. The implementation of Alternative 4 VMP project vegetation treatments would result in reducing the potential for stand-replacing wildfires, resulting in more favorable wildlife habitat conditions and maintained site productivity. This

would result in more favorable vegetation patterns across the landscape. Cumulatively, effects on Corps lands from Alternative 4 VMP projects would result in moderate beneficial effects to wildlife resources.

3.7 Fisheries

3.7.1 Affected Environment

Thirteen fish species were documented as occurring in Dworshak Reservoir in 2013 (Hand 2013) (Table 11). Primary sport species include kokanee, rainbow trout, smallmouth bass, and cutthroat trout. Because of the steep shorelines and drastic fluctuations in pool level, little shallow water habitat is available to support natural reproduction of smallmouth bass. Maximum shoreline spawning habitat exists at full pool. Cutthroat and rainbow trout spawn in the tributaries in the spring. Bull trout and kokanee spawn in the fall primarily in the tributaries to the reservoir (Maiolie, 1988).

The westslope cutthroat trout is listed as a sensitive species in Idaho. Since the late 1800s, distribution and abundance of westslope cutthroat trout has declined throughout its former range (Liknes and Graham, 1988). Westslope cutthroat occur in the reservoir and spawn in most tributaries (StreamNet, 2014). Bull trout distribution is restricted to the highest elevation tributaries of the Lower North Fork Assessment Unit (AU), and to Dworshak Reservoir.

Table 11. Project Fish Species

Common Name	Scientific Name
Bridgelip sucker	*Catostomus columbianus*
Largescale sucker	*Catostomus macrocheilus*
Sculpin	*Cottus* spp.
Smallmouth bass	*Micropterus dolomieu*
Kokanee	*Oncorhynchus nerka*
Black crappie	*Pomoxis nigromaculatus*
Northern pike minnow	*Ptychocheilus oregonensis*
Longnose dace	*Rhinichthys cataractae*
Speckled dace	*Rhinichthys osculus*
Redside shiner	*Richardsonius balteatus*
Cutthroat trout	*Onocorhynchus clarki*
Rainbow trout	*Onocorhynchus mykiss*
Bull trout	*Salvelinus confluentus*
Source: Per. Comm. Hand, Robert, 2013.	

3.7.2 Environmental Consequences

Alternative 1: No Action
There would be no vegetation management activities associated with the No Action Alternative so there would be no direct effects on fishery resources. However, due to the lack of vegetation management actions, it is likely that fuel loadings would increase in some project areas as forest health issues continue, raising the potential for indirect effects to fisheries habitat. Fuel loadings would continue to increase in these areas raising the potential for stand-replacing wildfires, which could potentially have a substantial negative effect on soils. A wildfire could potentially remove all vegetation creating hydrophobic soil conditions which could result in severe erosion and subsequent sedimentation into the reservoir and streams, reducing the quality of fish habitat. The potential indirect effects to fisheries are estimated to be low due to the low likelihood of wildfire, effective current fire suppression management, and the filtering effects of vegetative buffers. Cumulatively, higher fuel loadings on Corps lands resulting from the No Action Alternative would slightly increase overall detrimental effects to fish habitat.

Alternative 4: Preferred Alternative
The vegetation management activities associated with specific Alternative 4 VMP projects would have the potential for sedimentation caused by ground-disturbing activities, such as operation of yarding equipment, prescribed burning, roadwork, development and use of log landing sites, etc. However, minimal direct effects on the fishery resources would be expected due to the implementation of proposed minimization/avoidance measures (see Appendix D) for each specific VMP project. Projects with timber harvest actions would be conducted to limit ground disturbance by the use of yarding methods which minimize the amount of area impacted, potentially causing sedimentation, reduced infiltration, or other detrimental effects. Projects with prescribed burning activities would be conducted under specific soil moisture and weather conditions to minimize detrimental effects. Planting and plant protection projects would cause minimal impacts to fishery resources. The implementation of vegetative buffers for each project would minimize the likelihood of sediment reaching fish habitat in the reservoir or streams.

Vegetation management activities associated with all Alternative 4 VMP projects would be designed to protect the fishery resources. Due to the implementation of specific ecosystem health/restoration VMP projects, it is likely that fuel loadings would decrease in high fire risk portions of the Project area, reducing the potential for indirect fishery resource effects. Lower fuel loadings in high fire risk locations would reduce the potential for stand-replacing wildfires, which would correspondingly reduce the potential for detrimental effects to the fisheries resource. The potential indirect effects to reservoir and stream from proposed Alternative 4 VMP projects are estimated to be low due to the reduction of wildfire hazards and the filtering effects of vegetative buffers. Cumulatively, impacts associated with Alternative 4 VMP project activities on Corps land would minimize detrimental effects to fishery resources.

3.8 Threatened and Endangered Species

3.8.1 Affected Environment
Five species listed as threatened, endangered, proposed, or candidate species under the Endangered Species Act (ESA), were identified as having the potential to be affected by the

Dworshak project: Canada lynx, bull trout, fall Chinook salmon, steelhead salmon, and whitebark pine. Detailed information regarding the potential effects to these species and the measures to protect their habitat are presented in the Biological Assessment (BA) in Appendix B.

Canada Lynx: Canada lynx and associated critical habitat are listed as threatened under ESA. Lynx is a cat species typically found above 3,750 feet in elevation. The highest elevation within the Dworshak boundary is 3520 feet and no lynx have been previously documented on Dworshak Reservoir. Therefore, no lynx or lynx habitat are expected within the Project.

Bull Trout: Bull trout and associated critical habitat are listed as threatened under ESA. The Dworshak Reservoir has an isolated subpopulation of migratory bull trout. This subpopulation spends most of the winter, spring, and early summer months in the reservoir. Adults leave the reservoir from August to November to spawn in larger tributaries of the reservoir. Dworshak Reservoir and several tributaries have recently been designated as critical habitat for bull trout.

Fall Chinook Salmon: Fall Chinook salmon and associated critical habitat are listed as threatened under ESA. Dworshak Dam built on the North Fork of the Clearwater River in the 1970s permanently prevented upstream fish passage. As a result, no anadromous fish species, including Fall Chinook salmon, currently occur on Dworshak Reservoir, or within any of its tributaries. Fall Chinook salmon occur in the main stem of the Clearwater River and in the North Fork Clearwater River below Dworshak Dam. It appears that the area is used as primary spawning and rearing by fall Chinook. Both of these reaches are designated as critical habitat for fall Chinook.

Steelhead Trout: Steelhead trout and associated critical habitat are listed as threatened under ESA. Steelhead occur in the main stem of the Clearwater River and in the North Fork Clearwater River below Dworshak Dam. It appears that the area is used as primary spawning and rearing habitat by steelhead. The Clearwater River in the vicinity is designated as critical habitat for steelhead.

Whitebark Pine: Whitebark pine was identified on July 18, 2011 as a candidate species for ESA listing. Whitebark pine is a tree species, found in subalpine environments, that has been eliminated from much of its range by mountain pine beetle and white pine blister rust. In north Idaho it is a component of subalpine fir communities and dominates the highest peaks and ridges over 6,000 feet. The highest elevation within the Dworshak boundary is 3,520 feet. Therefore, whitebark pine is not anticipated within the project boundary.

Four of the five threatened, endangered, proposed, or candidate species identified as having the potential to occur in or near the Dworshak project area were evaluated in Appendix B. The candidate species, whitebark pine, was not assessed because it had only been identified as a candidate species for ESA listing a short time prior to the publication of that document. However, as stated above, the occurrence of whitebark pine is not expected in the Dworshak project area due to its high elevation habitat requirements.

3.8.2 Environmental Consequences

Alternative 1: No Action
There would be no vegetation management activities associated with the No Action Alternative so there would be no direct effects on threatened and endangered species. However, due to the lack of vegetation management actions, it is likely that fuel loadings would increase in some project areas as forest health issues continue, raising the potential for indirect effects to bull trout. Fuel loadings would continue to increase in these areas raising the potential for stand-replacing wildfires, which could potentially have a substantial negative effect on soils. A wildfire could potentially remove all vegetation creating hydrophobic soil conditions which could result in severe erosion and subsequent sedimentation into the reservoir and streams, reducing the quality of bull trout habitat. The potential indirect effects to the wildlife resources are estimated to be low due to the low likelihood of wildfire, effective current fire suppression management, and the filtering effects of vegetative buffers. Cumulatively, higher fuel loadings on Corps lands resulting from the No Action Alternative would slightly increase overall detrimental effects to bull trout habitat.

Alternative 4: Preferred Alternative
Four of the five threatened, endangered, proposed, or candidate species identified as having the potential to occur in or near the Dworshak project area were evaluated in the Biological Assessment in Appendix B. The candidate species, whitebark pine, was not assessed because it had only been identified as a candidate species for ESA listing a short time prior to the publication of that document. However, as stated above, the occurrence of whitebark pine is not expected in the Dworshak project area due to its high elevation habitat requirements. The two threatened anadromous fish species, fall Chinook salmon and steelhead trout, are not present in Dworshak Reservoir, or within any of its tributaries due to the presence of Dworshak Dam, so there would be no detrimental effect on these species, or their habitat, from the proposed Alternative 4 vegetation management projects.

The BA determined there would be no significant effects from the proposed vegetation management actions on the remaining two species. Table 12 summarizes the effects of proposed Alternative 4 vegetation management projects on the listed species.

Table 12. Alternative 4 Effects on ESA-Listed Species

Species	Species Determination	Critical Habitat Determination
Bull trout	May Affect, Not Likely to Adversely	May Affect, Not Likely to Adversely
Canada lynx	No Effect	No Effect

Letters from the US Fish and Wildlife Service in Appendix B concur with the Corps determination of no significant effects from the proposed actions. Any substantial change in the actions evaluated in the BA and proposed in the VMP, or failure to comply with the proposed minimization/avoidance measures (BMPs) in Appendix D. would require additional ESA review and supplemental/tiered NEPA analysis.

3.9 Cultural Resources

3.9.1 Affected Environment

The archaeological record indicates the continuous human habitation in Project areas around the proposed 2015-2020 vegetation management project areas for the past 10,000 years (Ames 1980). The subsistence pattern of the prehistoric inhabitants of the Clearwater Valley was based on a hunting, fishing, and gathering economy. Stable use of the resources is reflected through time, with slightly greater dependence on fishing and processing of plant foods reflected in the tool assemblages of the last few millennia (Mattson et al. 1982). The Clearwater River and its tributaries have been used by the Nez Perce Tribe (NPT) since prehistoric times. The Euro-American presence in the area began with Lewis and Clark's journey along the Clearwater River in 1805 and continues to the present day.

Several types of cultural resources have been documented on Project lands, including archaeological sites, and Traditional Cultural Properties (TCPs), and isolated finds. There are 356 recorded archaeological sites on Project lands. A majority of these sites are related to prehistoric occupation of the area, with a smaller number dating to the historic period. Only 23 of these sites have been formally evaluated for National Register of Historic Place (NRHP) eligibility, with four found eligible, and 17 found not eligible. While recommendations have been provided for eligibility determinations for other sites in various reports, they have not been formally evaluated. Until they are formally evaluated, they are considered eligible for listing on the NRHP.

TCPs are areas tied to beliefs, customs, and practices of a living community. They may coincide with the boundaries of archaeological sites, or be comprised of a number of landscape features. Identification and evaluation of TCPs on Dworshak managed lands is ongoing.

A number of isolated finds are documented at the Project. Isolated finds often contain isolated artifacts or features that on their own are not considered archaeological sites, but when taken together provide information on the prehistoric or historic use of the landscape.

Most of the archaeological sites recorded at the Project are comprised of lithic scatters ranging from several flaked pieces of stone to thousands of flakes and formed tools. Peeled trees (old trees where the tree bark and inner cambium was removed and used as a starvation food source by the Nez Perce during the precontact and ethnographic period) have not yet been documented at Dworshak but are likely present. Other resources present include remnants of historic camps, often times with associated structures such as trash scatters, fences, and structure remnants. A Cultural Resources Management Plan (Cannell et al 2001) was prepared for the Project in 2001. Section 106 of the National Historic Preservation Act (36 CFR 800)(NHPA) requires a reviews to be conducted for federal undertakings that have the potential to impact cultural resources. A majority of the lands located in the drawdown zone were surveyed by archaeologists from the University of Idaho and the NPT. A plan for surveying the remainder of Project lands was completed in 2011 (Norman and Glindeman 2011), and surveys are ongoing. In addition to those large inventory surveys, a variety of smaller surveys have taken place at Dworshak over the years as part of planning for individual undertakings, mainly activities like road and trail maintenance, fire and vegetation management, and development or improvements

to recreation sites, State Parks, the Dam, and Dworshak National Fish Hatchery. Thousands of acres of Project lands still require archaeological surveys, and there are numerous unrecorded archaeological sites present in those areas. Surveys for some of the proposed 2015-2020 vegetation management projects have already occurred, while others are scheduled to be conducted before potential project implementation (Table 13).

Table 13. Cultural Resource Survey Status for Proposed Vegetation Management Projects

Project	Project Type	Treatment Type	Cultural Resource Survey Status
East Dent Salvage 2 – FY 2016	Forest Health	Salvage Harvest	Section 106 compliance is currently being planned for FY2016.
Canyon Creek – FY 2015	Forest Health	Salvage Harvest	Section 106 compliance has been completed (2010-NWW-032 Canyon Creek Timber Sale dated 20 August 2010)
Dent Point Salvage – FY 2016	Forest Health	Salvage Harvest	Section 106 compliance is currently being planned for FY2015.
Long Creek J – FY 2016	Forest Health	Salvage Harvest	Section 106 compliance is currently being planned for FY2016.
Cold Springs Salvage – FY 2017	Forest Health	Salvage Harvest	Section 106 compliance is currently being planned for FY2016.
West Cranberry – FY 2017	Forest Health	Salvage Harvest	Section 106 compliance is currently being planned for FY2016.
Swamp Creek – FY 2018	Forest Health	Salvage Harvest	Section 106 compliance is currently being planned for FY2017.
Upper Elk Creek Salvage – FY 2018	Forest Health	Salvage Harvest	Section 106 compliance is currently being planned for FY2017.
Big Eddy North Restoration – FY 2018/2019	Ecosystem Restoration	Selective/ Prescribed Burn	Section 106 compliance is currently being planned for FY2017
Benton Creek – FY 2019	Elk Habitat Enhancement	Selective/ Prescribed Burn	Section 106 compliance is currently being planned for FY2017.
Hughes Point – FY 2020	Elk Habitat Enhancement	Selective/ Prescribed Burn	Section 106 compliance is currently being planned for FY2018.
Benton Creek Q – FY 2016	Vegetation Plant	Planting-2500 seedlings	Section 106 compliance is currently being planned for FY2015
Robinson Creek – FY 2016	Vegetation Plant	Planting-5000 seedlings	Section 106 compliance is currently being planned for FY2016
Long Creek – FY 2017	Vegetation Plant	Planting-5000 seedlings	Section 106 compliance is currently being planned for FY2017
Hughes Point – FY 2017/2018	Vegetation Plant/Seed	Seed or Plant-5000 seedlings	Section 106 compliance is currently being planned for FY2018
Boehls – FY 2017/2018	Vegetation Plant/Seed	Seed or Plant-5000 seedlings	Section 106 compliance is currently being planned for FY2018

Project	Project Type	Treatment Type	Cultural Resource Survey Status
Benton Creek Q – FY 2016	Plant Protection	50 wire baskets	Section 106 compliance is currently being planned for FY2015
Robinson Creek – FY 2016	Plant Protection	3, exclosures 100 wire baskets	Section 106 compliance is currently being planned for FY2015
Long Creek – FY 2017/2018	Plant Protection	1 exclosure 50 wire baskets	Section 106 compliance is currently being planned for FY2017
Hughes Point – FY 2019	Plant Protection	100 wire baskets	Section 106 compliance is currently being planned for FY2019

The Corps archaeologists evaluate individual actions as they are proposed, in accordance with Section 106 of the NHPA. This is necessary to identify if areas have been surveyed, whether cultural resources are present, and if the action can be reviewed under existing agreements with the Idaho State Historic Preservation Office (SHPO). For actions occurring on Corps managed lands within the boundaries of the NPT Indian Reservation, the Corps consults only with the NPT Tribal Historic Preservation Office (THPO). For actions occurring on Dworshak managed lands outside of the reservation, the Corps consults with both the Idaho SHPO and the NPT THPO.

3.9.2 Environmental Consequences

Alternative 1: No Action

There would be no vegetation management activities associated with the No Action Alternative so there would be no direct effects on cultural resources. However, due to the lack of vegetation management actions, it is likely that fuel loadings would increase in some project areas as forest health issues continue, raising the potential for indirect effects to cultural resources. Fuel loadings would continue to increase in these areas raising the potential for high severity, stand-replacing wildfires, which could potentially have a substantial negative effect on cultural resources. While wildfire is a natural disturbance process in north Idaho, a high severity wildfire occurring in areas with abnormally high fuel loadings caused by almost 100 years of effective fire suppression could potentially remove all vegetation. This could create hydrophobic soil conditions which could result in severe erosion and subsequent impacts to cultural resources. The potential indirect effects to cultural resources are estimated to be low due to the low likelihood of wildfire, effective current fire suppression management, and the often protected nature of cultural objects situated below the ground surface. Cumulatively, higher fuel loadings on Corps lands resulting from the no action alternative would slightly increase overall detrimental effects to cultural resources.

Alternative 4: Preferred Alternative

As stated previously, all Alternative 4 VMP projects would be reviewed for historic/cultural resources prior to implementation as resources are available. Therefore, review with the SHPO and THPO would continue as individual projects are surveyed for Section 106 compliance as shown in Table 13. Some cultural resources, when lying exposed on the ground surface, could be very easily impacted by a variety of activities, including wildland and prescribed fire, erosion, dragging (such as dragging downed trees to logging trucks), and trampling. Efforts would be made to avoid impacts to cultural resources as the specific vegetation management projects are surveyed, prior to implementation.

With the VMP in place, planning and field efforts could avoid impacts to cultural resources, and provide cost effective management. Due to the implementation of specific vegetation management projects that would reduce fuel loadings, potential, indirect, detrimental effects on cultural resources would be reduced due to the decreased likelihood of high severity wildfires occurring. The Corps assumes all Alternative 4 VMP projects will result in no significant effects to historic/cultural resources. If significant effects are identified, supplemental/tiered NEPA analysis would be required, or projects would be modified.

3.10 Recreation

3.10.1 Affected Environment

Dworshak is the only large reservoir with a forested shoreline found within a 100-mile radius of Orofino, Idaho. It is an important regional recreation resource for eastern Washington and north central Idaho. Because of the remote nature of the North Fork, there is limited road access and development has been minimal. The most popular activities include boat-in camping, boating, water-skiing, fishing, hunting, and hiking. Facilities include seven boat launch sites, two developed Class "A" full service campgrounds, two primitive campgrounds, a marina, and over 80 boat-accessible mini-camps. Annual visitation to the reservoir is approximately 150,000.

The recreation facilities at the Project provide for a wide range of recreational pursuits. With the exception of Dworshak State Park (Freeman Creek and Three Meadows) and Big Eddy Marina, which are leased to the State of Idaho, all of the recreation sites are operated and maintained by the Corps. The majority of recreation activities occur at the lower end of the reservoir, from Dworshak Dam to Dent Acres Bridge, with major recreation developments are located at Big Eddy, Dworshak State Park, and Dent Acres. These recreation sites were built with project construction money when the dam was built.

Dworshak is vital to the communities of Orofino and Lewiston, because it provides a large percentage of the region's recreational opportunities. The Project also contains, in many cases, the only access to the upper reaches of the North Fork Clearwater River and many of its tributaries and perennial streams. Although about 150,000 people visit Dworshak each year, the Project has never come close to reaching its estimated potential in terms of recreational development and visitor use.

Historically, the reservoir remained at full pool from Memorial Day to Labor Day. This allowed for the majority of the recreation areas to be used during the peak summer recreation season. The 1995 Biological Opinion for Operation of the Federal Columbia River Power System has changed operational procedures, so that reservoir drawdowns begin much earlier to help reduce water temperatures in the Clearwater and Snake rivers. Currently, full pool lasts for only a few weeks around the Fourth of July. This change of operations has limited access to recreational areas on the reservoir, necessitating alternative resource planning considerations.

3.10.2 Environmental Consequences

Alternative 1: No Action
There would be no vegetation management activities associated with the No Action Alternative so there would be no direct effects on recreation. However, due to the lack of vegetation management actions, it is likely that fuel loadings would increase in some project areas as forest health issues continue, raising the potential for indirect effects to recreation resources. Increased fuel loadings in these areas would increase the potential for wildfires, which could potentially have a negative effect on recreation sites. The potential indirect effects to recreation are estimated to be low due to the low likelihood of wildfire and effective current fire suppression management. Cumulatively, higher fuel loadings on Corps lands resulting from the No Action Alternative would slightly increase overall detrimental effects to recreation.

Alternative 4: Preferred Alternative
Activities associated with Alternative 4 VMP projects would have potential to cause some impacts to recreation activities primarily during their implementation. Some of the proposed projects are in close proximity to developed recreation sites and project specific activities including timber harvest, prescribed burning, etc. may restrict public access for short time periods as they are implemented. Increased truck traffic may limit recreation access in immediate project areas.
Vegetation management activities associated with Alternative 4 VMP projects would be designed to minimize detrimental effects to recreation resources, and would enhance some recreational activities. Due to the implementation of specific VMP projects, it is likely that fuel loadings would decrease in high fire risk portions of the Project area. Lower fuel loadings in high fire risk locations would reduce the potential for stand-replacing wildfires, which would correspondingly reduce the potential for detrimental effects to recreation resources and visitor experiences. The potential indirect effects to recreation from proposed Alternative 4 VMP projects are estimated to be low due to the improbability of wildfire and effective current fire suppression programs. Cumulatively, impacts associated with Alternative 4 VMP project activities on Corps land would minimize detrimental effects to recreation resources and would enhance recreation opportunities in some areas.

3.11 Aesthetics

3.11.1 Affected Environment
The Corps' visitation records indicate sightseeing is the primary motivation for visiting Dworshak. Dworshak Dam, located 1.5 miles upstream from the mouth of the North Fork Clearwater Canyon, impounds a 54-mile long reservoir. When full, the reservoir created by the dam is enhanced by 184 miles of scenic shoreline winding through the timbered canyons of the

western slopes of the Bitterroot Mountain Range (USACE 1996a). Over 80 mini-camps were placed along the shoreline to blend in with the landscape. Scenic natural meadows, mixed conifers, openings, brush fields along with logging roads, and burned and logged areas (both on Dworshak land and on adjacent property) are visible from the reservoir.

Prior to the construction of the Project, the free-flowing North Fork Clearwater River offered all of the aesthetic characteristics associated with a mountainous river and stream watershed. The natural setting outweighed even the visual effects of logging and recreational activities. The area was dominated by the river and canyon, disrupted only by a road, scattered cabins, and logging activities.

Aesthetics are extremely subjective, and are absorbed in varying degrees by every individual. Therefore, when evaluating the aesthetic qualities of natural settings (as opposed to modified settings), there are many relevant features to be considered. These features include river velocity, irregularity of shoreline, bank erosion, water color, special views or vistas, land use, accessibility, and others.

Since the completion of Dworshak Dam and Reservoir, both positive and negative aesthetic qualities have emerged. Portions of the reservoir are bordered by forested slopes and a mountainous setting. As long as the reservoir is at near-full capacity, bare banks are not visible; and the setting retains its pristine, natural qualities. During drawdown periods, the bare, muddy shorelines, perceived by some as a negative aesthetic impact, are visible.

3.11.2 Environmental Consequences

Alternative 1: No Action
There would be no vegetation management activities associated with the No Action Alternative so there would be no direct effects on aesthetics. However, due to the lack of vegetation management actions, it is likely that fuel loadings would increase in some project areas as forest health issues continue, raising the potential for indirect effects to aesthetics. Increased fuel loadings in these areas would increase the potential for wildfires, which could potentially have a negative effect on aesthetics. The potential indirect effects to aesthetics are estimated to be low due to the low likelihood of wildfire and effective current fire suppression management. Cumulatively, higher fuel loadings on Corps lands resulting from the No Action Alternative would slightly increase overall detrimental effects to aesthetics.

Alternative 4: Preferred Alternative
Activities associated with Alternative 4 VMP projects would have potential to cause detrimental impacts to aesthetics, primarily during their implementation, but also for a potentially extended time period after implementation. Proposed VMP projects involving timber harvest, prescribed burning, etc. may impact aesthetics for short time periods as they are implemented and for extended periods afterwards. Most proposed timber harvest projects would involve partial removal of tree canopies, so some trees would remain, ameliorating aesthetic impacts. Activities associated with Alternative 4 VMP projects would be designed to minimize detrimental effects to aesthetics by blending harvest design and unit shape into natural patterns, enhancing aesthetic values in some locations.

Due to the implementation of specific VMP projects, it is likely that fuel loadings would decrease in high fire risk portions of the Project area. Lower fuel loadings in high fire risk locations would reduce the potential for stand-replacing wildfires, which would correspondingly reduce the potential for detrimental effects to aesthetics. The potential indirect effects to aesthetics from proposed Alternative 4 VMP are estimated to be low due to the low likelihood of wildfire and effective current fire suppression programs. Cumulatively, impacts associated with Alternative 4 VMP project activities on Corps land would minimize detrimental effects to aesthetics and would enhance aesthetic values in some locations.

3.12 Socioeconomics

3.12.1 Affected Environment

Clearwater County, Idaho, has experienced high unemployment in recent years (12.1 percent for 2013 as compared to 6.2 percent for the State of Idaho) and a declining labor force (Idaho Department of Labor 2015). There remain concerns regarding the effects of the periodic Dworshak Reservoir drawdowns on recreational activities for tourists. The declining lumber industry continues to impact the local area, but the economy is starting to diversify as new businesses become established. Employment rates have increased since 2013, and currently are at 7.6 percent as of June 2015.

The principal economic activities are forestry and recreation. Governmental agencies and timber corporations own 95% of the basin. Although the amount of timber removal on the USFS lands has decreased significantly, Potlatch Corporation and IDL still harvest several hundred million board feet of timber each year from the Lower North Fork Clearwater River System (LNFCRS). Outdoor recreational activities are abundant as Dworshak Reservoir, the North Fork Clearwater River, and the surrounding area provide excellent fishing, hunting, and other outdoor recreational opportunities. Grazing allotments have been established and are active in the southern and central parts of the subbasin. Over the last few decades, mining activities have curtailed significantly. There are several aggregate mines located throughout the subbasin used primarily for road building and maintenance activities. The LNFCRS economy is driven by some of the most productive forest lands and some of the best hunting, fishing and other outdoor recreational activities in the state.

3.12.2 Environmental Consequences

Alternative 1: No Action

There would be no vegetation management activities associated with the No Action Alternative so there would be no direct effects on socioeconomics. However, due to the lack of vegetation management actions, it is likely that fuel loadings would increase in some project areas as forest health issues continue, raising the potential for indirect effects to socioeconomics. Increased fuel loadings in these areas would increase the potential for wildfires, which could potentially have a negative effect on socioeconomics by decreasing tourism. The potential indirect effects to socioeconomics are estimated to be low due to the low likelihood of wildfire and effective current fire suppression management. Cumulatively, higher fuel loadings on Corps lands resulting from the No Action Alternative would slightly increase overall detrimental effects to socioeconomics.

Alternative 4: Preferred Alternative
Activities associated with Alternative 4 VMP projects would have the potential to increase local employment related to timber harvest and forest management activities. Proposed projects involving timber harvest, prescribed burning, etc. would require specialized skills for implementation and would provide ongoing employment opportunities in the local communities.

Vegetation management activities associated with Alternative 4 VMP projects would generally provide positive socioeconomic effects due to the implementation of the proposed vegetation management projects over the 2015-2020 period, and beyond, as some projects would be implemented over multiple year periods. Cumulatively, impacts associated with Alternative 4 VMP project activities on Corps land would have positive effects to socioeconomics.

3.13 Climate Change

3.13.1 Affected Environment
The forests in the Dworshak Project area range from ponderosa pine in drier locations to western redcedar and hemlock in moister locations, with a variety other species in locations between, as previously summarized in Section 3.5. The EPA (2015) has reported that over the last century, the average annual temperature rose by 1.5°F in the Pacific Northwest, with increases in some areas up to 4°F. Changes in forest cover are already occurring and the average annual temperature in the region is projected to increase 3-10°F by the end of the century (USGCRP 2009). Climate change may result in increased winter precipitation, though snowpack is expected to be reduced with more precipitation falling as rain, due to projected warmer temperatures. Summer precipitation is projected to decrease, resulting in increased environmental stresses on forests. Higher temperatures and changing periods of precipitation may result in an increase in forest insects and disease outbreaks.

With changes in climate, forested areas within the Dworshak area will continue to change over time. Hotter, drier weather could increase the frequency and intensity of wildfires, and increase grassland and prairies at the expense of forests. There is still uncertainty as to what impact climate change will have on forests in the Project area, but it will likely exacerbate many of the current problems present in the area today, including the impacts of past fire suppression having creating denser forests than historically existed.

3.13.2 Environmental Consequences

Alternative 1: No Action
There would be no vegetation management activities associated with the No Action Alternative so there would be no direct effects on climate change. However, due to the lack of vegetation management actions, it is likely that mortality from insect and diseases will increase in the Project area if climate change predictions of warmer, drier conditions materialize. Fuel loadings would increase in some project areas as forest health issues continue, raising the potential for indirect effects from climate change. Increased fuel loadings in these areas would increase the potential for wildfires, which could potentially have a negative effect on climate change due to increased emission of carbon dioxide (CO_2).

The potential short term effects on climate change are estimated to be low due to the short time frame (5 years) being considered, along with effective current fire suppression management. Cumulatively, higher fuel loadings on Corps lands resulting from the No Action Alternative would slightly increase overall detrimental effects on climate change.

Alternative 4: Preferred Alternative

The vegetation management activities associated with specific Alternative 4 VMP projects would have the potential for small, direct beneficial effects on climate change processes. Project specific forest management activities would change species composition, remove unhealthy and/or undesired trees, reduce understory ladder fuels, reduce fire hazards, and a variety of other benefits, which would make the forests more resilient to changing climate conditions. Projects in the VMP have been specifically developed to address ecosystem health concerns and to benefit priority habitats, particularly ponderosa pine ecosystems. Other forest types would also benefit as stand densities would be reduced making the stands more resistant to stress induced mortality. The utilization of mechanized forest management equipment and trucks for the transport of logs to be processed associated with VMP projects is estimated to produce less than 1000 metric tons of greenhouse gas (GHG) emissions annually. CEQ requires projects expected to generate over 25,000 metric tons annually to conduct a quantitative analysis, so the direct effects of VMP projects on GHG related climate change processes is estimated to be very small.

Vegetation management activities associated with Alternative 4 VMP projects would be designed to benefit vegetation resources, and fuel loadings would decrease in projects located in areas with short fire return intervals. This would decrease the potential for stand-replacing wildfires, which would minimize damage to soils and maintain each project's productive capacity to produce vegetation capable of adapting to changing climatic conditions. Wildfires would occur at lower intensities, resulting in reduced erosion rates, with little loss of soil productivity. This would maintain the historic, potential, natural communities within specific project locations and all the associated organisms dependant on those communities. The potential indirect effects on climate change processes due to the proposed project impacts are estimated to be low to moderate, and positive, due to targeting specific vegetative stands most in need of treatment, especially those with current ecosystem health problems. Cumulatively, the effects on Corps lands from Alternative 4 VMP projects would result in low to moderate beneficial effects on climate change.

3.14 Summary of Environmental Consequences

Table 14. Summary of Environmental Effects of the Two Alternatives

Resource Area	Alternative 1 (No Action)	Alternative 4 (Preferred)
Geology/Soils	No direct effects on geology and soils. Long-term indirect effects of not implementing vegetation management actions could result in slight decrease in soil productivity due to increased risk of wildfires.	Vegetation management projects would have low direct negative effects to geology and soils. Long-term indirect effects would be beneficial due to reduction of wildfire hazards.
Hydrology/Limnology	No direct effects on hydrology and limnology. Long-term indirect effects of not implementing vegetation management actions could result in slight increases in sedimentation and turbidity in the reservoir and streams due to increased risk of wildfires.	Vegetation management projects would have minimal direct negative effects to hydrology and limnology. Long-term indirect effects would be beneficial due to reduction of wildfire hazards.
Air Quality	No direct effects on air quality. Long-term indirect effects of not implementing vegetation management actions could result in slight decrease in air quality due to increased risk of wildfires.	Low to moderate short term direct negative effects of some vegetation management projects, primarily due to prescribed burning. Long-term indirect effects would be beneficial due to reduction of wildfire hazards.
Vegetation	No direct effects on vegetation. Long-term indirect effects of not implementing vegetation management actions could result in low to moderate increased risks of large wildfires and subsequent detrimental vegetation effects related to undesirable species, composition, structure, and age class distribution.	Vegetation management projects would have moderate, positive direct vegetation effects by restoration of historic stand composition, structure, and function, improved forest health, and reduced wildfire hazard. Long-term indirect effects would be beneficial due to the reduction of wildfire hazards.

Wildlife	No direct effects on wildlife. Long-term indirect effects of not implementing vegetation management actions could result in low increased risks of large wildfires and subsequent vegetation effects detrimentally affecting wildlife.	Vegetation management projects would have positive long-term direct and indirect effects of maintaining historic vegetation composition, structure, and function. Positive habitat conditions would result from proposed projects.
Fisheries	No direct effects on fisheries. Long-term indirect effects of not implementing vegetation management actions could result in low increases in sedimentation and turbidity in the reservoir and streams with subsequent negative fisheries effects.	Vegetation management projects would have minimal negative effects to fisheries. Long-term indirect effects would be beneficial due to reduction of wildfire hazards and subsequent reduction of risks of sedimentation and turbidity.
Threatened and Endangered Species	No direct effects on threatened and endangered species. Long-term indirect effects of not implementing vegetation management actions could result in low increases in sedimentation and turbidity in the reservoir and streams with subsequent negative effects to bull trout.	The Biological Assessment determined there would be no significant effects from the proposed actions. Received concurrence letter from UFWS.
Cultural Resources	No direct effects on cultural resources. Long-term indirect effects of not implementing vegetation management actions could result in low impacts to cultural resources due to increased risk of wildfires.	Vegetation management projects would have minimal effects to cultural resources. Long-term indirect effects would be beneficial due to reduction of severe wildfire hazards and subsequent reduction of impacts to cultural resources.
Recreation	No direct effects on recreation. Long-term indirect effects of not implementing vegetation management actions could result in low impacts to recreation due to increased risk of wildfires.	Vegetation management projects may cause short-term, temporary detrimental recreational effects. Long-term indirect effects would be beneficial due to reduction of severe wildfire hazards and subsequent reduction of impacts to recreation resources.

Aesthetics	No direct effects on aesthetics. Long-term indirect effects of not implementing vegetation management actions could result in low impacts to aesthetics due to increased risk of wildfires.	Vegetation management projects may cause short-term, detrimental aesthetic effects, which would be moderated by partial tree removal methods. Long-term, indirect effects would be beneficial due to reduction of wildfire hazards.
Socioeconomics	No direct effects on socioeconomics. Long-term indirect effects of not implementing vegetation management actions could result in low impacts to socioeconomics due to increased risk of wildfires.	Vegetation management projects would have positive long-term direct and indirect effects on socioeconomics by increasing employment related to timber harvest and forest management activities.
Climate Change	No direct effects on climate change processes due to the short time frame (5 years) being considered. Long-term indirect effects of not implementing vegetation management actions could result in low increased risks of large wildfires and subsequent detrimental climate change effects related to undesirable species, composition, structure, and age class distribution.	Vegetation management projects would have small, positive direct change effects due to the restoration of historic stand composition, structure, and function, improved forest health, and reduced wildfire hazard. This would make forest stands more resilient to changing climatic conditions. Direct, detrimental impacts due to emission of GHG is estimated to be very low. Long-term indirect effects would be beneficial due to the reduction of wildfire hazards.

3.15 Cumulative Effects

The National Environmental Policy Act and the Council on Environmental Quality regulations implementing the Act require federal agencies to consider the cumulative impacts of their actions. Cumulative effects are defined as, "the impact on the environment which results from the incremental impact of an action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR § 1508.7). Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time.

The primary goal of a cumulative effects analysis is to determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative effects of other past, present, and reasonably foreseeable future actions.

3.15.1 Resources Considered

The Corps used the technical analysis conducted in this EA to identify and focus on cumulative effects that are "truly meaningful" in terms of local and regional importance. While the EA addresses the effects of alternatives on the range of resources representative of the human and natural environment, not all of those resources need to be included in the cumulative effects analysis – just those that are relevant to the decision to be made on the proposed action. The District has identified the following resources that are notable for their importance to the area and potential for cumulative effects. Those resources are:

- Air Quality
- Vegetation
- Aesthetics
- Wildlife;
- Socioeconomics

The long-term effect of the proposed action on all of these resources is expected to be positive, but there may be some short-term, negative direct effects on some resources as projects are being implemented. Resources are discussed in terms of their cumulative effect boundary (spatial and temporal), the historic condition and impacts to the resources, present condition and impacts to the resources, reasonably foreseeable future actions that may affect the resources, and the effects to the resource by the various vegetation management alternatives when added to other past, present, and future actions.

This section evaluates the cumulative effects of actions that could potentially affect the same environmental resources as those discussed earlier in this EA. The scope of this analysis extends beyond the Dworshak Project to other areas that sustain the resources of concern. A resource may be differentially impacted in both time and space. The implication of those impacts depends on the characteristics of the resource, the magnitude and scale of the project's impacts, and the environmental setting (EPA 1999).

3.15.2 Geographic and Temporal Scope of Cumulative Effects Analysis

Guidance for setting appropriate boundaries for a cumulative effect analysis is available from CEQ (1997) and EPA (1999). Generally, the scope of cumulative effects analysis should be broader than the scope of analysis used in assessing direct or indirect effects. "Geographic boundaries and time periods used in cumulative impact analysis should be based on all resources of concern and all of the actions that may contribute, along with the project effects, to cumulative impacts" (EPA 1999). The analysis should delineate appropriate geographic areas including natural ecological boundaries, whenever possible, and should evaluate the time period of the project's effects.

The resources assessed have experienced various impacts since the 1860's. Actions such as road building, logging, mining, construction and operations of Dworshak Dam and Reservoir, agricultural development, development of communities, recreation, and others have all contributed to the current state of the resources in the area. These actions have negatively and positively affected the resources.

Discussed below are the past, present, and reasonably foreseeable future actions that were considered for the cumulative effects analysis, the effects of the actions on the resources assessed, and a summary of the cumulative effects of the alternatives. Table 15 summarizes the geographic and temporal boundaries used in this cumulative effects analysis.

Table 15. Geographic and Temporal Boundaries of Cumulative Effects Area

Resource	Geographic Boundary	Temporal Boundary
Air Quality	North Fork Clearwater Watershed (HUC* 17060308)	75 years
Vegetation		
Aesthetics		
Wildlife		
Socioeconomics	Clearwater County	10 years

*Hydrologic Unit Code

The geographic boundary for the cumulative effects analysis for air quality, vegetation, aesthetics, and wildlife includes actions taking place in the North Fork Clearwater Watershed (HUC 17060308), while socioeconomic cumulative effects are evaluated within Clearwater County. The timeframe of 75 years for air quality, vegetation, aesthetics, and wildlife was based on a typical fire return interval for trees established through VMP projects. The timeframe was ten years for socioeconomic impacts since that is a standard reporting period used by the Idaho Department of Labor. A timeframe of five years into the future is used for consideration of actions that are reasonably foreseeable to occur. To be reasonably foreseeable, there must be a strong indication that an action/event will occur or be conducted.

3.15.3 Past, Present, and Reasonably Foreseeable Future Actions and Implications for Resources

The following sections present summaries of past, present, and reasonably foreseeable future actions considered in this cumulative effects analysis, and the effects of those actions on the resources considered. All proposed Corps actions would be continuously coordinated with appropriate federal, state, and local agencies throughout planning and implementation. This is

particularly critical, as the Dworshak area of influence includes two states; five counties; several city, county, state, tribal, and federal agencies; and many special interest groups.

3.15.3.1 Past Actions

Most past actions were related to vegetation management activities, primarily timber harvest, and associated road construction, but the area also has a history of gold mining dating back to the 1860's, which brought many early residents to the area, including historic Moose City near the headwater of the North Fork Clearwater River. The construction of Dworshak Dam in the late 1960's/early 1970's was a major impact on the area.

US Corps of Engineers

The construction of Dworshak Dam and Reservoir covered thousands of acres of wildlife habitat and created a barrier for anadromous fisheries on the North Fork Clearwater River. Annual drawdowns of the reservoir started in 1992 and impacted recreation use. Vegetation management activities have been conducted by the Corps for many years, particularly within the Elk Mitigation area in the 1970's. Some of the vegetation management projects within the past 20 years are:

- 2003-Hudson and Robinson Creek Prescribed Burns
- 1998-Bishop-Chute Creeks Timber Salvage Sale
- 1994-Weitas Creek Timber Sale
- 1994-Indian Creek Timber Sale

US Forest Service

The USFS is the primary forest management agency for the United States. Nearly two-thirds of the land in the Dworshak region is owned by the federal government. Of that number, 97% is owned and managed by the USFS. The USFS has historically been involved in many vegetation management projects in the North Fork Clearwater River basin dating back to the early 1900's. Road building and timber harvest occurred in many areas. The USFS has recently implemented the Middle Bugs project on the North Fork District of the Nez Perce-Clearwater National Forest.

The Nez Perce Tribe

The Nez Perce Tribe owns lands in the local region including two sections of Tribal Trust lands on the Old Ahsahka Grade and land adjacent to the Dworshak Hatchery. The Nez Perce Tribe completed selective harvest on the Trust lands in 2007. Some Dworshak Project lands are located within the boundaries of the Nez Perce Tribe Indian Reservation. The Corps has regularly consulted with the Tribe on past projects within the area.

Idaho Department of Lands

The Idaho Department of Lands (IDL) manages lands granted to the State by the federal government. The lands were granted on the condition they produce maximum long-term financial returns for public schools and other beneficiaries. IDL has conducted considerable timber harvest on State lands in the past within the Dworshak area as evidenced from aerial photo reviews.

Potlatch Corporation
The Potlatch Corporation owns a significant amount of land surrounding Dworshak Reservoir. Potlatch Corporation manages most of their forest lands primarily for timber production and has conducted considerable timber harvest in the past in the Dworshak area as evidenced from aerial photos. Potlatch has recently sold some of their lands around Dworshak Reservoir for development of private home sites or timberlands.

Other Landowners
Bennett Lumber Products, Inc., Tri-Pro Forest Products, Idaho Forest Group, the Bureau of Land Management (BLM), and small, private landowners manage smaller tracts of forest land in the North Fork Clearwater River basin. It is unknown how much timber harvest and other activities have occurred off these lands, but review of aerial photos show some past timber harvest and associated road construction has occurred on these lands.

3.15.3.1.1 Effects of Past Actions on Resources

Air Quality
Air quality has historically been very good in the Dworshak area with the exception of periodic episodes of smoke from both wildfires and agricultural field burning. Management ignited fires for disposal of slash after harvest operations has regularly occurred on Corps, USFS, IDL, Potlatch, and other lands, to comply with the requirements of the Idaho State Forest Practices Act, creating periods of reduced air quality.

Vegetation
Vegetation in much of the Dworshak area has been heavily impacted by past timber harvest, particularly in the lower North Fork Clearwater River basin where the land is gentler and the forests are more productive. Early harvest practices often involved clearcut harvesting which resulted in erosion and loss of site productivity on steep slopes, as well as impacting fish habitat in streams and rivers. Some areas of early timber harvest have reforested over time and have created new forest habitat. Effective fire suppression has created overly dense stands in some forest types, predisposing these areas to insect and disease outbreaks. The introduction of white pine blister rust in the early 1900's, an exotic pest from Eurasia, essentially eliminated western white pine from its historical prominence in the North Fork Clearwater River basin resulting in increases of other species, particularly Douglas-fir and grand fir. Limited reforestation with genetically resistant white pine has occurred, but it is still a minor species in the area

Aesthetics
The North Fork Clearwater River basin has historically been known for its high quality scenic views, both before and after the construction of Dworshak Dam. Past management actions, including road building and timber harvest have impacted natural landscapes reducing visual quality from many people's perspective. Effective fire suppression has allowed many of these areas to return to forest habitat, improving the aesthetic quality. Annual drawdowns of Dworshak Reservoir begun in 1992 to enhance downstream migration of ESA listed fish species, have impacted scenic views from the reservoir.

Wildlife
Past timber harvest, along with large scale wildfires, created large areas of brushfields, which provided habitat for large mammals, especially deer and elk. Much of the historic winter range used by these species was submerged with the filling of Dworshak reservoir. Thermal and hiding cover was often limiting with the predominance of early seral (brushfield) vegetation, but many of these areas are now reverting back to forest vegetation. Timber harvest in the Elk Mitigation area improved browse conditions for elk and deer.

Socioeconomics
The local economy historically has been strongly tied to resource based industries including logging, mining, and tourism. Logging has historically fluctuated with supply, demand, and market conditions, and consequently employment has correspondingly fluctuated over time, with unemployment rates since 1990 ranging from 4.4% in September 2007 to 26.5% in March 1991. Mining has generally curtailed, while tourism has been moderately stable, though the introduction of reservoir drawdowns resulted in a decline of tourism.

3.15.3.2 Present Actions
Present actions continue to be related to natural resource based industries, primarily timber harvest and recreation, but the economy is diversifying to include service based industries as well.

US Corps of Engineers
The Corps manages the Dworshak Project for a variety of resource as summarized in the recently completed Master Plan (USACE 2015). The current vegetation management projects being implemented are:

- 2014 East Dent Salvage
- 2011-Ahsahka Stewardship

US Forest Service
Projects currently being implemented on Forest Service lands are shown in Table 16.

Table 16. Clearwater National Forest Present Actions

Project Name	Project Purpose	Planning Status	Decision	Expected Implementation
Brumit Claim Group Exploration CE	Mineral Test Exploration	In Progress	Expected: 7/2015	8/2015
Roads 5216E and 5216-1 Special Use Permit CE	Motorized Road Access	In Progress	5/2015	Spring 2015 to 7/2020
South Fork # I, II, III Exploration Project CE	Mineral Test Exploration	In Progress	Expected: 7/2015	8/2015
Lower Orogrande EIS	Wildlife, Fish, Rare plants Forest products Watershed management	In Progress	4/24/2015	6/2015

Source: U.S. Forest Service web site, http://www.fs.fed.us/sopa/components/reports/sopa-110105-2015-01.pdf

Other Ownerships
Current actions on Potlatch Corporation and IDL lands include timber harvest to meet their management objectives, but the Corps wasn't able to attain any information pertaining to exact locations of present actions carried out or planned by either entity. Vegetation management prescriptions implemented on both Potlatch and IDL lands may result in improved ecosystem heath and/or elk habitat, but specific management objectives are generally different than those for the Corps. The Nez Perce Tribe is not currently implementing any management actions on their Tribal Trust lands.

Similarly, the Corps wasn't able to obtain information on current actions being implemented on other ownerships including Bennett Lumber Products, Inc., Tri-Pro Forest Products, Idaho Forest Group, the Bureau of Land Management (BLM), and small, private landowners. It is assumed some level of vegetation management activity may be occurring on these lands.

3.15.3.2.1 Effects of Present Actions on Resources

Air Quality
Present actions on air quality are similar to past actions except they are generally smaller in scope and are monitored and regulated by the Idaho Division of Environmental Quality. Seasonal wildfires occur each year contributing to reduced air quality, with scale and scope highly dependent on yearly weather conditions.

Vegetation
Vegetation in the Dworshak area is currently impacted by timber harvest and road construction, though on much smaller scales than occurred historically in the past. Vegetation management actions are producing early seral plant communities (brushfields), as harvest is focused on mid to late seral plant communities. Some management actions include thinnings to reduce stand density to improve ecosystem health and reduce wildfire hazards. Wildfires are common during dry years due, in many cases, to the effects of past fire suppression.

Aesthetics
Present actions have reduced impacts on aesthetics compared to past, historical actions. Current timber harvest and road construction will cause some short term negative impacts to aesthetics. Wildfires will produce negative aesthetic impacts for short time periods until vegetation recovery occurs.

Wildlife
Present actions will create additional browse for elk and deer though at a much smaller scale than historical actions. Wildfire within the North Fork Clearwater River basin provides the potential for also producing increased browse production for deer and elk, but also brings with it the risk of creating entry points for invasive plant species which could reduce wildlife habitat.

Socioeconomics
Present actions are providing employment for workers in forest industry as well as supporting service industries. Tourism remains an important factor in the local economy. Economic diversification is also occurring, providing some economic stability in the area.

3.15.3.3 Reasonably Foreseeable Future Actions

Future actions are expected to continue to be related to natural resource based industries, primarily timber harvest and recreation, but continued economic diversification is expected to occur in the area.

US Corps of Engineers

The Corps will continue managing resources at the Dworshak Project for a variety of resource as directed in the recently completed Master Plan (USACE 2015).

US Forest Service

The future projects currently being planned for on Forest Service lands are shown in Table 17. These include access, forest, and watershed management projects.

Table 17. Clearwater National Forest Future Actions

Project Name	Project Purpose	Planning Status	Decision	Expected Implementation
Roads 5216E and 5216-1 Special Use Permit CE	Motorized Road Access	In Progress	5/2015	Spring 2015 to 7/2020
French Larch Project EA	Forest Products, Watershed Management	In Progress	Expected: 9/2015	1/2016
Barnyard South Sheep EA	Forest Products, Watershed Management	In Progress	Expected: 6/2015	3/2017

Source: U.S. Forest Service web site, http://www.fs.fed.us/sopa/components/reports/sopa-110105-2015-01.pdf

Other Ownerships

Future actions on Potlatch Corporation and IDL lands are expected to include timber harvest to meet their management objectives, but the locations of such future actions are unknown. Vegetation management prescriptions implemented on both Potlatch and IDL lands in the future may result in improved ecosystem heath and/or elk habitat, but specific management objectives are generally different from those for the Corps.

It is anticipated that future actions implemented on other ownerships including Bennett Lumber Products, Inc., Tri-Pro Forest Products, Idaho Forest Group, the Bureau of Land Management (BLM), and small, private landowners will be similar to those currently being implemented as well as those in the past. It is assumed some level of vegetation management activity will occur on these lands. Real estate development is expected to occur in some areas as population grows.

3.15.3.3.1 Effects of Future Actions on Resources

Air Quality

Future actions on air quality will be similar to impacts from past and present actions it is anticipated that these actions will be monitored and regulated by the Idaho Division of Environmental Quality. Seasonal wildfires will continue to occur each year, and may increase due to the effects of climate change, contributing to reduced air quality, with scale and scope highly dependent on yearly weather conditions.

Vegetation
Future actions will impact vegetation in the Dworshak area through timber harvest and road construction, though the level of activity is unknown. Vegetation management actions will likely continue to produce early seral plant communities (brushfields), as harvest is focusing on mid to late seral plant communities. Management actions on some ownership may emphasize thinnings to reduce stand density to improve ecosystem helath and reduce wildfire hazards. Wildfires are expected to continue, and may increase in occurrence and size, due to the effects of past fire suppression and climate change.

Aesthetics
Future actions will likely have impacts on aesthetics that are less than those attributed to past, historical actions. Future timber harvest and road construction will cause some short term negative impacts to aesthetics. Wildfires will produce negative aesthetic impacts for short time periods until vegetation recovery occurs. Real estate development and associated infrastructure development may alter aesthetic values in some areas.

Wildlife
Future actions will create additional browse for elk and deer though at a much smaller scale than historical actions. Wildfire within the North Fork Clearwater River basin will provide the potential for also producing increased browse production for deer and elk, but also brings with it the risk of creating entry points for invasive plant species which could cause detrimental impacts to wildlife habitat.

Socioeconomics
Future actions are expected to provide employment for workers in forest industry as well as supporting service industries. Tourism will likely remain an important factor in the local economy. Real estate development may increase providing employment in the construction industry. Economic diversification is also occurring, providing some economic stability in the area.

3.15.4 Summary of Cumulative Effects of Past, Present, and Reasonably Foreseeable Future Actions on Resources

There is a diverse ownership pattern of properties surrounding the Project area including: private individuals, tribal lands, private timber company lands, and lands managed by state and federal land management agencies. Many actions have occurred within the North Fork Clearwater River basin in the past and changing demographics would affect actions on other ownerships in the future.

Partnership opportunities exist for vegetation management projects to develop efficiencies as well as developing a landscape level perspective. Coordination with other organizations and individuals is important to minimize adverse environmental effects and maximize joint efforts.

The Corps evaluated the effects of past, present, and reasonably foreseeable future actions on these lands to as required by NEPA and CEQ to consider the cumulative effects of the Corp's proposed action.

Air quality impacts associated with the proposed action would be minor and of short duration, and would be coordinated with the Idaho Division of Environmental Quality. Vegetation impacts would improve ecosystem health and provide for habitats not present on some of the other ownerships in the North Fork Clearwater River basin. Impacts to aesthetics would be minor and of short duration. Wildlife impacts would be positive, particularly in providing habitat for elk and deer. Socioeconomic impacts would be positive, as the proposed action would provide employment opportunities in forest industry.

The potential effects of the proposed action, when combined with the effects of past, present and reasonably foreseeable future actions, is not expected to result in significant effects to the resources identified above.

SECTION 4.0 - COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS

The following paragraphs address the principal environmental review and consultation requirements applicable to the proposed project. Pertinent Federal statutes, executive orders (EO), and executive memorandums are included.

4.1 Laws Considered

4.1.1 National Environmental Policy Act of 1969 (NEPA)

A Final Environmental Impact Statement (FEIS) evaluating the environmental effects from the operation of Dworshak Dam was prepared in 1975 (Corps 1975). The effects of vegetation management were evaluated in the FEIS. Vegetation management in the 1975 FEIS focused primarily on sanitation and thrift, while today, the Corps' natural resource management mission focuses on forest health, ecosystem management, and elk habitat. Further, social, economic, and environmental settings have changed. As a result, this EA augments findings in the FEIS, specifically regarding the vegetation management projects identified in the Five Year Vegetation Management Plan (FY 2015-2020). The NEPA compliance has previously been completed for two projects in the Five Year Plan, the East Dent Salvage 1 (11 September 2014) and Ahsahka Stewardship (January 2013) projects, so this EA analyzed the remaining projects in the FYVMP.

This EA has been prepared and is being circulated to agencies and the public for review and comment pursuant to requirements of NEPA. No effects significantly affecting the quality of the human environment have been identified at this time. If no such effects are identified during the public review process, compliance with NEPA would be achieved upon the signing of a Finding of No Significant Impact (FONSI). However, if such effects are identified during the public review, an Environmental Impact Statement (EIS) would be required. Compliance with NEPA would then be achieved upon completion of an EIS and the signing of a Record of Decision.

4.1.2 Endangered Species Act of 1973, As Amended

The Corps prepared a biological assessment in 2011 in accordance with section 7(a)(2) of the ESA, which analyzed potential effects of management actions (including vegetation management) on listed species and designated critical habitat, and consulted with the USFWS. The USFWS concurred with the Corps' determination that the project "may affect, but is not likely to adversely affect" bull trout and designated bull trout habitat, and that it would not affect Canada lynx or North American wolverine (Appendix B).

A candidate species, whitebark pine, was not assessed in the 2011 biological assessment because it had only been identified as a candidate species for ESA listing a short time prior to the publication of that document. However, the occurrence of whitebark pine is not expected in the Dworshak area due to its high elevation habitat requirements above elevations present within the Project.

4.1.3 National Historic Preservation Act of 1966 (NHPA), as Amended

The Corps of Engineers has determined that the proposed FY 2015-2020 vegetation management projects are undertakings as described in Section 106 of the NHPA and its implementing regulations, 36 Code of Federal Regulations Part 800. Ongoing (status quo) actions are covered

by prior NEPA and Section 106 compliance. Projects proposed under the FY2015-2020 vegetation management plan will undergo separate Section 106 reviews prior to project implementation. If historic/cultural resources are identified during project Section 106 reviews, projects will be modified to minimize any potential impacts. The Corps assumes all proposed projects will result in no significant effects to historic/cultural resources. If significant effects are identified, supplemental/tiered NEPA analysis would be required.

4.1.4 Migratory Bird Treaty Act of 1918 (MBTA) As Amended

Various provisions to protect active nesting raptors and other migratory birds have been incorporated. In addition, monitoring of breeding activities would occur to develop an understanding of migratory bird use. A no disturbance zone, with a radius of 150 feet, would be maintained around all raptor and 50 feet around other migratory bird nests from April 1 to August 15. If tree removal is desired within this no disturbance zone, the removal would generally be conducted between August 16 and March 31. In addition, neither the nest tree(s), nor any other trees within 50 feet of the nest tree, would be removed. Snags would be left unless they present a hazard to logging or prescribed burning activities. A qualified wildlife biologist would survey the timber sale area prior to harvest activity to locate any active raptor or other migratory bird nests within the project treatment units. If active nests are identified, attempts would be made to avoid impacts through modified project design or the implementation of timing stipulations or stressor-specific BMPs. If impacts cannot be entirely avoided, the Corps would submit a take permit application with the USFWS Permit Office.

4.1.5 Bald and Golden Eagle Protection Act of 1940

Bald eagle nests would have a large no-disturbance zone based on recommendations from the USFWS. If tree removal is desired within this no disturbance zone, the removal would be conducted between August 16 and February 28. In addition, neither the nest tree(s), nor any other trees within 50 feet of the nest tree, would be removed. Snags would be left unless they present a hazard to logging or prescribed burning activities. A Corps wildlife biologist would survey the timber sale area prior to harvest activity to locate any active eagle nests within the units. Because of the implementation of recommendations from the USFWS, disturbance of nesting bald eagles is unlikely to occur. No take of either bald or golden eagles would occur due to the proposed projects.

4.1.6 Clean Air Act of 1970, As Amended

Compliance with the standards of the Northern Idaho Airshed Group is discussed in section 3.4.1. The proposed actions would be in compliance with the Clean Air Act. Pursuant to Section 176(C) and 309 of the Act, this environmental assessment would be provided to the EPA.

4.1.7 Federal Water Pollution Control Act (Clean Water Act of 1972)

The proposed action would not result in the discharge of dredged or fill material, below the ordinary high water mark, into waters of the United States, so it would be in compliance with Sections 401 and 404 of the Clean Water Act. The proposed action would not result in the discharge of pollutants so it would be in compliance with Section 402 of the Clean Water Act. General discussion of potential effects of the proposed action upon water quality is addressed in section 3.3.

4.1.8 Fish and Wildlife Coordination Act of 1958
The proposed action would not alter or modify stream-flow or a body of water and would not involve activities subject to this Act.

4.1.9 Wild and Scenic Rivers Act of 1968
No rivers designated as "wild and scenic" occur within or near the proposed project area.

4.1.10 Northwest Electric Power Planning and Conservation Act of 1980 (Northwest Power Act)
The proposed action would not conflict with the requirements of the Act or the Columbia Basin Fish and Wildlife Program.

4.1.11 Energy Independence and Security Act of 2007
The proposed action would not convert more than 5,000 square feet to impermeable surfaces and would not be subject to the Act.

4.1.12 Farmland Protection Policy Act of 1984
The proposed federal action would not convert farmland to non-agricultural uses.

4.1.13 Federal Insecticide, Fungicide, and Rodenticide Act of 1947
The federal action may utilize pesticides. All guidelines identified in the Act would be followed (proper storage, disposal, training, and pesticides registration; certified applicator, record keeping, and other rules listed in FIFRA).

4.1.14 Federal Water Project Recreation Act of 1965
Wildlife enhancement actions would be a part of the federal action. Proposed activities would enhance wildlife habitat, particularly benefitting elk in the Grandad Mitigation area.

4.1.15 National Trail Systems Act of 1968
The federal action would not affect any trails of the National Trails System.

4.1.16 Noise Control Act of 1972
The federal action would not result in noise emissions greater than the applicable legal limits. The required certified low-noise-emission products would be utilized if needed.

4.1.17 River and Harbors Act of 1899
The action would not involve the construction of any structure in or over any navigable water, or work affecting the course, location, condition, or physical capacity of such waters.

4.1.18 Lacey Act of 1900
The proposed action would not result in the import, export, sale, acquisition, or purchase of protected plants or animals.

4.1.19 Magnuson-Stevens Fishery Conservation and Management Act of 1976
The proposed action would not adversely affect Essential Fish Habitat.

4.1.20 Plant Protection Act of 2000
The proposed action would not result in the movement or commerce of any plant pest or noxious weed.

4.1.21 Flood Control Act of 1944
The federal action would not permit or encourage the use of recreation areas in a manner that is inconsistent with state laws for the protection of fish and game.

4.1.22 Comprehensive Environmental Response, Compensation and Liability Act of 1980 and 2006
The proposed action in not known to involve lands contaminated with hazardous substances and environmental compliance would be performed, if necessary, to determine liability and remediation.

4.1.23 Emergency Planning and Community Right-To-Know Act of 1986
The proposed action may involve hazardous substances in quantities listed in 40 CFR 355 and actions would be performed, if necessary, to notify state and local agencies and comply with all reporting requirements in accordance with this Act.

4.1.24 Hazardous Materials Transportation Act of 1975
The proposed action may involve the transportation of hazardous materials under this Act and actions would be taken, if necessary, to conform to all applicable transportation standards.

4.1.25 Oil Pollution Act Of 1990
The proposed action would not involve actions or quantities of oil subject to the Act.

4.1.26 Pollution Prevention Act Of 1990
The proposed action would involve substances that are potential pollutants and actions would be taken to recycle, treat, or dispose of substances in an environmentally safe and friendly manner.

4.1.27 Resource Conservation and Recovery Act of 1976
The proposed action would involve hazardous wastes, used oil, or underground storage tanks regulated by this Act and environmental compliance will be performed to properly dispose of all hazardous waste.

4.1.28 Safe Drinking Water Act of 1974
The proposed action would not involve public drinking water systems and is not subject to this Act.

4.1.29 Toxic Substances Control Act of 1976
The proposed action would not involve production, importation, use, and disposal of polychlorinated biphenyls (PCBs), asbestos, radon, or lead-based paint.

4.2 Executive Orders Considered

4.2.1 Executive Order 11988, Flood Plain Management, May 24, 1977
The proposed projects would protect floodplain resources.

4.2.2 Executive Order 11990, Protection of Wetlands, May 24, 1977
Wetlands would be protected through proposed project activities.

4.2.3 Executive Order 12898, Environmental Justice, February 11, 1994
The proposed federal action would not adversely or disproportionately affect minority or low income populations.

4.2.4 Executive Order 13112, Invasive Species, February 3, 1999
The proposed action would involve lands with invasive species populations. In accordance with the Order, the agency would take appropriate actions to prevent the spread of invasive species, and provide for the restoration of native species.

4.2.5 Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, November 6, 2000
The District offered Government to Government consultation with the Nez Perce Tribe by letter on August 21, 2015, but no request to consult has been received.

4.2.6 Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, January 10, 2001
The proposed action would impact either migratory bird species or their habitat subject to this EO and the MOU with the USFWS. The USFWS and other applicable agencies have been consulted and compliance measures addressed in the environmental stipulations/commitments.

4.2.7 Executive Order 13195, Trails for America in the 21st Century, January 18, 2001
The proposed federal action would not involve activities that would impact scenic, historic, recreation, Millennium or other trails subject to this EO.

4.2.8 Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance, October 5, 2009
The proposed federal action would not involve activities that would be impacted by this EO.

SECTION 5.0 – PUBLIC INVOLVEMENT

5.1 Scoping Meetings

The Corps conducted public scoping meetings in Orofino and Lewiston, Idaho in September 1999 to support an update of the Dworshak Master Plan. The meetings were well attended, and the Corps received many suggestions and comments related to management issues at the Project, including vegetation management. The Corps conducted public scoping meetings in September 2008 to support the development of the Public Use Plan.

5.2 Public Comments. This EA was released for public comments for a30-day review and comment period from August 28 to September 27. 2015. Upon conclusion of the review period, the District will consider comments received and move forward in the NEPA process with a Finding of No Significant Impact (FONSI) if applicable, or on to the preparation of an Environmental Impact Statement if deemed necessary..

SECTION 6.0 - LITERATURE CITED AND REFERENCED

Ames, K. M. 1980. A Prehistory of the Clearwater Drainage and Adjacent Portions of the Columbia Plateau. Manuscript. Idaho State Historical Society, Boise, Idaho.

Asherin, D. A. and M. L. Orme. 1978. Inventory of Riparian and Associated Wildlife along Dworshak Reservoir and Lower Clearwater River. Volume V., Dworshak Reservoir and Lower Clearwater River. Idaho Cooperative Wildlife Research Unit, University of Idaho, College of Forestry, Wildlife and Range Sciences, Moscow, Idaho.

Bowers, D. and S. Nadeau. 2002. Inventory of Fungi, Plants, and Wildlife in the Dworshak Reservoir Project Area, Idaho. Idaho Department of Fish and Game Report. 59 pp.

Cannel, Kevin. 2001. Dworshak Reservoir Cultural Resource Management Plan. Nez Perce Tribe Cultural Resource Program. Lapwai, Idaho.

Council on Environmental Quality (CEQ). 1997. Considering Cumulative Effects Under the National Environmental Policy Act. January 1997. Crecelius, E.A., and O.A. Cotter

Environmental Protection Agency (EPA). 1999. Consideration of Cumulative Impacts in EPA Review of NEPA Documents. U.S. Environmental Protection Agency, Office of Federal Activities, May 1999.

Environmental Protection Agency (EPA). 2015. Climate Impacts in the Northwest. Website (http://www.epa.gov/climatechange/impacts-adaptation/northwest.html) accessed August 2015.

Hand, Robert. 2013. Personal Communication. Clearwater Region Fisheries Biologist, Idaho Department of Fish and Game, Lewiston, ID.

Fiedler, Carl E., Stephen F. Arno and Michael G. Harrington. 1998. Reintroducing fire in ponderosa pine-fir forests after a century of fire exclusion. Pages 245-249 in Teresa L. Pruden and Leonard A. Brennan (eds.) Fire in ecosystem management; shifting the paradigm from suppression to prescription. Tall Timbers Fire Ecology Conference Proceedings, No. 20. Tall Timibers Research Station, Tallahassee, FL.

Idaho Department of Labor. 2015. Information retrieved from: http://lmi.idaho.gov/laus (August 2015).

Liknes, G.A. and P.J. Graham. 1988. Westslope cutthroat in Montana: life history, status, and management. American Fisheries Society Westslope Cutthroat Symposium. Vol. 4: 53-60.

Maiolie, M.A. 1988. Dworshak Dam Effects Assessment and Fishery Investigation. Annual Report FY 1987. Prepared for U.S. Department of Energy, Bonneville Power Administration, Division of Fish and Wildlife, Project No. 87-99.

Mattson, D. M., R. Knudson, R. L. Sappington, and M. A. Pfieffer. 1982. Cultural Resources Investigations of the Dworshak Reservoir Project, North Fork, Clearwater River, Northern Idaho. University of Idaho Anthropological Research Manuscript Series, No. 75, Moscow, Idaho.

Norman, Jared and Jessica Glindeman. 2011. Dworshak Reservoir Uplands Cultural Resource Survey Plan. Prepared for the U.S. Army Corps of Engineers by the Nez Perce Tribe Cultural Resource Program, Lapwai, Idaho.

StreamNet 2014. Information retrieved from: http://www.streamnet.org/data/ (April 2015).

U.S. Army Corps of Engineers (USACE). 1977. Design Memorandum 15. Plan for Development of Rocky Mountain Elk Habitat, Dworshak Dam and Reservoir, North Fork Clearwater River, Idaho. Walla Walla District, 4 November 1977.

U.S. Army Corps of Engineers.1986. Water Control Manual for Dworshak Dam and Reservoir, North Fork Clearwater River Idaho, November 1986. Walla Walla, Washington.

U.S. Army Corps of Engineers. 1996. Dworshak Master Plan, Plan of Study, 1995-1996, Draft. U.S. Army Corps of Engineers, Walla Walla District, Planning Division. Walla Walla, Washington.

U.S. Army Corps of Engineers. 1997. Environmental Assessment: Bishop-Chutes Creek Timber Salvage Sale. U.S. Army Corps of Engineers Dworshak Dam and Reservoir Ahsahka, Idaho.

U.S. Army Corps of Engineers. 2015. Dworshak Reservoir Project Master Plan, Ahsahka, Idaho. U.S. Army Corps of Engineers, Walla Walla, Washington.

U.S. Department of Energy. 1996. Columbia River System Operation Review Final Environmental Impact Statement, U.S. Department of Energy, Bonneville Power Administration; U.S. Department of the Interior, Bureau of Reclamation; U.S. Department of the Army, North Pacific Division, Corps of Engineers. Publication DOE/EIS-0170.

United States Global Change Research Program (USGCRP). 2009. Karl, T.R., J. M. Melillo, and T. C. Peterson (eds.). United States Global Change Research Program. Cambridge University Press, New York, NY, USA.

U.S. Laws, Statutes, etc. PL 87-874, Flood Control Act of 1962; PL 85-624, The Fish and Wildlife Coordination Act; PL 86-717, The Forest Cover Act; and 5 Code of Federal Regulations, Section 402.12.

APPENDIX A

DWORSHAK FIVE YEAR VEGETATION MANAGEMENT PLAN (FY 2015-2020)

DWORSHAK FIVE YEAR VEGETATION MANAGEMENT PLAN (FY 2015-2020)

U.S. Army Corps of Engineers
Dworshak Dam and Reservoir
1428 Northfork Drive
Ahsahka, ID 83520
August 5, 2015

I. Summary

The Dworshak five year vegetation management plan (VMP) is an addition to the Operational Management Plan (OMP) for Dworshak. This plan will be updated each year along with the OMP. The VMP provides specific information on upcoming vegetation management projects. The intent is to have vegetation projects well lined out to allow for internal review ensuring all legal requirements are met.

This plan identified four categories of projects to address vegetation management goals. Categories 1 and 2 focus on general ecosystem health and restoration, while categories 3 and 4 focus on maintaining and creating habitat for elk:

1. General Forest Health: There are a variety of forest health problems needing to be addressed to restore or maintain a healthy forest condition. Problems may range from root-rot, bug infestations, storm blow-down, overstocking or a combination of these and other forest health related conditions.

2. Ecosystem Restoration: Some forest areas are out of the expected range of variability for their forest type, age, location, and fire regime. Wildfire, a natural ecosystem process, was virtually eliminated from the landscape over the past 95 years, resulting in unnatural species composition, distribution and stand structures. The intent is to restore the forest composition, form and structure more in line with the expected conditions for each forest type. Wildlife habitat and forest health are of primary concern in these types of projects. Goals, objectives and guidelines for restoration are described in P.L. 86-717 (Forest Cover Act), Corps regulations, ER1130-2-540, the Dworshak Master Plan (MP), and Dworshak OMP, support these type of actions.

3. Elk Habitat Enhancement: Improved elk habitat can be achieved through timber harvest and prescribed burning. Other vegetative treatments may be employed in association with these projects to facilitate the prescribed burning including, but not limited to slashing and pruning of existing vegetation to stimulate growth and/or assist carrying fire across the landscape. These projects will most likely occur in areas classified as Elk Mitigation and/or Multiple Resource Management – wildlife habitat. Elk mitigation at Dworshak is a compliance requirement of the Fish and Wildlife Coordination Act.

4. Vegetation Planting/Seeding and Plant Protections: Projects in this category are typically a combination of planting/seeding of, and protections for, specific vegetation that benefit elk by improving habitat conditions. These projects will most likely occur in areas classified as Elk Mitigation and/or Multiple Resource Management – wildlife habitat.

II. Tools/Methods to Accomplish Vegetation Management Goals

A variety of vegetation management tools/methods will be used in project design to accomplish vegetation management goals in the above four project categories during the FY 2015-2020 period.

1. Timber Harvest: Forest stands throughout the Project in need of treatment will be identified by qualified natural resource specialists. Areas selected for treatment will undergo more detailed forest inventory to determine specific proposed actions. Harvest treatment methods will vary by existing stand characteristics and project objective, ranging from selective harvest methods for ecosystem restoration projects, to small salvage harvests for forest health and restoration projects (see Table 1). Timber harvest without a timber sale, such as pre-commercial thinning, may be used as an option to reduce environmental effects while improving forest health.

Yarding methods will including "in-woods" processing, tractor yarding, cable yarding, skyline yarding, helicopter yarding, and possibly others. Yarding on slopes exceeding 35 percent will use cable, skyline, or helicopter systems to transport logs to landings. Treating slash may include hand or machine piling or scattering and pile or broadcast burning. Snags would be protected as wildlife habitat to the greatest extent practicable, unless a snag presents a safety hazard to operation personnel, in which case it will be removed.

Table 1 shows the specific harvest methods that will be used to accomplish some of the various vegetation management objectives in the different 2015-2020 project categories, based on stand characteristics, to achieve multiple resource objectives.

Table 1. Dworshak Harvest Prescriptions by Stand Characteristics.

Stand Characteristics	Harvest Prescriptions	Debris Treatment
Ponderosa pine (PIPO) dominated stand. PIPO constitutes > 50% of the overstory.	Thin to 2 crown widths between trees. Selectively retain large diameter trees of species in the following order: PIPO, western larch (LAOC), western white pine (PIMO), Douglas-fir (PSME). Remove trees between 150' downslope and 75' elsewhere around single trees or patches of PIPO, PIMO, or LAOC.	Lop and Scatter. Underburn.
Mixed PSME and PIPO. PIPO constitutes 30-50% of the overstory.	Thin to 2 crown widths between trees. Selectively retain large diameter trees of species in the following order: PIPO, LAOC, PIMO, PSME. Remove trees between 150' downslope and 75' elsewhere around single trees or patches of PIPO, PIMO, and LAOC.	Lop and Scatter. Underburn.
PSME dominated stand. No other species constitutes > 30% of the overstory.	Thin to 1.5 crown widths between trees. Selectively retain large diameter trees of species in the following order: western redcedar (THPL), PIMO, grand fir (ABGR). Remove trees between 150' downslope and 75' elsewhere around single trees or patches of PIPO, PIMO, and LAOC.	Lop and Scatter. Underburn.
Mixed PSME and ABGR constitutes 30-50% of the overstory.	Thin to 1.5 crown widths between trees. Selectively retain large diameter trees of species in the following order: PIPO, LAOC, PIMO, PSME. Remove trees between 150' downslope and 75' elsewhere	Lop and Scatter. Underburn.
Grand fir dominated stand. No other species consitutes > 30% of the overstory.	Thin to 1 crown widths between trees. Selectively retain large diameter trees of species in the following order; LAOC, PIMO, PIPO, THPL, PSME . Remove trees between 150' downslope and 75'	Pile slash. Jackpot burn piles.
Mixed Grand fir & Western Redcedar. THPL consitutes < 20% of the overstory and is not sucessfully reproducing.	Thin to 0 crown widths between trees. Selectively retain large diameter trees of species in the following order; PIPO, LAOC, PIMO, PSME. Remove trees between 150' downslope and 75' elsewhere	Pile slash. Jackpot burn piles.
Western Redcedar > 20% of stand.	No Harvest	N/A
Stand dominated by extensive insect and/or diseased caused mortality.	Harvest insect and/or disease killed, or impacted, trees, creating openings generally less than 5 acres in size, throughout the stand. Scattered trees and patches of trees of non-infected species will be retained throughout the stand.	Broadcast burn. Pile slash. Jackpot burn piles.

2. Yarding Methods: To transport felled trees from the harvest locations to landings, a variety of methods will be used.

- **Tractor/Skidder.** Crawler tractors or wheeled skidders are used on slopes up to 35% to transport logs up to ~1000' to landings.
- **Cable Line Machines (Highlead or Jammer).** Use of a stationery machine, or yarder, to pull logs along the ground to the landings by means of steel cables. Cable systems can yard logs up to 1000' or more to landings and are suited to 30%-70% slopes.
- **Skyline Systems.** Aerial yarding systems where logs are suspended from a carriage which minimizes log contact with the ground. Skyline systems can yard logs up to 4000' to landings and are suited to 30%-90% slopes.
- **Helicopters.** Helicopters are used to transport logs to landings through the air with minimal impacts to the ground or other trees. Helicopter systems can yard logs from any slope up to several miles, with distance limited by economics.

Figure 1 shows various yarding methods and the type of terrain where they can be used.

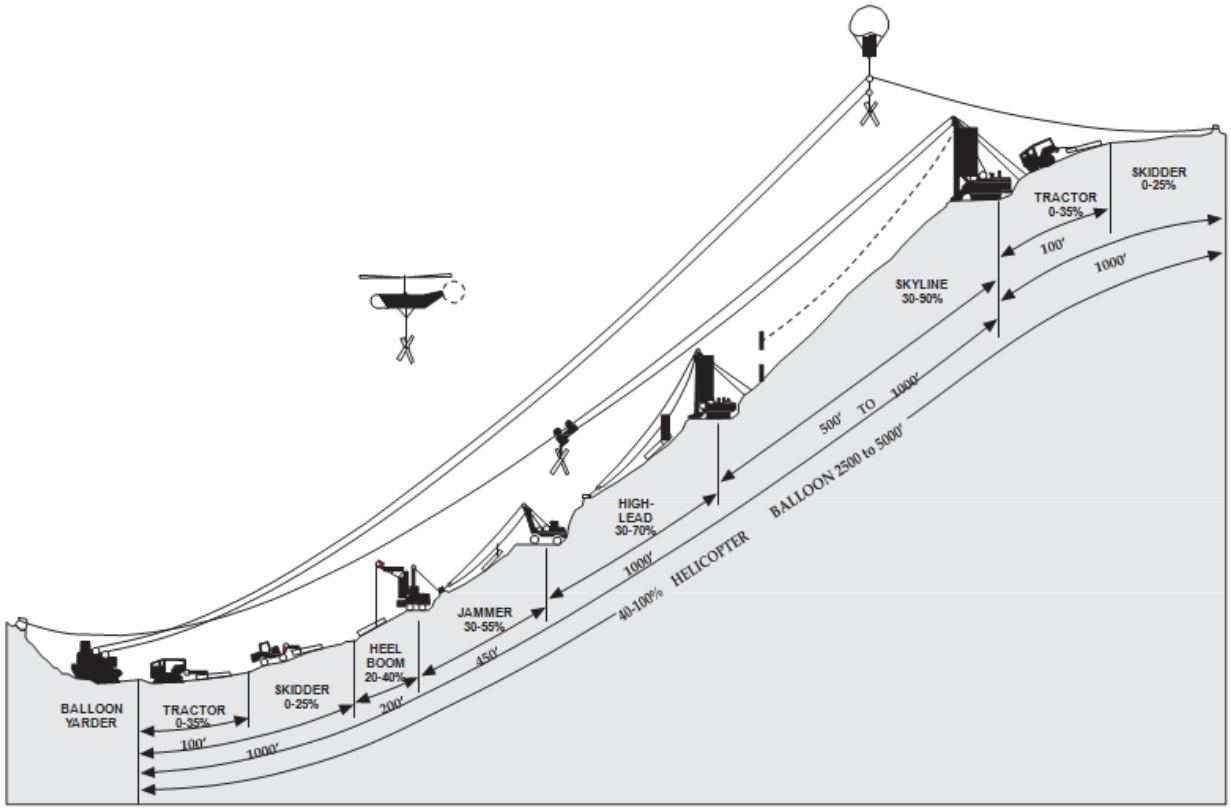


Figure 1. Yarding Systems and terrain limitations (from Washington State University 1999).

3. Slashing and Pruning: Vegetation slashing is the cutting off of woody trees and/or brush at the base and leaving them lie. Slashing the woody brush is typically used to improve wildlife forage or as a pre-treatment before applying herbicide or prescribed fire to the site.

Pruning is generally conducted to improve tree form and wood quality, but also may be done to improve disease resistance/reduce effects and reduce fire hazards by removing branches as ladder fuels.

4. Prescribed Burning: Prescribed burning is an efficient and effective way to enhance ungulate forage, to reduce fuel loads, and to create seedbeds for the natural regeneration of conifers or planting. It has been used very successfully to meet objectives for wildlife habitat improvements and ecological restoration. Wildfire is a natural ecological process and prescribed burning, if executed appropriately, can effectively emulate that process.

Two different methods of prescribed fire are used to achieve management objectives:

- **Broadcast burning.** Broadcast burning is the act of applying fire in a prescriptive manner over a broad area. Assessment of the environmental conditions (fuel moisture, relative humidity, ambient air temp, wind speed, and direction) of the site would be conducted prior to each burn.
- P**ile Burning.** Pile burning includes the ignition, control and patrol of burning piled woody debris. Piles of woody debris are generally created to consume/remove logging slash (tree tops and limbs). They are generally ignited in the late fall or winter when wildfire risk is very low. Ignition would typically be accomplished with either drip torches or propane torches.

Fire lines would be constructed around designated burn units to the minimum extent necessary for safety concerns and resource protection.

5. Vegetation Planting/Seeding: Planting/seeding of shrub species primarily for elk forage would improve elk winter habitat within the mitigation area to meet the habitat maintenance requirements of Design Memorandum No. 15. A variety of forage species including Redstem ceanothus (*Ceanothus sanguineus*) serviceberry (*Amelanchier alnifolia*), rocky mountain maple (*Acer glabrum*), willow (*Salix sp.*), wild cherry (*Prunus sp*.) and other forage plants are proposed for the FY 2015-2020 projects. Specific forage species and planting areas would be specified by the Dworshak natural resource specialists. Seeding would be used in areas with difficult access.

6. Plant Protection: Wire baskets, fencing, vexar tubing, and animal repellents have been used to reduce herbivory of browse species in the Project area in the past. Wire baskets and fencing are being proposed to exclude ungulates from browsing on trees and shrubs to improve winter forage for elk.

7. Road Treatments: To access the proposed FY 2015-2020 vegetation management projects, several types of road treatments will be necessary including: new road construction, road reconstruction, and road maintenance.

- **New Road Construction.** The construction of new roads will require the felling of timber at least 20 feet on either side of the road centerline, if needed. Clearing and grubbing will remove all trees, logs, brush, stumps, roots, slash, and other woody debris and materials embedded in the ground. The road width for new roads will be 14 feet. The cut slope will be cut down and leveled out to form the subgrade width with a proper fill slope ratio (approximately 1.5:1). All native and gravel surfaced timber treatment area roads will be one lane with pullouts appropriately sized for log trucks. Pit run rock will be applied to the native surface in areas that are steep or poorly drained and at all live water crossings. New construction includes work associated with associated ditches, other surface drainage and culvert installation for the proper functionality of the roads.

- **Road Reconstruction.** Road reconstruction will consist of reconditioning and preparing the roadbed and shoulders, cleaning and shaping drainage ditches, trimming vegetation from cut and embankment slopes, and cleaning, repairing, and upgrading the drainage structures of existing roads. It also includes work for associated ditches, other surface drainage, and culvert installation. Subsequent to project completion, all roads will be barred and grass seeded to reduce the potential for erosion. Roadbed surfaces in RHCAs will be graveled to limit suspended sediment. Sediment capture devices will be installed between work areas and streams to prevent escapement of sediment into the streams.
- **Road Maintenance.** Road maintenance work includes adding gravel, blading, brushing, and ditch and culvert clean-out. It also includes maintenance of the road's associated ditches and other surface drainage, and may include placing a new layer of crushed gravel.
- **Road Decommissioning.** Roads determined to not be needed after use would be targeted for decommissioning. Such roads would either be mechanically obliterated, allowed to "grow in", or be converted to a non-motorized use, or demolished, which would focus on specific road sections being removed.

III. General Forest Health Projects

1. East Dent Salvage 1 – FY 2015

Area Description: South side of Dworshak Reservoir between Dent Bridge and Hodson Creek**.** The project area is split into two harvest units for a total harvest area of 122 acres.

Purpose & Need: Idaho Department of Lands (IDL) completed a project directly adjacent to the U.S. Army Corps of Engineers, (Corps) East Dent Salvage 1 in the spring of 2014. The IDL timber was salvaged as a result of an infestation of beetles. IDL has scheduled to burn the slash and replant the area in fall of 2015. Beetles are also killing fir trees on Corps property. This has created an urgency to complete the project and remove the affected trees. The Corps has a responsibility, as a good land management steward, to make every reasonable effort to promote forest health.

Access: Roads accessing the general project area are already present. To facilitate this project, the Corps plans to construct two short spur roads through IDL property. East Dent Salvage 1 will require a total of 1,243 feet of new road construction in two different spurs. Both spurs will cross IDL property to ridge tops on Corps land. One such spur will require 570 feet of new construction on ILD property. The other will require 243 feet of new construction on ILD lands. IDL has stated that they would allow this construction if deemed necessary. The existing road system has been brought up to best management practices, (BMP) standards by IDL and will require very little work on the part of the Corps. Once the project is complete, the Corps will be required to leave the road in a condition that is “as good or better” as it was when the project began. IDL has an established process for granting temporary access easements to other entities. The Corps is required to acquire a temporary access easement from IDL using their process for each project.

Environmental Compliance, EC, Requirements: The project plan fits within the Corps current Walla Walla District programmatic Biological Assessment (BA) guidelines (see Dworshak Natural Resources Land Management Program Activities PM-EC-2010-0065 dated 15 November 2011 and USFWS Concurrence Letter dated 7 December 2011). District Environmental Compliance (EC) section completed a Record of Environmental Compliance (REC) related to East Dent Salvage 1 (see Memorandum for Record dated 11 September 2014). District personnel also completed Section 106 review related to this project (see Cultural Resources Compliance Report dated 2 September 2014 and SHPO concurrence letter dated 9 September 2014).

Operational Guidelines: Logging within the harvest units will be accomplished by a high lead line machine. This project sale was advertisement in late 2014 and harvesting is expected to be completed by late 2015, weather permitting. The maximum period of performance will be two years from time of award for the project. Due to the extensive damage from beetles on fir trees, the planned prescription is to selectively harvest the Douglas-fir and grand fir leaving ponderosa pine, western larch and western redcedar to the greatest extent possible.

2. East Dent Salvage 2 – FY 2016

Area Description: South side of Dworshak Reservoir between Dent Bridge and Hodson Creek (see Map # A01). The project has a total potential harvest area of 511 acres.

Purpose & Need: IDL is in the process of completing a sale (2015-2017) of timber directly adjacent to the Corps East Dent Salvage 2. The IDL timber is being salvaged as a result of a beetle infestation. IDL will schedule slash burning and replanting their project area following the harvest operations.

Beetles are killing fir trees on Corps property creating an urgency to remove the affected trees. To facilitate this project, the Corps may construct short spur roads through IDL property. Felled trees may be yarded/skidded across IDL property creating the need to complete the Corps action prior to any planned IDL post-harvest seedling and planting. The Corps has a responsibility, as a good land management steward, to make every reasonable effort to promote forest health.

Access: Proposed new road construction is estimated at approximately 1.6 miles and road reconstruction at approximately ⅓ mile. The existing roads are being brought up to BMP standards by IDL and will require little work for the Corps. Once the project is complete, the Corps will be required to leave the roads in a condition that is "as good or better" as it was when the project began. IDL has an established process for granting temporary access easements the Corps will obtain such easement permits. General road maintenance is planned on up to 35 miles to bring the existing roads within, and accessing, the project area up to present BMP standards.

EC Requirements: The project plan fits within the Corps current Walla Walla District programmatic BA guidelines (see Dworshak Natural Resources Land Management Program Activities PM-EC-2010-0065 dated 15 November 2011 and USFWS Concurrence Letter dated 7 December 2011). Section 106 review is being planned for FY2016. This project is included in the vegetation management EA that is anticipated to be completed in 2015.

Operational Guidelines: All harvest units will be accomplished utilizing a high lead line logging machine. The maximum period of performance will be two years from time of award. Due to the extensive damage from beetles on fir trees, the planned prescription is to selectively harvest the Douglas-fir and grand fir, leaving ponderosa pine, western larch and western redcedar to the greatest extent possible.

3. Canyon Creek – FY 2015

Area Description: Located near Canyon Creek Camp Ground (see **Map # A02**). The project has a total potential harvest area of 84 acres. Harvest volume for this project is estimated to be 500mbf.

Purpose & Need: This project will improve forest health due to root rot and beetle attacks in the mixed fir forest. The many pockets of diseased trees make the forest more susceptible to insect infestations that compromise forest structure. The Corps has a responsibility, as a good land management steward, to make every reasonable effort to promote forest health.

Access: Roads accessing the general project area are present and the primary maintenance responsibility lies with Clearwater County Road Dept. No temporary access easement will be needed for this project. New road construction planned will be less than 1,000 feet. Road reconstruction will amount to less than ¾ mile. General road maintenance is planned on less than two miles to bring the existing roads within the project area up to present BMP standards.

EC Requirements: A BA was completed for this project (see Canyon Creek Recreational Facilities Enhancement Project dated 12 October 2010 and USFWS Concurrence Letter dated 10 January 2011). Section 106 compliance has been completed (see 2010-NWW-032 Canyon Cr. Timber Sale dated 20 August 2010). This project is included in the vegetation management EA that is anticipated to be completed in 2015.

Operational Guidelines: The project will be accomplished through tractor yarding. The prescription is to selective harvest the dead and dying trees that have been damaged by disease or insects. Healthy dominant or co-dominant ponderosa pine, western larch, Douglas-fir, western redcedar, or grand fir will be left, in that order, on a 40 to 70 foot average spacing. This will lead to the removal of approximately 60 to 70% of the existing trees. The project will have a 2 to 3 year period of performance.

4. Dent Point Salvage – FY 2016

Area Description: North side of Dworshak Reservoir between Dent Bridge and Dent Point and extends approximately ½ mile up the Elk Creek arm of the reservoir (see **Map #A03**). The project has a total potential harvest area of 643 acres.

Purpose & Need: This project will improve forest health due to beetle infestations. The beetle infestation is destructive to the native forest and leads to a compromised forest structure. Forest conditions continue to degrade increasing the need for action. The Corps has a responsibility, as a good land management steward, to make every reasonable effort to promote forest health.

Access: Roads accessing the general project area are already present. No temporary access easement is expected for this project. New road construction will be less than 3 miles. Road reconstruction will be approximately 4 ½ miles. General road maintenance is planned for approximately 3 miles to bring the existing roads up to present BMP standards.

EC Requirements: The project plan fits within the Corps current Walla Walla District programmatic BA guidelines (see Dworshak Natural Resources Land Management Program Activities PM-EC-2010-0065 dated 15 November 2011 and USFWS Concurrence Letter dated 7 December 2011). Section 106 review is being planned for FY2015. This project is included in the vegetation management EA that is anticipated to be completed in 2015.

Operational Guidelines: The project will have a combination of line machine and tractor yarding, based on the site topography. The project could be ready for advertisement in by the end of CY 2015 with a 2 year period of performance.

5. Long Creek J – FY 2016

Area Description: Grandad Elk Mitigation Area, Long Creek sub-unit in the upper reservoir area (see **Map #A04**). The project has a total potential harvest area of 57 acres.

Purpose & Need: This project will improve forest health due to root rot in the mixed Douglas-fir and grand fir forest and to prevent the advancement of beetles in the stressed trees. The disease pockets make the forest far more susceptible to insect infestations leading to a compromised forest structure. The Corps has a responsibility, as a good land management steward, to make every reasonable effort to promote forest health.

Access: Roads accessing the general project area are already present. No temporary access easement will be needed for this project. New road construction planned will be less than ⅓ mile. Road reconstruction will amount to less than ¼ mile. General road maintenance is planned on approximately 2 ¼ miles of existing roads to bring them up to present BMP standards.

EC Requirements: The project plan fits within the Corps current Walla Walla District programmatic BA guidelines (see Dworshak Natural Resources Land Management Program Activities PM-EC-2010-0065 dated 15 November 2011 and USFWS Concurrence Letter dated 7 December 2011). Section 106 compliance is currently being planned for FY 2016. This project is included in the vegetation management EA that is anticipated to be completed in 2015.

Operational Guidelines: This project will be accomplished primarily through cable yarding. The project could be ready for advertisement by late CY 2015 with a 3 year period of performance.

6. Cold Springs Salvage – FY 2017

Area Description: The south side of Dworshak Reservoir between Dent Bridge and minicamp 12.4 across from the mouth of Elk Creek (see **Map #A05**). The project has a total potential harvest area of 691 acres.

Purpose & Need: This project will improve forest health due to high occurrence of various root rots effecting the Douglas-fir and Grand Fir. The root rots makes the area more susceptible to beetle outbreaks as observed in nearby similar forest stands. This situation, if not addressed will lead to a compromised forest structure. The Corps has a responsibility, as a good land management steward, to make every reasonable effort to promote forest health.

Access: Roads accessing the general project area are already present. Temporary access easements across IDL and Potlatch may be sought for this project. Each of these forests management entities have an established process for temporary easements that the Corps utilize. New road construction planned may be up to 3 ¾ miles. Approximately 2 ¼ miles of road will have to be reconstructed along with an additional 13 miles of general road maintenance of the existing roads on adjacent ownership to bring them up to present BMP standards.

EC Requirements: The project plan fits within the Corps current Walla Walla District programmatic BA guidelines (see Dworshak Natural Resources Land Management Program Activities PM-EC-2010-0065 dated 15 November 2011 and USFWS Concurrence Letter dated 7 December 2011). Section 106 compliance is currently being planned for FY2016. This project is included in the vegetation management EA that is anticipated to be completed in 2015.

Operational Guidelines: The project will have a combination of line machine and tractor yarding based on the topography of the area. This project will have a 4 year period of performance due to the extensive road work necessary. Schedule for this project may change if adjacent landowners (IDL & Potlatch) also take forest management actions in this area that alter present conditions or access.

7. West Cranberry – FY 2017

Area Description: West bank of Cranberry Creek on the north side of Dworshak Reservoir approximately 1 mile upstream from Dent Bridge near minicamps 18.1 and 18.2 (see **Map #A06**). The project has a total possible harvest area of 116 acres.

Purpose & Need: The project will improve forest health by salvaging trees infested with western pine beetles. The persistent progression of these insects makes the forest far more susceptible to continued insect infestations. This leads to a compromised forest structure. Failure to deal with an insect infestation on Corps managed property may lead to problems for adjacent landowners. The Corps has a responsibility, as a good land management steward, to make every reasonable effort to promote forest health.

Access: Roads accessing the general project area are already present. Temporary access easements across multiple ownerships (three – four separate ownerships) will be sought for this project. One adjacent landowner is Potlatch. Potlatch has an established temporary access easement process that the Corps will utilize. New road construction planned is less than 1 mile in length. Approximately 1 ½ miles of road will have to be reconstructed along with an additional 11 miles of general road maintenance of the existing roads to bring them up to present BMP standards.

EC Requirements: The project plan fits within the Corps current Walla Walla District programmatic BA guidelines (see Dworshak Natural Resources Land Management Program Activities PM-EC-2010-0065 dated 15 November 2011 and USFWS Concurrence Letter dated 7 December 2011). Section 106 compliance is currently being planned for FY 2016. This project is included in the vegetation management EA that is anticipated to be completed in mid 2015.

Operational Guidelines: The project will be accomplished primarily through cable yarding. This project could be ready for advertisement by the end of 2016 with a 2 year period of performance.

8. Swamp Creek – FY 2018

Area Description: Swamp Creek on the north side of Dworshak Reservoir across from minicamp 26.0 (see **Map #A07**). The project has a total possible harvest area of 630 acres.

Purpose & Need: The project will improve forest health due to various root rots effecting the Douglas-fir and grand fir. Reduced forest health makes the area more susceptible to insect outbreaks that are presently occurring in adjacent areas. Forest health conditions will further decline until this project can be completed. The Corps has a responsibility, as a good land management steward, to make every reasonable effort to promote forest health.

Access: Roads accessing the general project area are already present. Temporary access easements across IDL and Potlatch lands will be sought for this project. Each of these entities has an established temporary access easement process that the Corps will follow. New road construction could be up to 4 miles in length. Approximately 4 miles of road will have to be reconstructed along with up to 29 ½ miles of general road maintenance of the existing roads on adjacent ownership to bring them up to present BMP standards.

EC Requirements: The project plan fits within the Corps current Walla Walla District programmatic BA guidelines (see Dworshak Natural Resources Land Management Program Activities PM-EC-2010-0065 dated 15 November 2011 and USFWS Concurrence Letter dated 7 December 2011). Section 106 compliance is currently being planned for FY 2017. This project is included in the vegetation management EA that is anticipated to be completed in 2015.

Operational Guidelines: This project will be accomplished through both cable and tractor yarding. This project could be ready for advertisement by the end of FY 2017 or early FY 2018 and would have a 4 year period of performance due to the overall scope of the project.

9. Upper Elk Creek Salvage – FY 2018

Area Description: Extreme upstream end of Corps ownership on Elk Creek (see **map #A08**). The project has a total possible harvest area of 278 acres.

Purpose & Need: The project will improve forest health due to a high occurrence of a Douglas-fir beetle affecting the mixed conifer forest. The majority of effected trees are Douglas-fir and grand fir. Forest health conditions will further degrade until the project can be completed. The Corps has a responsibility, as a good land management steward, to make every reasonable effort to promote forest health.

Access: Roads accessing the general project area are already present. Temporary access easements across IDL and Potlatch will be sought for this project. Both entities have established formal temporary access easement processes that the Corps will utilize. New road construction could be up to 2 ⅓ miles in length along with up to 5 miles of general road maintenance of the existing roads on adjacent ownership to bring them up to present BMP standards.

EC Requirements: The project plan fits within the Corps current Walla Walla District programmatic BA guidelines (see Dworshak Natural Resources Land Management Program Activities PM-EC-2010-0065 dated 15 November 2011 and USFWS Concurrence Letter dated 7 December 2011). Section 106 compliance is currently being planned for FY2017. This project is included in the vegetation management EA that is anticipated to be completed in 2015.

Operational Guidelines: The project will have a combination of line machine and tractor yarding based on the topography of the area. However, the majority of the volume will be cable yarded. This project could be ready for advertisement by the end of 2016 or early 2017 and would have a 3 year period of performance.

IV. Ecosystem Restoration Projects

1. Ahsahka – FY 2016

Area Description: The proposed Ahsahka Stewardship project is located near Dworshak Dam between river miles 0 and 4 on selected Corps-administered forestlands situated in Sections 23, 25, 26, 27, 34, 35, and 36 of Township 37 North, Range 01 East and in Sections 2 and 3 of Township 36 North Range 01 East in Clearwater County, Idaho.

Purpose and Need: The project will restore the vegetative composition, form, and structure to a desired condition more consistent with historic, natural ecosystem processes (wildfire) within the Ahsahka area. The total project is approximately 1,738 acres of forestland. The Corps plans to selective harvest trees on approximately 1,227 acres and complete prescribed burning on approximately 937 acres.

EC Requirements: National Environmental Policy Act, NEPA, (see Ahsahka Stewardship Project Environmental Assessment, 6 March 2013), ESA (see Ahsahka Stewardship Project Biological Assessment, 2 September 2010 & Ahsahka Stewardship Project Biological Opinion, 16 December 2010), and Section 106 Reviews (see Ahsahka Stewardship Project Cultural Resources Survey report 10 September 2010; Tribal Historical Preservation Office, THPO, Concurrence letter, 10 February 2011; and State Historic Preservation Office, SHPO, Concurrence, 20 January 2011) are complete.

Operational Guidelines: The project will have a total of 36 harvest units consisting of a combination of tractor (13 harvest units), line machine (cable) yarding (18 harvest units), and helicopter yarding (1 harvest unit) based on the topography of the area. The majority of the harvested volume will be cable yarded. This project is in the final stages of the field work. This project is planned to be ready for advertisement by the end of FY 2015 or early FY 2016 and would have a three to four year period of performance. Successful completion of this project will require the acquisition of 10 temporary access easements across various private landowners. The easement acquisition process is underway and is expected to be completed in summer 2015.

The Bureau of Land Management (BLM), Cottonwood Field Office, is tasked (through Memorandum of Agreement #00000102-0000-000, 07 March 2014) with completing this project. Activities are being coordinated through the Walla Walla District Real Estate section for disposal of timber products.

2. Big Eddy North Restoration – FY 2018/2019:

Area Description: The project area begins at Big Eddy Marina and runs up the north side of Dworshak Reservoir to the mouth of Freeman Creek (see **Map #B01**). The project has a total possible harvest area of 922 acres.

Purpose & Need: To restore the forest composition, form and structure to a desired condition consistent with ponderosa pine ecosystems. Throughout the project area, stands of trees currently infested with Douglas-fir beetles will be treated. The far northern end of the project area has a few small patches of ponderosa pine that are infested with western pine beetle. Areas showing signs of insect infestation will be targeted for harvest in an effort to contain and control these forest pests. Most infestations occur in mixed conifer overstories, so, non-host tree species will be identified for retention when working in these areas. The desired condition is essentially the expected condition developed as a product of the site attributes (elevation, slope, aspect, soils & current vegetation) and the knowledge and understanding of the historic ecological disturbance regime for the site. Project lands lake-wide were assessed in 2012, (current condition vs. desired conditions), for both opportunity and need for ecological restoration treatment. This area met criteria for action and appears feasible within site constraints.

Access: Few roads currently exist within the project boundary. As a result nearly the entire project will be either cable yarded or helicopter yarded with landings on Corps property. New road construction up to 5 miles is being proposed. Approximately 11 miles of road will have to be reconstructed along with an additional 2 miles of general road maintenance of the existing roads to bring them up to present BMP standards. This project will require cooperation and coordination with adjacent landowners. Most adjacent land owners have contacted the Corps and expressed their interest in working with the agency. Easements will be required to utilize lands and roads off Corps property.

EC Requirements: The project plan fits within the Corps current Walla Walla District programmatic BA guidelines (see Dworshak Natural Resources Land Management Program Activities PM-EC-2010-0065 dated 15 November 2011 and USFWS Concurrence Letter dated 7 December 2011). Section 106 compliance is currently being planned for FY2017. This project is included in the vegetation management EA that is anticipated to be completed in 2015.

Operational Guidelines: The project will have a combination of cable and tractor yarding to be determined by the topography of the area. However, the majority of the volume will be cable yarded. This project could be ready for advertisement by the end of FY 2017 or early FY 2018 and would have a 4 year period of performance due to the overall scope of the project.

V. Elk Habitat Enhancement Projects:

Elk habitat studies have recommended optimum elk habitat consist of 60% openings and 40% cover. The original goals and objectives set for the Dworshak Elk Mitigation Area, (1978), focused on establishing this ratio. Of the 5,000 acre area established, 3000 acres were clear-cut and burned in the 1970s and early 80's. Over the past 40+ years many of the openings created have moved successionally away from openings and have returned to forest cover.

To further enhance winter habitat for elk, all timber harvest implemented to increase openings will be followed by prescribed burning. The most nutritious and palatable elk winter forage regionally is redstem ceanothus (*Ceanothus sanguineus*)(redstem). This is a moderately sized woody shrub, which is greatly utilized by elk all year long, but extremely important as winter forage when forbs and grasses are no longer available. Redstem is a fire adapted species that requires heat to crack the seed coat for germination and establishment. Fire is an essential component when enhancing winter habitat for elk.

Using satellite imagery, the Corps has created a vegetation layer and overlaid elk habitat units (EHUs) based on sub-watersheds. The resulting data allowed Dworshak staff to estimate the percent of openings and cover in all EHUs (Table 1). All EHU's within the established mitigation area were drastically below the recommended 60% openings and suggest timber harvest to improve elk habitat.

Table 2 "Winter Forage Assessment," provides a summary of major EHU's around Dworshak and the highlighted sections are specifically linked to the Elk Mitigation area.

Table 2. Winter Forage Assessment.

EHU NAME	EHU ACRES	CLASS	%
Cranberry Creek	16281	Cover	66.4%
Cranberry Creek	16281	Openings	33.6%
Hodson Creek	9921	Cover	79.7%
Hodson Creek	9921	Openings	20.2%
Magnus Bay	14035	Cover	79.8%
Magnus Bay	14035	Openings	20.2%
Swamp Creek	14287	Cover	45.6%
Swamp Creek	14287	Openings	54.4%
Silver Creek	20850	Cover	63.8%
Silver Creek	20850	Openings	36.2%
Weitas Creek	10833	Cover	48.0%
Weitas Creek	10833	Openings	52.0%
Elkberry Creek	11984	Cover	69.6%
Elkberry Creek	11984	Openings	30.4%
Gold Creek	15741	Cover	60.6%
Gold Creek	15741	Openings	39.4%
Benton Creek	19207	Cover	79.9%
Benton Creek	19207	Openings	**20.1%**
Breakfast Creek	23470	Cover	59.0%
Breakfast Creek	23470	Openings	41.0%
Butte Creek	12978	Cover	88.2%
Butte Creek	12978	Openings	10.8%
Cedar Creek	19894	Cover	44.1%
Cedar Creek	19894	Openings	53.5%
Smith Ridge	23589	Cover	65.7%
Smith Ridge	23589	Openings	30.5%
* Mitigation Area EHU's			

1. Benton Creek – FY 2019

Area Description: The Grandad Elk Mitigation area in the upper reservoir area (see **Map #C01**). The project has a total possible harvest area of 212 acres.

Purpose and Need: Based on habitat analysis the Benton Creek EHU had the lowest percent of openings at 20%, well short of the 60% recommended. This project is for the purpose of improving habitat and forage for the North Fork Elk Herd. Increased openings on south facing slopes within this EHU will increase available elk winter forage and improve habitat. Harvest will be followed by prescribed burning to promote winter forage for elk. This project will also benefit overall forest health due to the occurrence of various root rots effecting the Douglas-fir and grand fir in the area as well as the increasing prevalence of bark beetles.

Access: Roads accessing the general project area are already present. Temporary access easements will be sought across Potlatch property. New road construction planned could be up to 1000' in length, entirely on Corps ownership, and within the project area. Approximately 3000' of road will have to be reconstructed along with an additional 27 miles of general road maintenance of the existing roads on adjacent ownership to bring them up to present BMP standards.

EC Requirements: The project plan fits within the current programmatic BA guidelines. Section 106 compliance is currently being planned for FY 2017. This project is included in the vegetation management EA that is anticipated to be completed in 2015.

Operational Guidelines: The project is planned to be accomplished entirely through cable yarding. This project could be ready for advertisement by early FY 2019 and would have a 4 year period of performance due to the overall scope of the project.

2. Hughes Point – FY 2020

Area Description: Smith Ridge within the Grandad Elk Mitigation area in the upper reservoir area and is across the reservoir from Grandad Camp Ground (see **Map #C02**). The project has a total possible harvest area of 560 acres.

Purpose & Need: Based on habitat analysis the Smith Ridge EHU consisted of 30% openings, short of the 60% recommended for elk habitat. This project is proposed for the purpose of improving habitat and forage for the North Fork Elk Herd. Increased openings on south facing slopes within this EHU will increase available elk winter forage and improve habitat. Harvest will be followed by prescribed burning to promote winter forage for elk. This project will also benefit overall forest health due to the occurrence of various root rots effecting the Douglas-fir and grand fir in the area as well as the increasing prevalence of bark beetles.

Access: Roads accessing the general project area are already present. Temporary access easements will be sought across IDL property. New road construction planned could be up to 1 mile in length, entirely on Corps ownership, and within the project area. Approximately 6 miles of road will have to be reconstructed along with up to 3 miles of general road maintenance of the existing roads on adjacent ownership to bring them up to present BMP standards.

EC Requirements: The project plan fits within the current programmatic BA guidelines. Section 106 compliance is currently being planned for FY 2018. This project is included in the vegetation management EA that is anticipated to be completed in 2015.

Operational Guidelines: The project will accomplished by a combination of tractor and cable yarding. However, the majority of the project will require cable yarding. This project could be ready for advertisement by early 2019 and would have a 4 year period of performance due to the overall scope of the project.

VI. Vegetation Planting/Seeding and Plant Protections

1. Vegetation Planting/Seeding Projects

Purpose and Need: Openings within the Grandad Mitigation Area are continuously being evaluated by the Dworshak Wildlife Biologist for winter forage value. Many existing openings are not producing adequate forage due primarily to herbivory and harsh winter conditions. Planting winter elk forage has been and will continue to be utilized to improve elk winter habitat within the mitigation area. Species typically planted include redstem ceanothus, serviceberry, rocky mountain maple, willow and wild cherry. Plants are typically purchased as seedlings in 2" diameter plugs.

Given the lack of palatable winter forage in many of the elk mitigation units and the cost of planting, aerial seeding is being considered. In collaboration with the Idaho Department of Fish and Game (IDFG) aerial seeding of redstem is planned for testing in the fall of 2015 and the fall of 2016. Both agencies will work together to monitor the effectiveness of aerial seeding within openings of the elk mitigation area. If proven to be successful subsequent aerial seeding will occur in other areas.

Access: Existing roads will be utilized to access each specific vegetation planting/seeding project. Helicopters will be utilized for seeding actions. Maps #D01, D02, D03, D04, and D05 show the specific locations of the proposed treatment units for each project.

EC Requirements: Specific treatment units have been identified by the Dworshak Wildlife Biologist for each vegetation planting and/or seeding project. The specific project plans fit within the current programmatic BA guidelines. Project specific Section 106 compliance is being planned for FY 2015-FY 2019, based on the anticipated project starting date. The vegetation planting/seeding projects are included in the vegetation management EA that is anticipated to be completed in 2015.

Operational Guidelines: The planting projects will accomplished with a variety of hand tools. The seeding projects will be accomplished from helicopters.

A. Benton Creek Q – FY 2016

Habitat evaluations conducted in 2013 by the Dworshak Wildlife Biologist documented the need for additional winter forage within the Benton Creek Q Unit (see **Map #D01**). This unit was planted as a control unit in 2012 to determine the need for animal repellant. The unit was subsequently exposed to intensive elk herbivory resulting in the removal of most of the newly planted redstem. Seedlings supplied for planting starting in 2015 are being grown in soil containing a systemic animal repellent (Repellex). Up to 2500 plants will be planted starting in 2015 within the unit. Most plants will be redstem as they are scarce throughout these units due to intense elk herbivory.

B. Robinson Creek – FY 2016

Habitat evaluations conducted in 2014 by the Dworshak Wildlife Biologist documented the need for additional winter forage within several Robinson Creek Units (see **Map #D02**). A total of 5000 plants will be planted within the identified units starting in 2016. Most plants will be redstem as they are scarce throughout these units due to intense elk herbivory.

C. Long Creek – FY 2017

Habitat evaluations to be conducted in 2015 by the Dworshak Wildlife Biologist will determine the need for additional winter forage within the Long Creek Sub-unit (see **Map #D03**). A total of 5000 plants will be planted within the identified units starting in 2017. Most plants will be redstem as they are scarce throughout these units due to intense elk herbivory.

D. Hughes Point – FY 2017/2018

Habitat evaluations are planned for FY 2016 by the Dworshak Wildlife Biologist to determine the need for more elk forage in several units within the Hughes Point Area (see **Map #D04**). Due to access difficulty for planting, the Hughes Point area has been chosen for aerial seeding. Plant survey methods to monitor the effectiveness of the seeding have been established by the Dworshak Wildlife Biologist and the IDFG Botanist. Pre-treatment surveys will take place in 2015 and 2016 with the seeding in identified units conducted by helicopter in late fall/early winter of 2016 (FY 2017). Seeding units have been identified, and the amount of area to be seeded will depend on the seed availability.

Planting redstem seedlings is also being proposed within the Hughes Point Area, dependent on the success of seeding efforts. The planting of up to 5000 redstem in identified units in the Hughes Point area in 2018 (see Map #D04) is anticipated.

E. Boehls – FY 2017/2018

Habitat evaluations are planned for FY 2017 by the Dworshak Wildlife Biologist to determine the need for more elk forage in several identified units within the Boehls Area (see **Map #D05**). Boehls has been selected for seeding due to access difficulty for planting. Pre-treatment surveys will take place in the summer of 2016 with the seeding to be conducted by helicopter in late fall/early winter of 2016 (FY 2017). Seeding units have been identified, and the amount of area to be seeded will depend on seed availability.

Planting redstem seedlings is also being proposed in the Boehls Area, dependent on the success of seeding efforts. The planting of up to 5000 redstem in identified units in the Boehls area in 2018 (see Map #D05) is anticipated.

2. Plant Protection Projects

Purpose and Need: Openings within the Grandad Mitigation Area are evaluated for their winter forage value by the Dworshak Wildlife Biologist. Many existing openings are not producing adequate forage due primarily to herbivory and harsh winter conditions. Herbivory is the greatest cause for the decrease in available winter forage for elk. Often plants, notably redstem ceanothus, are not afforded the time to get established as elk, deer, lagomorphs and rodents all forage on the most nutritious available plant. This herbivory drastically decreases the abundance and quality of winter forage for elk. Structures have been used with great success to protect forage plants from herbivory for a set amount of time to allow them to get established and produce seed. Both 3.2' diameter wire baskets and large elk fencing are currently being used to protect either individual plants or large areas to increase forage biomass.

Access: Existing roads will be utilized to access each specific plant protection project. Equipment will be delivered via truck or off road vehicles. Maps #D01, D02, D03, and D04 show the specific locations of the proposed treatment units for each project.

EC Requirements: Specific treatment units have been identified for each plant protection project. The specific project plans fit within the current programmatic BA guidelines. Project specific Section 106 compliance is being planned for FY 2015-FY 2019, based on the anticipated project starting date. The plant protection projects are included in the vegetation management EA that is anticipated to be completed in 2015.

Operational Guidelines: The plant protection projects will accomplished primarily with a variety of hand tools, including motorized equipment such as post hole diggers. Limited heavy equipment will be used for the installation of the exclosures.

A. Benton Creek Q – FY 2016

Habitat evaluations conducted in 2013 by the Dworshak Wildlife Biologist have documented the need for plant protection structures in the Benton Creek Q Unit (see **Map #D01**) as intensive elk herbivory was documented after 2012 plantings. Up to 50 wire baskets are planned to be installed around redstem in 2015/2016. The locations will be within the unit identified in Map #D01.

B. Robinson Creek – FY 2016

Habitat evaluations conducted in 2014 by the Dworshak Wildlife Biologist have documented the need for plant protection structures in the Robinson Creek area (see **Map #D02**). Three elk fencing exclosures and up to 100 wire baskets are planned for the Robinson Creek area in 2015-2017. The locations of the elk exclosures and the units to install plant baskets have been identified.

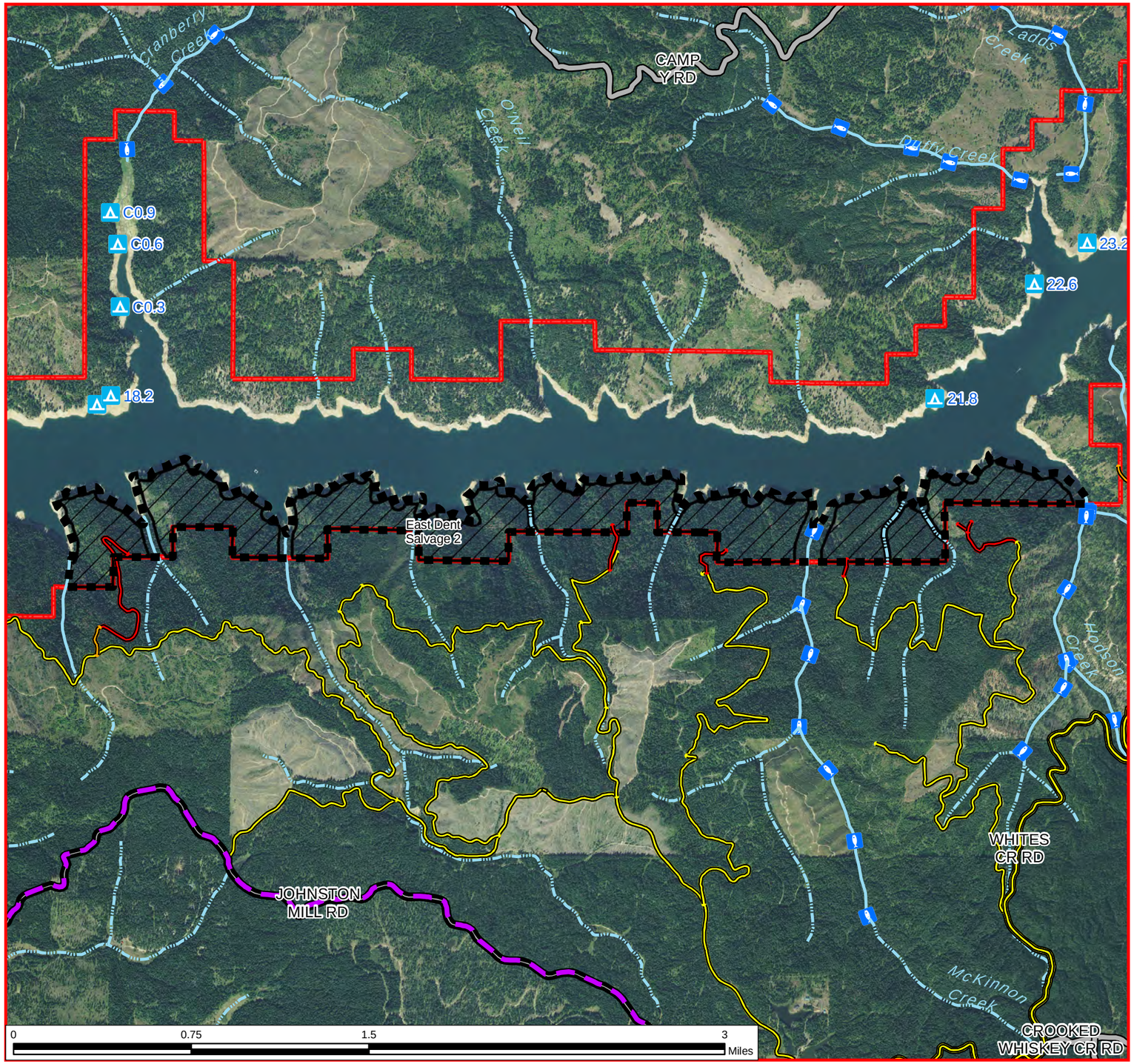
C. Long Creek – FY 2017/2018

Habitat evaluations will be conducted in 2015 by the Dworshak Wildlife Biologist to identify sites for plant protection structures in the Long Creek area (see **Map #D03**). One large elk fencing exclosure was

installed in 2014 and another one is planned for 2017. Up to 50 wire baskets are planned for the Long Creek area in 2017/2018 within the identified units.

D. Hughes Point – FY 2019

Habitat evaluations are planned in 2016/2017 by the Dworshak Wildlife Biologist to identify sites for plant protection structures within this area (see **Map #D04**). Up to 100 wire baskets are planned for the Hughes Point area in 2019 within the identified units.



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

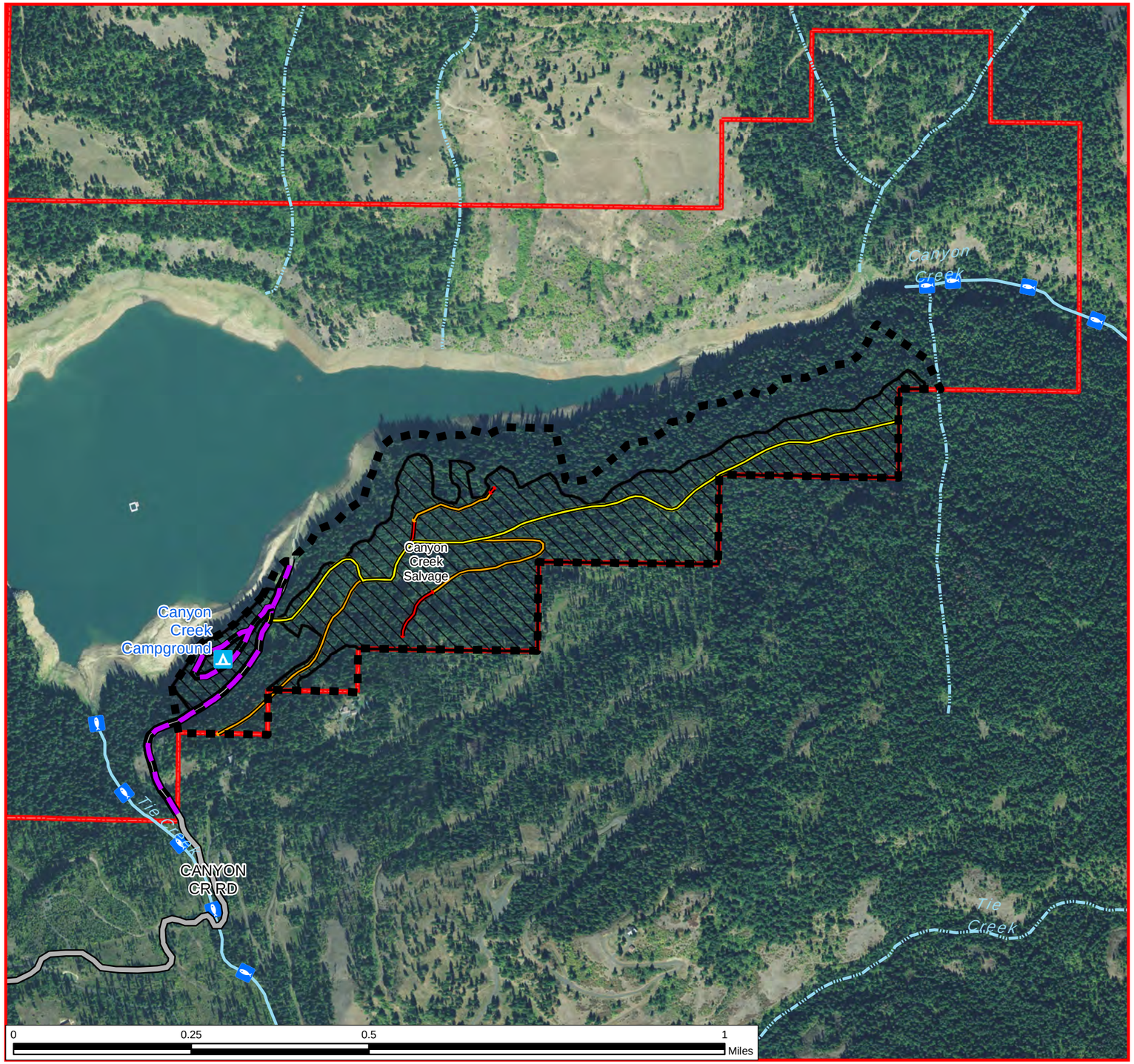
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

EAST DENT SALVAGE 2

FY 2016

MAP PAGE: A01



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

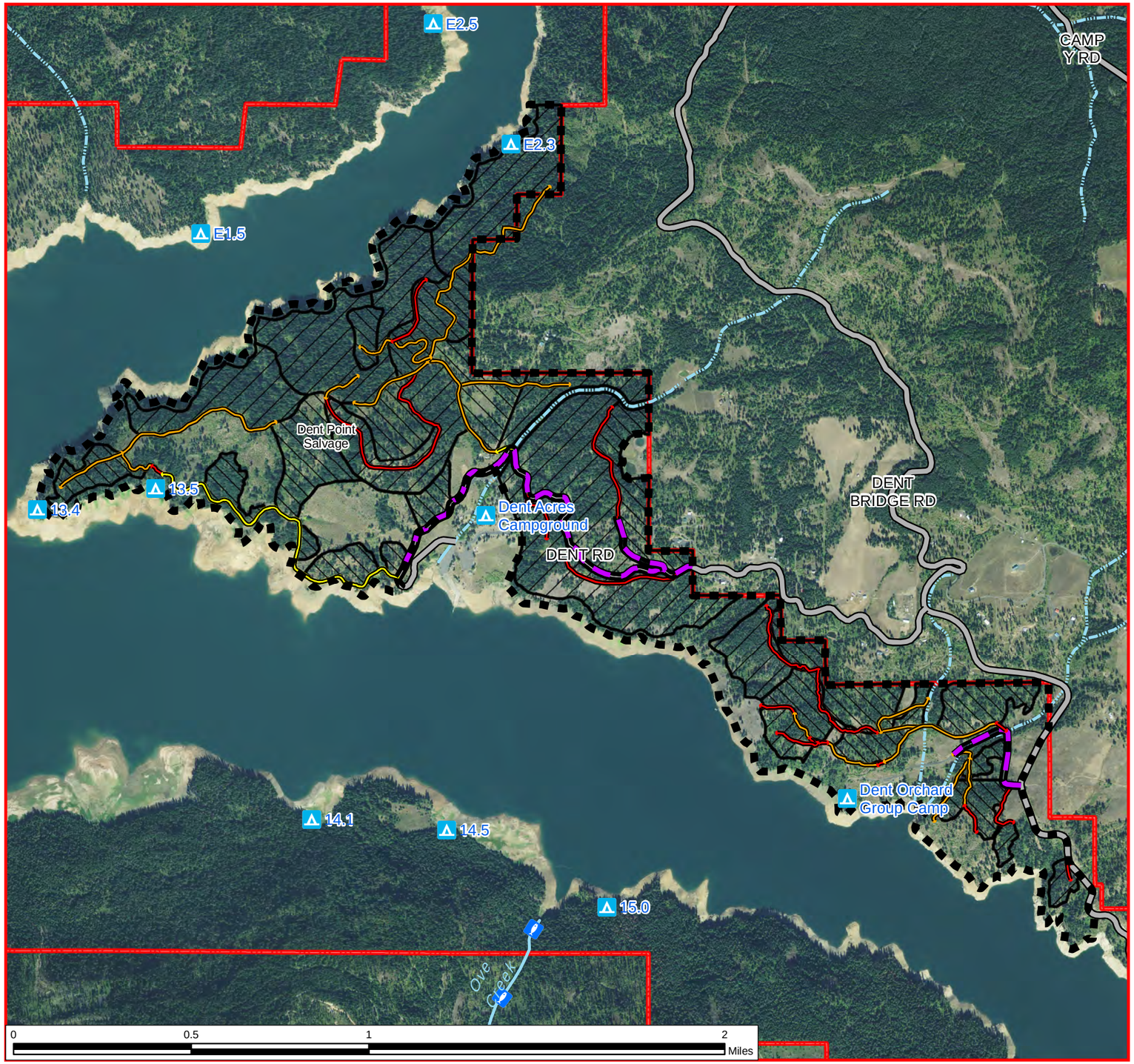
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

CANYON CREEK SALVAGE

FY 2015

MAP PAGE: A02



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers
Walla Walla District

Building Strong ®

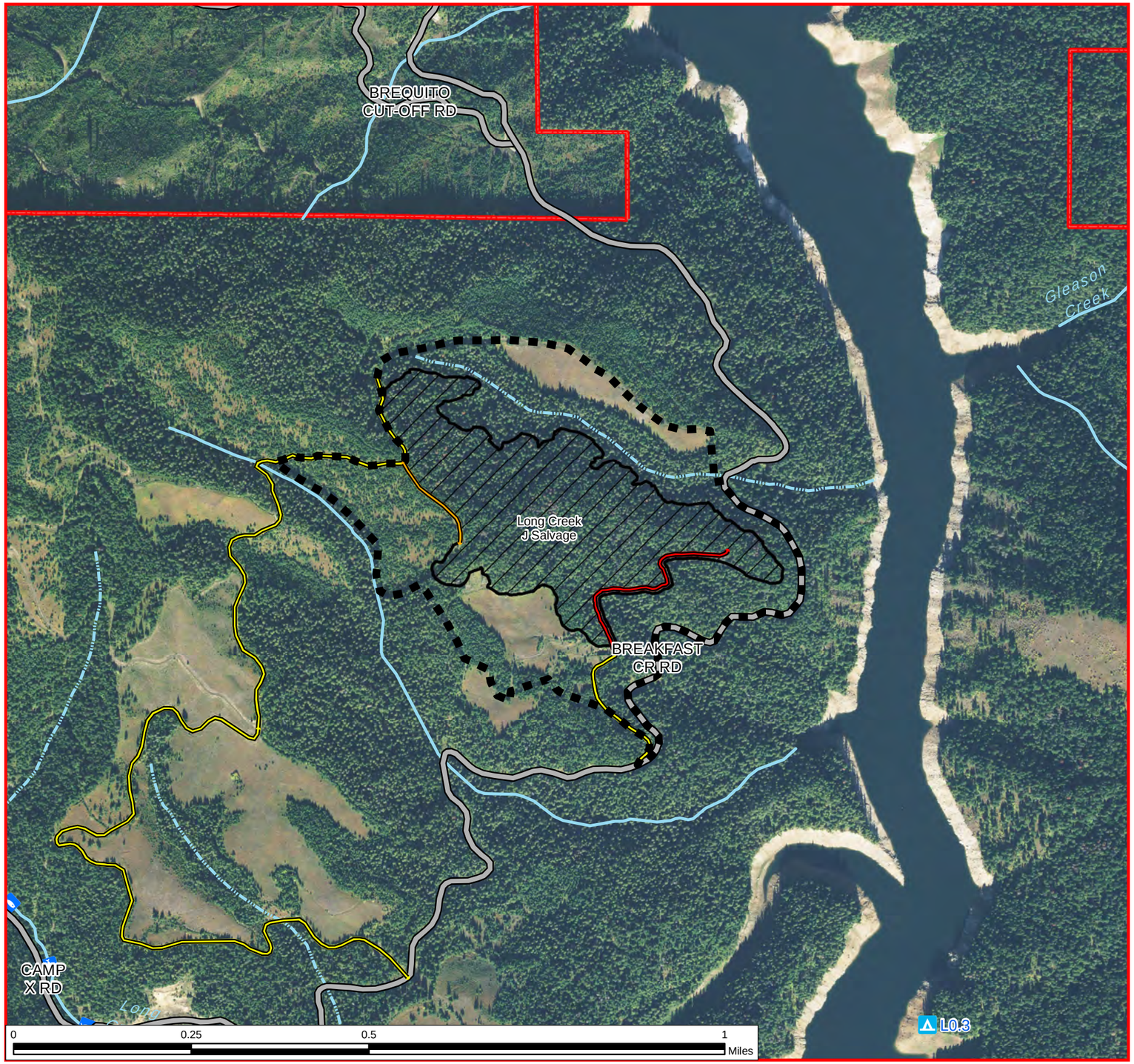
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

DENT POINT SALVAGE

FY 2016

MAP PAGE: A03



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

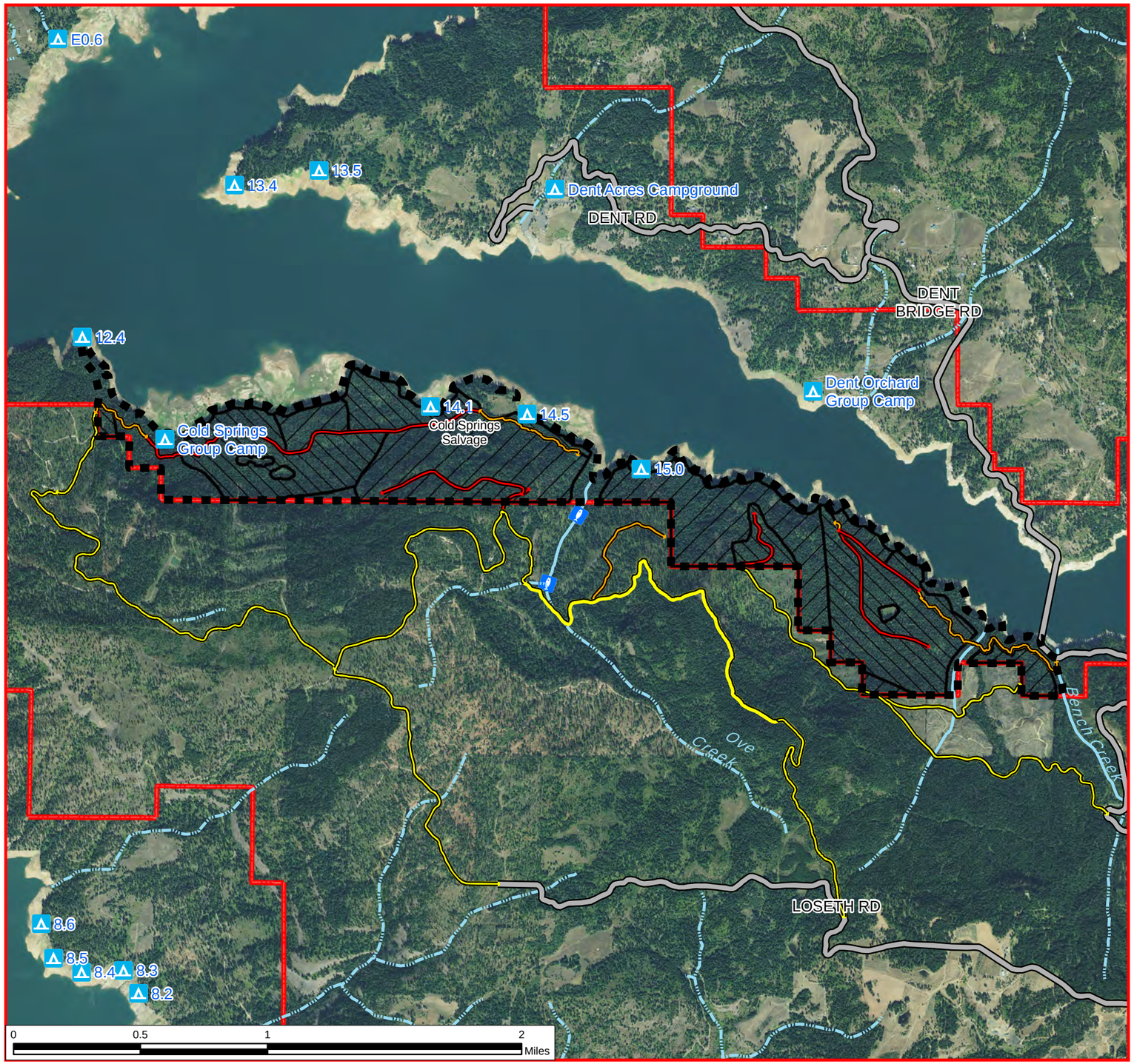
N
W E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

LONG CREEK J SALVAGE

FY 2016

MAP PAGE: A04



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

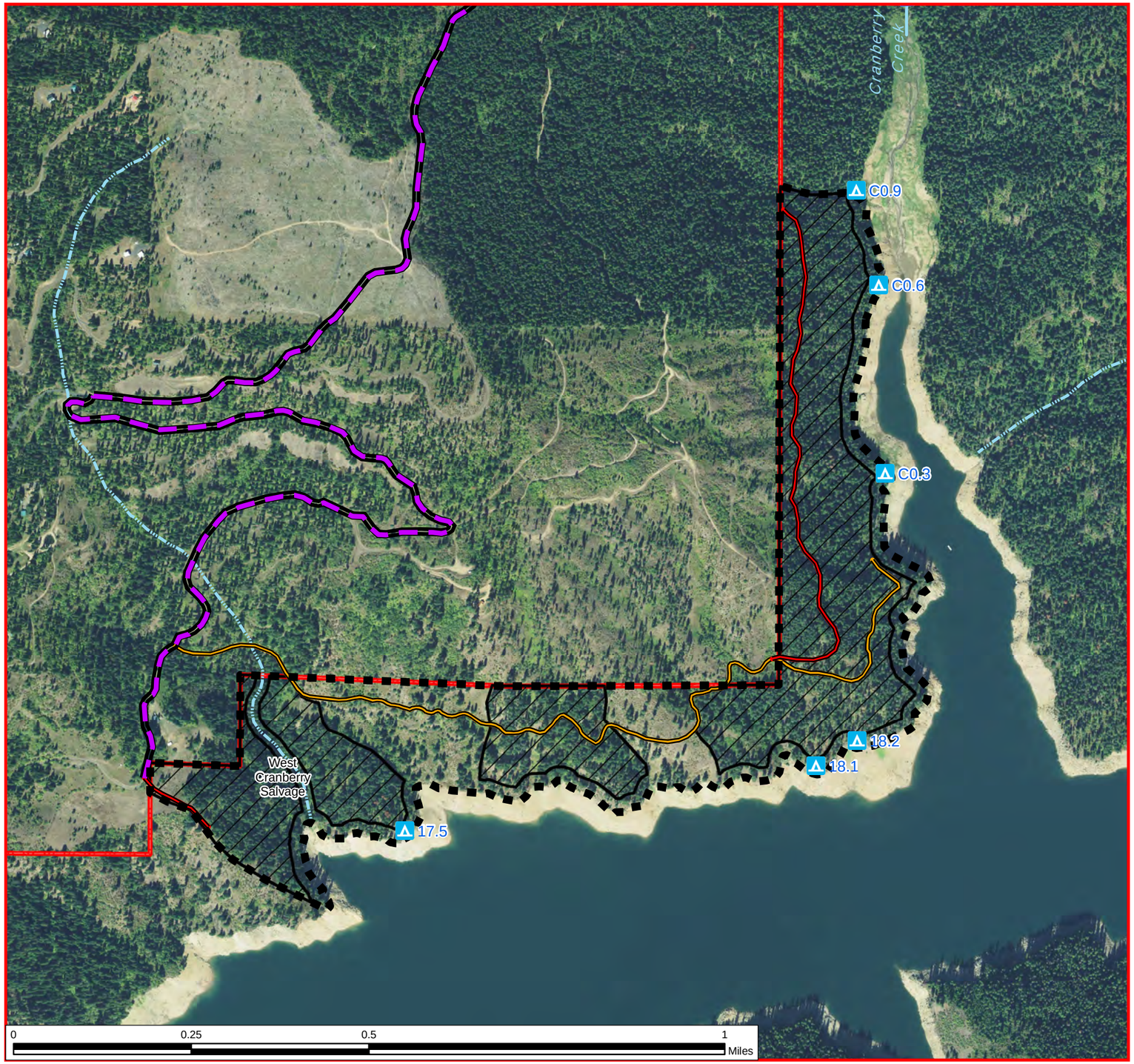
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

COLD SPRINGS SALVAGE

FY 2017

MAP PAGE: A05



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

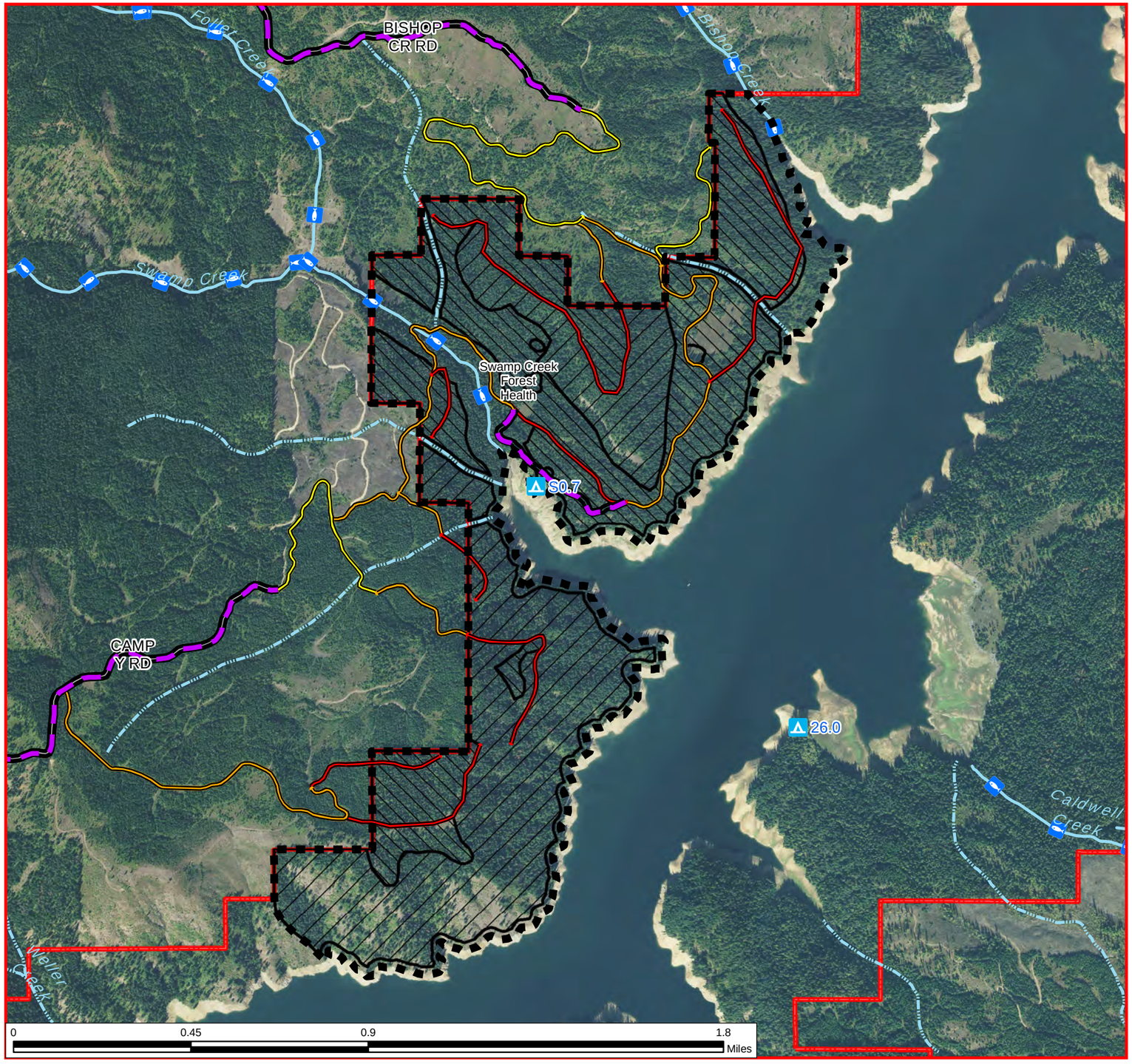
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

WEST CRANBERRY SALVAGE

FY 2017

MAP PAGE: A06



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers
Walla Walla District

Building Strong ®

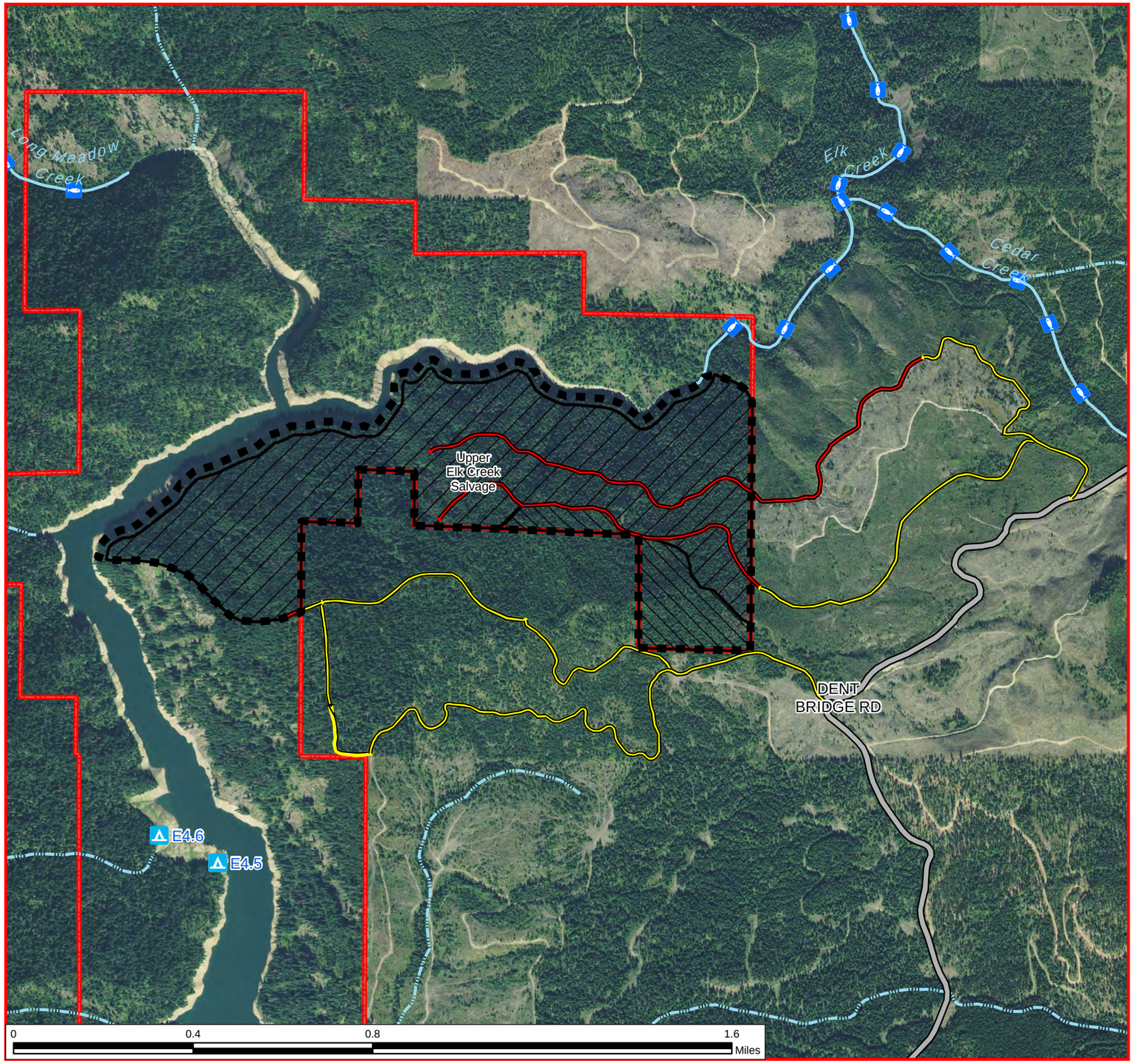
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

SWAMP CREEK FOREST HEALTH

FY 2018

MAP PAGE: A07



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

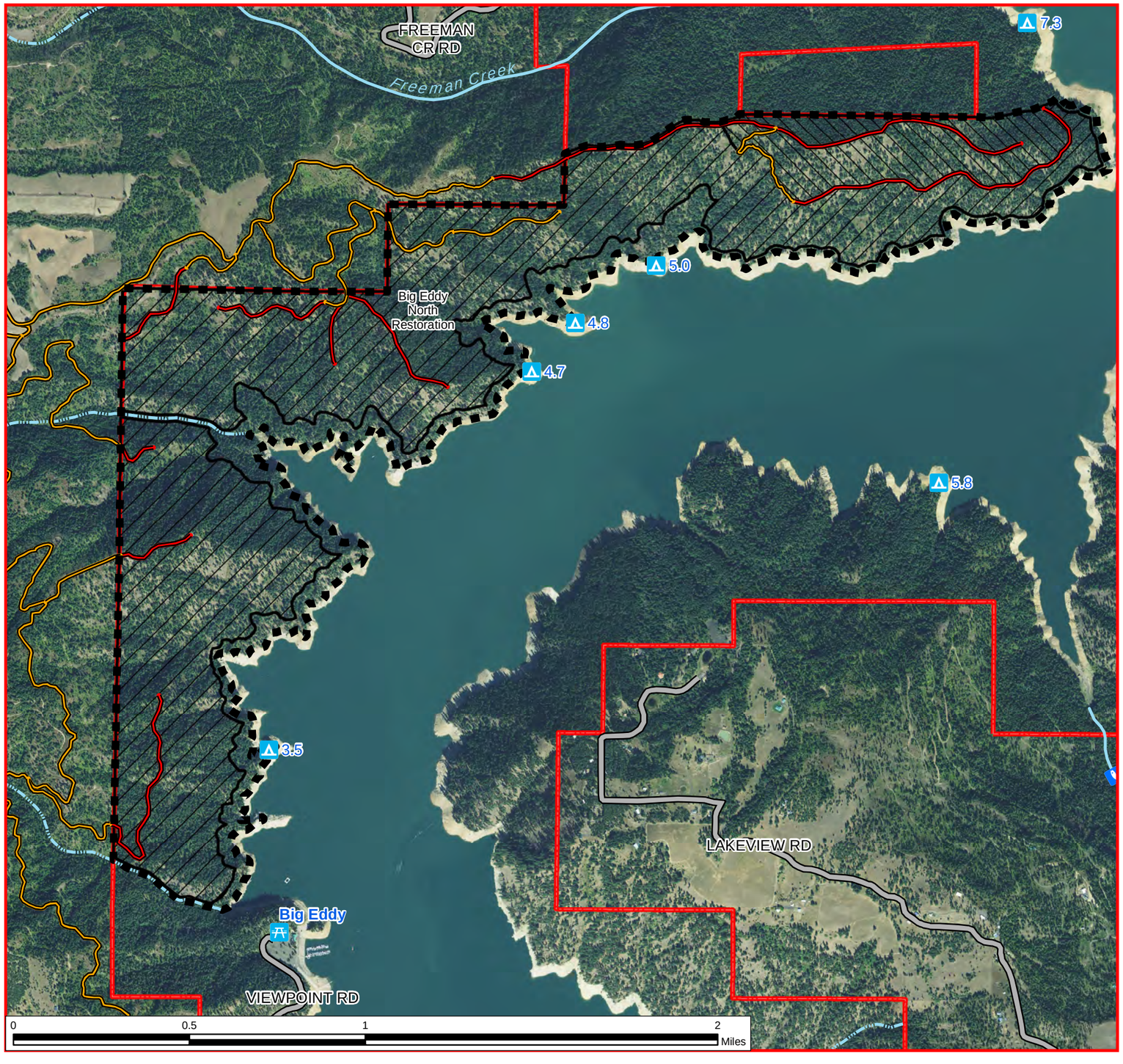
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

UPPER ELK CREEK SALVAGE

FY 2018

MAP PAGE: A08



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers
Walla Walla District

Building Strong ®

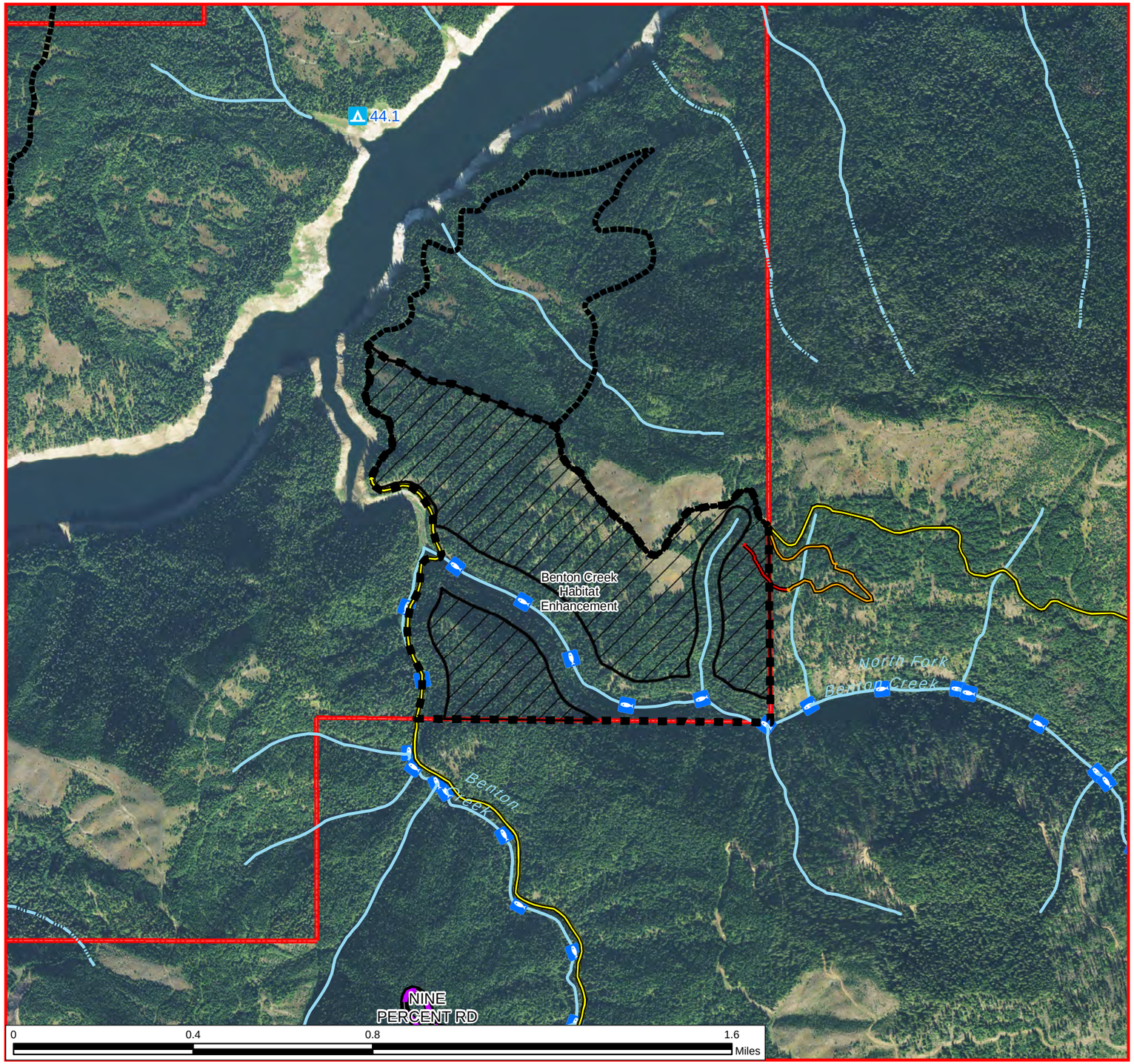
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

BIG EDDY NORTH RESTORATION

FY 2018

MAP PAGE: B01



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers
Walla Walla District

Building Strong ®

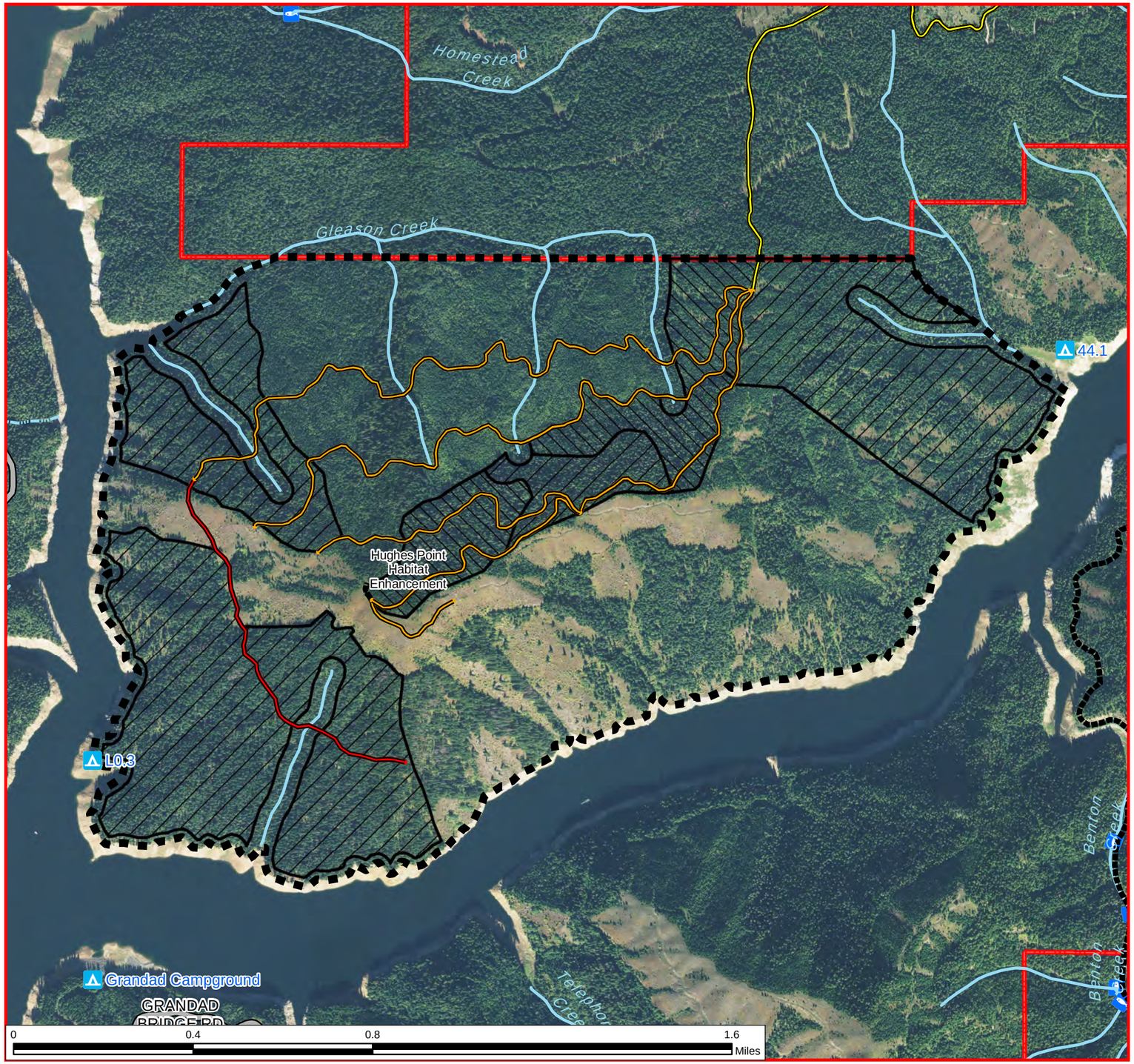
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

BENTON CREEK HABITAT ENHANCEMENT

FY 2019

MAP PAGE: C01



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

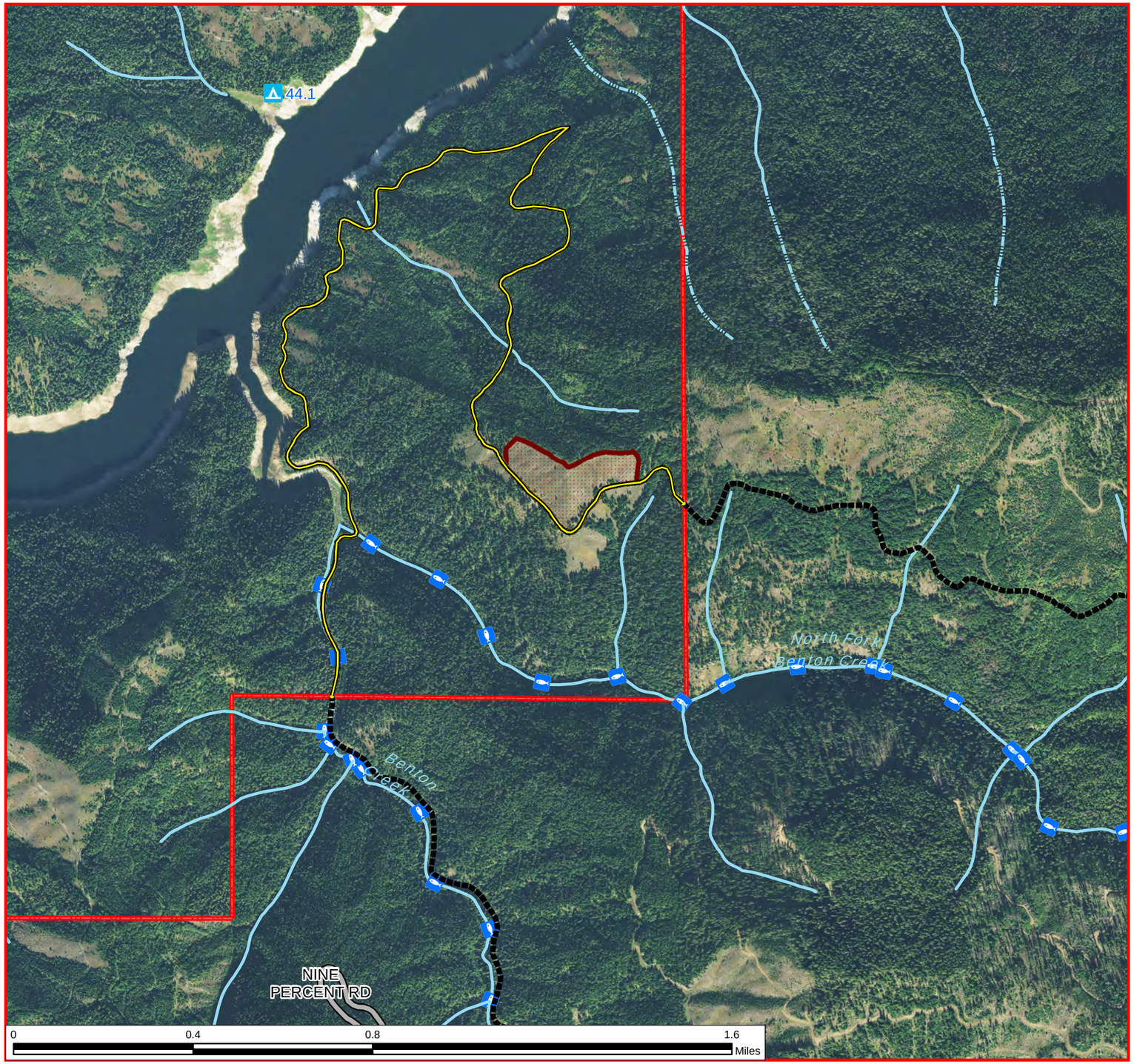
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

HUGHES POINT HABITAT ENHANCEMENT

FY 2020

MAP PAGE: C02



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

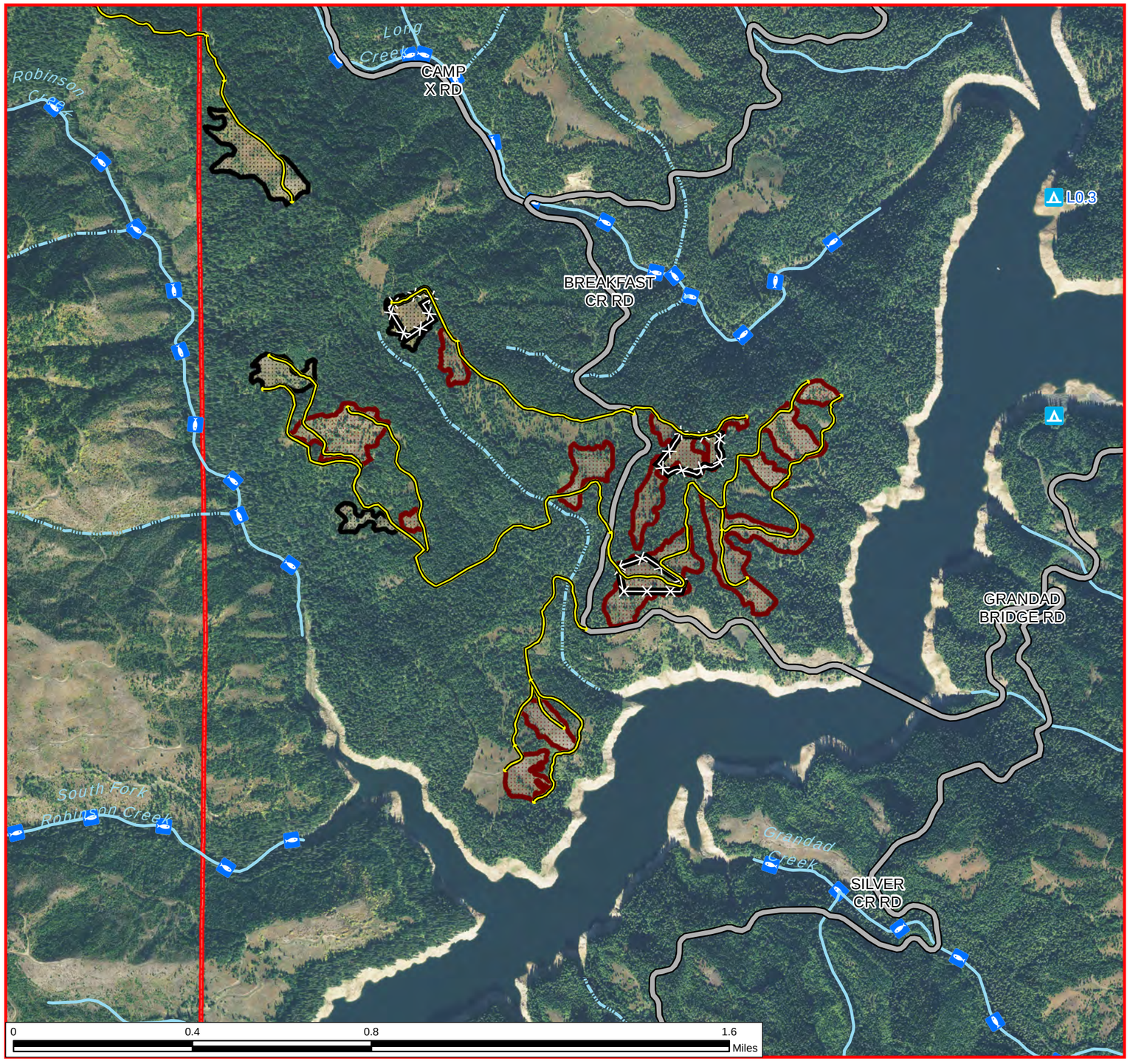
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

BENTON CR FORAGE ENHANCEMENT

FY 2015

MAP PAGE: D01



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers
Walla Walla District

Building Strong ®

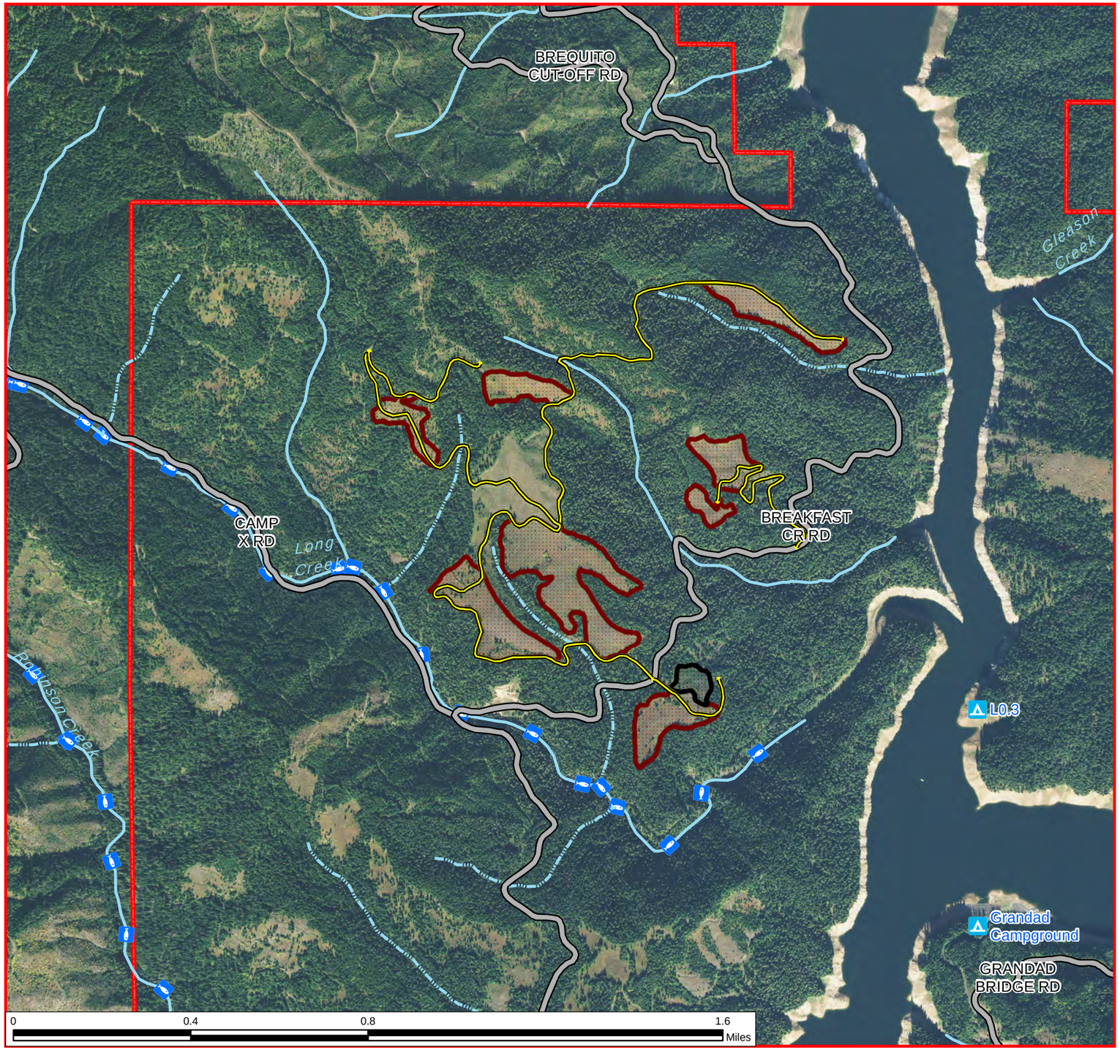
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

ROBINSON CR FORAGE ENHANCEMENT

FY 2016

MAP PAGE: D02



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

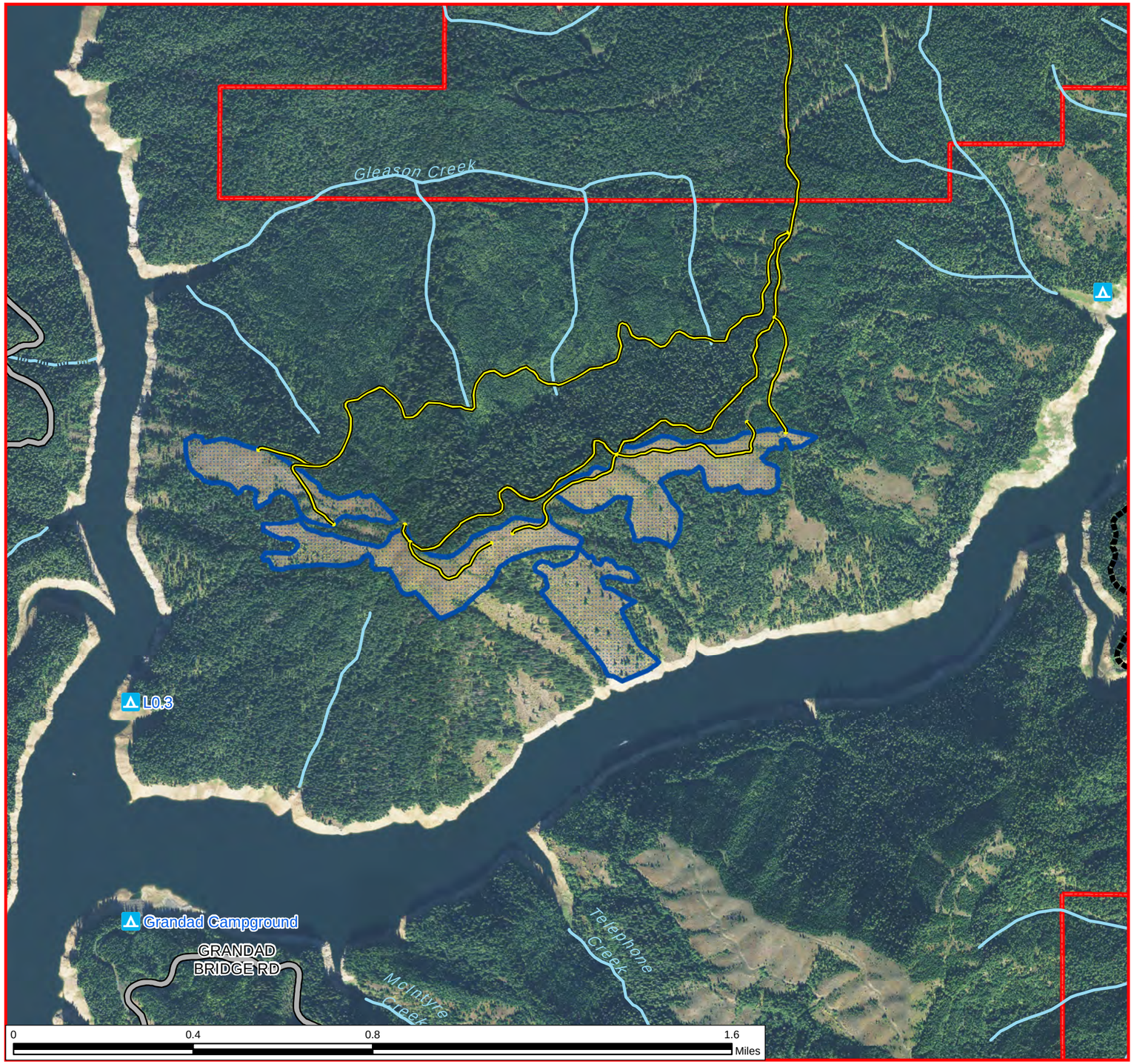
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

LONG CR FORAGE ENHANCEMENT

FY 2017

MAP PAGE: D03



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

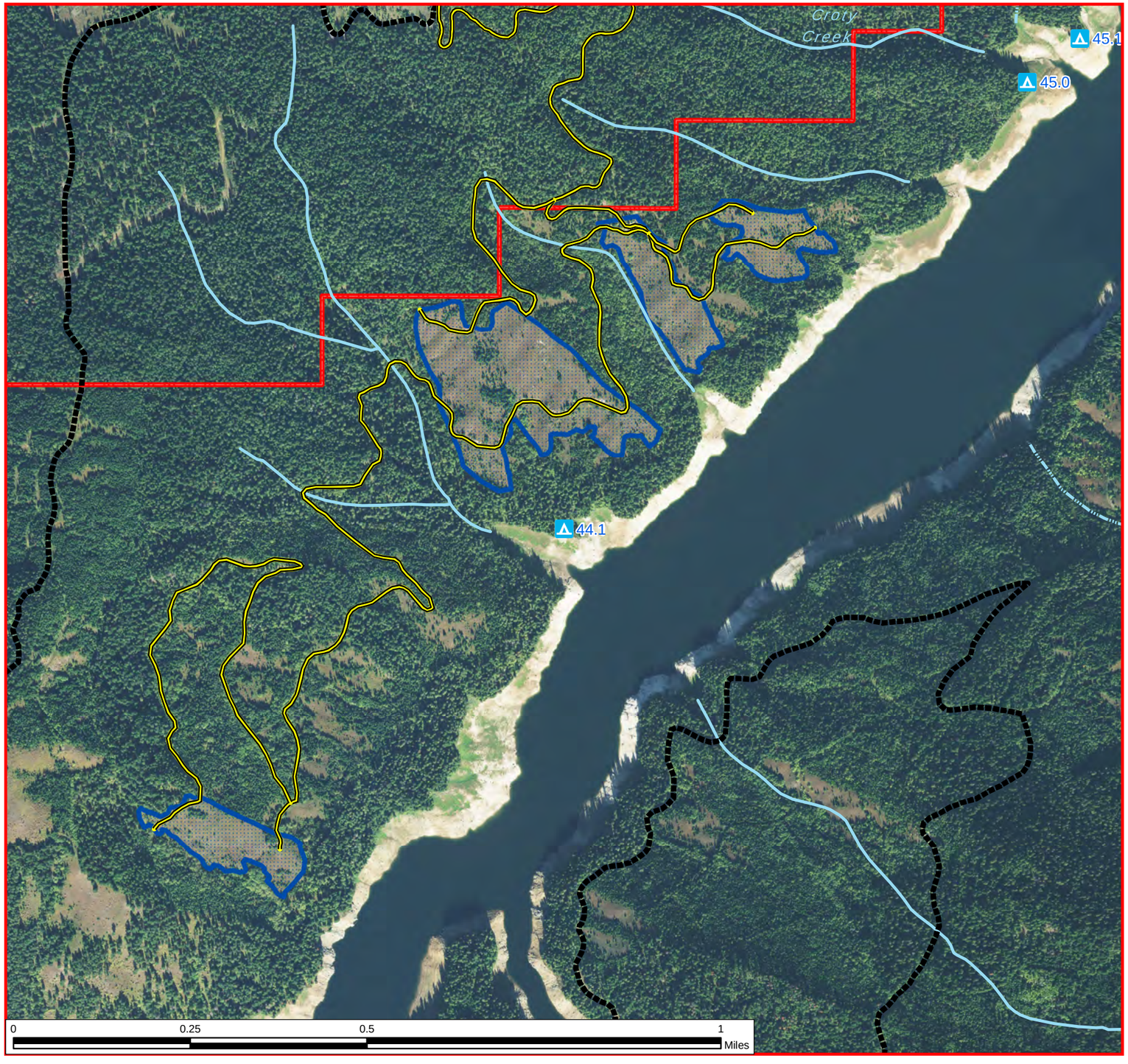
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

HUGHES POINT FORAGE ENHANCEMENT

FY 2018

MAP PAGE: D04



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT DIGITAL ORTHO PHOTO

BOEHLS FORAGE ENHANCEMENT

FY 2018

MAP PAGE: D05

APPENDIX B

ENDANGERED SPECIES ACT COMPLIANCE

DWORSHAK NATURAL RESOURCES LAND MANAGEMENT PROGRAM ACTIVITIES

DWORSHAK RESERVOIR

PM-EC-2010-0065

Biological Assessment

for

Threatened and Endangered Species,
Critical Habitat, and Essential Fish Habitat

Under the Jurisdiction of:

National Marine Fisheries Service
and
U.S. Fish and Wildlife Service

U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

Date
15 November 2011

If additional information regarding this document is required, please contact Jason Achziger, Fishery Biologist in the Environmental Compliance Section of the U.S. Army Corps of Engineers, Walla Walla District, at (509) 527-7262, or by email at jason.k.achziger@usace.army.mil. Other correspondence can be mailed to:

Jason Achziger
Fishery Biologist
Environmental Compliance Section
U.S. Army Corps of Engineers
Walla Walla District
201 North Third Ave.
Walla Walla, WA 99362

/s/ Jason Achziger

_____

Jason Achziger
Fishery Biologist/Preparer
U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

/s/ Michael Francis

_____

Michael Francis
Chief, Environmental Compliance Section
U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

TABLE OF CONTENTS

List of Figures

LIST OF TABLES

Glossary

ac/yr	Acres per Year
Activity	Land Management Activity (Access, Boundary, Fire, Forest, Road, Wildlife Habitat, and Recreation Management)
af	Acre-feet
AU	Assessment Unit
BMP	Best Management Practice
BO	Biological Opinion
CBTPA	Clearwater-Potlatch Timber Protection Association
CFR	Code of Federal Regulations
CHU	Critical Habitat Unit
CHSU	Critical Habitat Subunit
Corps	U.S. Army Corps of Engineers
CR	Clearwater River
CRB	Clearwater River Basin
DBH	Diameter at Breast Height
DM-15	Design Memorandum No. 15, *Plan for Development of Rocky Mountain Elk Habitat*
DPS	Distinct Population Segment
Dworshak	Corps-managed Lands at Dworshak Dam and Reservoir
EFH	Essential Fish Habitat
ESA	Endangered Species Act of 1973, as amended
ER	Engineering Regulation
ESU	Evolutionarily Significant Unit
FCA	Forest Cover Act of
ft	Feet
HUC	Hydrologic Unit Code
IDFG	Idaho Department of Fish and Game
IMM	Impact Minimization Measure
in	Inch(es)
IPIF	Idaho Partners in Flight
LC	Lower Clearwater
LNF	Lower North Fork
MPG	Major Population Group
mi	Miles
mi^2	Square Miles
MMBF	Million Board Feet of Timber
MSA	Magnuson-Stevens Fishery Conservation and Management Act
msl	Mean Sea Level
NFCR	North Fork Clearwater River
NMFS	National Marine Fishery Service
NRM	Natural Resource Management
OHWM	Ordinary High Water Mark
PCE	Primary Constituent Element
PFMC	Pacific Fishery Management Council

Program	Dworshak Natural Resources Land Management Program
PROU	Provisional Resource Use Objective
RFPA	Reciprocal Fire Protection Agreement
RHCA	Riparian Habitat Conservation Area
RM	River Mile
SR	Snake River
SRB	Snake River Basin
UCR	Upper Columbia River
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

1. Introduction

The U.S. Army Corps of Engineers (Corps) proposes to programmatically manage forest and wildlife resources within Corps-managed lands at Dworshak Dam and Reservoir (Dworshak), Clearwater County, Idaho, as part of the Dworshak Natural Resources Land Management Program (Program). The treatments will include a variety of activities that will occur on an annual basis between 2011 and 2021. Program management activities will be limited in quantity (e.g. miles, acres, etc.) each year to minimize potential adverse effects.

The proposed action is proposed as programmatic management because it is distinguished by well-defined activity types with potential adverse effects that are minor, repetitive, and predictable. Individual consultation of these actions at the project scale would produce the same overall result and not provide any additional conservation benefit.

2. Background / History

Dworshak was authorized in 1962. The 717 feet (ft) tall Dworshak Dam is a hydroelectric, concrete gravity dam in Clearwater County, Idaho, United States at river mile (RM) 1.9 on the North Fork Clearwater River (NFCR). The dam is located 4 miles (6 km) northwest of the city of Orofino, and 47 miles (76 km) east of Lewiston. Construction began in June 1966; the main structure was completed in 1972, with the generators coming online in 1973. The drainage area is 2,440 square miles (mi^2), and the maximum operating pool is at 1,600 feet mean sea level (msl). The National Marine Fisheries Service (NMFS) biological opinion (BO) for operation and maintenance of the Federal Columbia River Power Supply System (FCRPS) (NMFS 2008) requires the summer drawdown of Dworshak's reservoir to cool water in the Snake River for anadromous fish, which results in fluctuations in pool elevation. These fluctuations leave 80 to 155 ft of exposed banks in the reservoir below the ordinary high water mark (OHWM) (1,600 msl).

The gross storage capacity for the reservoir is 3,468,000 acre-feet (af), and the reservoir length (at 1, 600 msl) is 53.6 miles (mi). Dworshak has 175 mi of shoreline, and 17,090 surface acres at 1,600 msl (9,050 at 1,445 msl).

The sums of Corps lands that are part of the Dworshak operating project include approximately 46,000 acres. This includes flow easements in the Clearwater National Forest of approximately 2,150 acres, approximately 21 acres at the Dworshak Fish Hatchery in Ahsahka, and lands inundated by the reservoir. Dworshak Reservoir is surrounded by 29,318 acres of land that the Corps owns and manages, and most of which are the subject of this consultation.

Today Dworshak has five congressionally authorized purposes; Navigation, Flood Control, Hydropower, Fish and Wildlife and Recreation. Further, various laws and regulations guide how natural resources are to be managed on Corps Projects.

In the Forest Cover Act (FCA), Congress declares that lands owned in fee title by the Chief of Engineers are to be managed in such a way as to promote future resources of readily available timber. Sustained yield programs and accepted conservation practices are mentioned in the FCA

as a ways to meet this declaration. In response to the FCA, Engineering Regulation (ER) 1130-2-540 Chapter 2 states "Forest and woodland management will be applied to develop, maintain, protect and/or improve vegetation conditions for timber, fish, wildlife, soils, recreation, water quality and other beneficial uses.

Further, the new Public Use Plan for Dworshak includes Forest Management as one of several resource use objectives. It states,

> "Manage forestland along Dworshak Reservoir to meet various resource objectives, including ecosystem integrity, forest health, wildlife habitat, and recreational opportunities. Forest management actions include, but are not limited to, the following: use of large and small-scale timber sales, pre-commercial thinning, brush slashing, prescribed burning, road construction, re-construction, and demolition, planting of native plant species where necessary to meet specific management objectives."

It is the intent of the Corps to utilize the management activities listed above to meet objectives in the Dworshak Public Use Plan (USACE 2011). The forest management activities will involve what have been considered in the past large and small scale timber sales at Dworshak. These will include sales of several acres to several hundred acres of selectively-harvested timber.

2.1. Background

2.1.1. Ecosystem Integrity

In conjunction with biologists from the U. S. Forest Service (USFS) Clearwater National Forest and in concert with the Interior Columbia Basin Ecosystem Management Project (ICBEMP) recommendations (ICBEMP 1997), the Corps has concluded that current stand conditions for most stands are unnatural, unhealthy, and occurring as a result of fire suppression. The Corps has contracted with Clearwater-Potlatch Timber Protection Association (CPTPA) to suppress fires on Corps administered lands at Dworshak since 1965. Prior to 1965, CPTPA actively suppressed fires on this landscape starting in about 1905 as part of their protection area.

The ecosystem processes that historically shaped the vegetative composition, form, and structure of the regional flora consisted of deposition of ash, glaciations, flooding, landslides, wind events, and wildfire. Of these, only the effects of landslides, wind events, and wildfire have been measurably altered by human activity. Landslides have increased on forested land due primarily to road construction. The effects of wind events have also increase due to logging's affect on natural windbreaks. The effects of these processes on the vegetative composition, form, and structure of the forest stands surrounding Dworshak are considered negligible in comparison to the effects from fire suppression. Within Dworshak and the surrounding area, wildfire and its effects have been suppressed for over 100 years. Most habitat types occurring on Dworshak were historically affected by wildfire (Table 1). The past and present management action of fire suppression has drastically altered the vegetative composition, form and structure of most forest stands surrounding Dworshak and presumably all stands within the stewardship project. This is plausible based on historic fire regimes and further evidenced by the current forest conditions.

Table 1 Historic Fire Characteristics of Dworshak Habitat Types

HABITAT TYPES	ACRES	FIRE GROUP[1]	Biophysical Setting	AVERAGE FIRE INTERVAL [2]			
				All Fires	Surface	Mixed	Replacement
Ponderosa Pine/Idaho Fescue	1462	1	80531	6	8	35	125
Ponderosa Pine/Snowberry	208	1	80531				
Douglas Fir/Snowberry	13	1	1010451	21	35	60	300
Douglas Fir/Mallow Ninebark	3245	2	1010451				
Grand Fir/Mallow Ninebark	6296	2	1010451				
Grand Fir/Twinflower	81	7	1010451				
Grand Fir/Bride's Bonnett	590	7	1010453	69		100	220
Grand Fir/Wild Ginger	604	7	1010453				
Western Redcedar/Bride's Bonnett	10384	8	1010471	80		133	200
Western Redcedar/Wild Ginger	2374	8	1010471				
Western Redcedar/Oak Fern	49	8	1010471				
Western Hemlock/Bride's Bonnett	1009	8	1010471				
Western Hemlock/Wild Ginger	62	8	1010471				
Western Redcedar/Maidenhair Fern	935	9	1010471				

[1] Derived from Smith and Fischer 1997.

[2] Derived from LANDFIRE: Vegetation Dynamic Models. http://www.landfire.gov/national_veg_models_op1.php (8/12/2010)

The potential for altered vegetative characteristics as a result of fire suppression increases inversely with the average fire interval. Thus the more frequent the historic fire interval the more potential variation from natural vegetative conditions from active fire suppression. .

Many stands (Fire Groups 1 & 2) are estimated to have missed 5 – 15 fire cycles over the past 100 years. The expected measurable effects from fire suppression include; increased fuel loads, an increase in tree density and canopy closure, a shift from early to late seral tree species and an increase in the height of understory species. Most of these effects have been documented within Fire Group 1 & 2 stands. Examples of past projects designed to meet the ecosystem integrity objective include the Elk Creek Meadows Project (1219 acres) and the Little Bay Project (1288 acres selectively harvested over a 3 year period).

The Dworshak property is surrounded mostly by privately owned land. There are numerous small private landowners; however, of these, the largest landowner is Potlatch Corporation. Potlatch is a large, privately owned timber company whose primarily land management activity is commercial timber production. Dworshak also shares a common property boundary with public land managed by the State of Idaho and other federal agencies. In relation to our adjacent landowners, Corps managed land sits lower in elevation (down slope); this creates a higher potential for wildfires originating on Corps land for spread onto adjacent ownerships since fire tends to burn up slope. Thus due to the juxtaposition of the Corps lands and the missions of adjacent landowners, we do not have the option for wildland fire use as a management tool.

Based on the above discussions the Corps plans to continue to manage forest stands for ecosystem integrity which can include large or small scale timber sales, road construction and/or reconstruction, gate and barricade installation and maintenance, sign installation, prescribed fire both broadcast and pile burning, and vegetation slashing.

2.1.2. Forest Health

Forest trees compete for limited water, sunlight, and nutrients. As stands mature (succession) without disturbance they become overstocked resulting in increased competition for a limited

amount of resources. As this occurs trees become stressed and are more susceptible to disease and insect infestation. Currently many forest stands surrounding Dworshak are overstocked and are exhibiting an elevated amount of dead and dying trees resulting from disease (root rot, heart rot and other pathogens have all been observed onsite) and beetle infestation. These conditions are the cause of the safety and aesthetic concerns within recreation areas and tree health and fire danger within the multiple resource management areas.

Forest health issues are generally addressed by thinning forest stands to reduce competition for limited resources. This increases the vigor and health of individual trees and reduces their susceptibility to insect and disease outbreaks. One such project was conducted on Corps managed land surrounding Dworshak Reservoir, The Bishop-Chutes Timber Sale. The NRM Team at Dworshak plans to continue to utilize forest thinning to address forest health issues. This could include employing the following natural resource management actions; large or small scale timber sales, road construction and/or reconstruction, gate and barricade installation and maintenance, sign installation, prescribed fire both broadcast and pile burning, and vegetation slashing.

2.1.3. Wildlife Habitat

A host of native wildlife species occur on Corps managed lands surrounding Dworshak Reservoir. Conserving, protecting, and enhancing habitat for native species is a primary goal for forest management. Habitat for Rocky Mountain Elk, a regional focal species, was identified as critical for the North Fork Basin, and the loss of habitat through the creation of Dworshak Reservoir was mitigated by the Corps, Idaho Department of Fish and Game and the US Fish and Wildlife Service in the late seventies. The resulting mitigation document "Design Memorandum No. 15, *Plan for Development of Rocky Mountain Elk Habitat* (DM-15) (USACE 1977) set the direction for future elk habitat measures on Dworshak Reservoir.

The primary purpose of DM-15 was to present a plan for the development and maintenance of winter range for Rocky Mountain Elk at Dworshak Dam and Reservoir. This report established the legal mitigation lands and requirements on Dworshak Reservoir. DM-15 addressed the development of elk habitat on project lands along the upper reservoir (above Grandad Bridge). A total of 5,119 acres at the junction of the Little North Fork and North Fork of the Clearwater River were acquired for elk habitat mitigation. An additional 4,680 acres on Smith Ridge were also intended for inclusion in the Dworshak Elk Habitat Development Program, but the Corps was unable to acquire the Smith Ridge lands from the State of Idaho. The actual mitigation lands acreage comes out to approximately 6,900 acres.

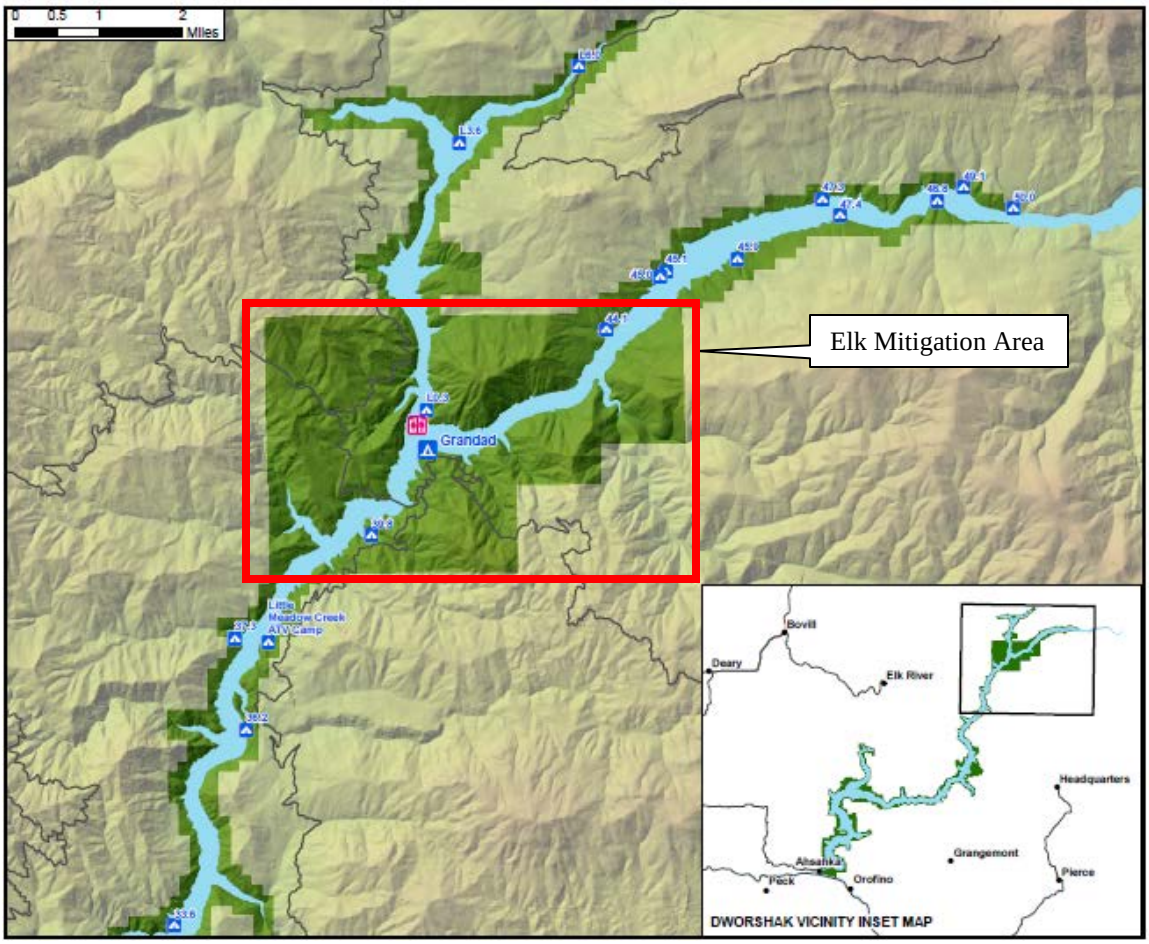
In the 1970s and 1980s, the Corps conducted extensive treatments to enhance elk habitat within the previously defined elk mitigation area (Figure 1). Thousands of acres were clear-cut and burned to optimize elk habitat and increase winter forage production. Although the treatments were highly successful, they were not enough to meet the objective of producing 915,000 pounds of browse annually. As a result, Bonneville Power Administration (BPA) acquired 60,000 acres on Craig Mountain (near Lewiston, Idaho, now Craig Mountain Wildlife Management Area) as mitigation for Dworshak Reservoir. These lands were deeded to the State of Idaho to be managed in perpetuity by the Idaho Department of Fish and Game (IDFG). In addition, millions

of dollars in trust funds were given to IDFG and the Nez Perce Indian Tribe for mitigation. A letter from the Director of IDFG in 1992 documented IDFG's consensus that 100% of the Corps' mitigation obligations were met through the purchase of these lands and the establishment of the trust funds.

Dworshak Project has harvested approximately 100MMBF over the past 30 years. The majority of the harvesting has taken place in the Grandad Elk Mitigation Area in the late 1970's through the 1980's and was accomplished in order to increase forage for wintering elk. The Natural Resource Management (NRM) Team at Dworshak continues to manage the mitigation area primarily for elk habitat.

Along with timber management, other activities have been implemented to meet objectives in DM-15. Planting and protecting redstem ceanothus (*Ceanothus sanguineus*) and other forage plants, minimizing unauthorized motor vehicle access, vegetation slashing and prescribed burning are other examples of management actions designed to meet objectives presented in DM-15. The Corps is still obligated to annually maintain the "hard core" Wildlife Mitigation Area for its designated purposes. The work of improving elk habitat within the mitigation area and throughout the reservoir continues today. Both IDFG and the Corps are committed to maintaining the mitigation area for the purposes for which it was purchased and managed. Future management actions to improve habitat for elk and other species include large or small scale timber sales, road construction and/or reconstruction, gate and barricade installation and maintenance, sign installation, prescribed fire both broadcast and pile burning, and vegetation slashing.

Figure 1 Dworshak elk mitigation area.



2.1.4. Recreational Opportunities

Forest management actions are often required to facilitate the construction and maintenance of recreational facilities. Timber sales were a significant portion of the original establishment of all recreational facilities constructed originally. Few new facilities have been construction since the original development. In the recent past forest management actions for recreation has focused on maintenance for safety and aesthetics. In 2005 the Viewpoint Timber Sale was executed to enhance recreational facilities at the Viewpoint and more projects are being planned (e.g. Canyon Creek Timber Sale). The maintenance of existing recreational facilities will continue and could include small scale timber sales, road construction and/or reconstruction, gate and barricade installation and maintenance, sign installation, prescribed fire both broadcast and pile burning, and vegetation slashing. ESA consultation for new recreation facilities will be addressed in subsequent documents.

2.2. Project History

In the past, Dworshak's Program has been conducted under individual plans, and has been managed, in general, at the project scale. This approach has resulted in several consultations that have involved similar activities, with similar effects, and added workload, both to the Services

and the Corps. The Corps intends to minimize consultation-related workload for the Corps and the Services, while producing the same overall result through a programmatic approach to management, and programmatic consultation.

2.3. Documentation of Relevant Correspondence

The design of this Program has been accomplished through great effort and coordination between the Dworshak Natural Resource Team, and the Corps' Environmental Compliance Section. Numerous emails, telephone calls, and exchange of information have facilitated the development of this Program.

2.4. Supplemental Information

Supplemental information may be found in the Dworshak Reservoir Public Use Plan, available at: http://www.nww.usace.army.mil/planning/er/dworshak/pub-use-plan.pdf

2.5. Federal Action History

The construction of Dworshak Dam and Reservoir was authorized for flood control and other purposes under Section 201 of the Flood Control Act of 1962, Public Law (PL) 87-874, approved 23 October 1962. The Federal Water Project Recreation Act of 1965 (PL 89-72, 89th Congress, 1st Session, dated 9 July 1965), as amended, established recreation potential at Dworshak Dam and Reservoir as a full project purpose.

- Endangered Species Act Section 7(a) (2) Consultation Biological Opinion And Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation on Remand for Operation of the Federal Columbia River Power System, 11 Bureau of Reclamation Projects in the Columbia Basin and ESA Section 10(a) (I) (A) Permit for Juvenile Fish Transportation Program (Revised and reissued pursuant to court order, *NWF v. NMFS*, Civ. No. CV 01-640-RE. (D. Oregon)) May 5, 2008. The FCRPS BO requires the Corps to draw down the reservoir level in early July each year to facilitate fish outmigration. This policy has been in place, and has continued each year since 1992, with only minor adjustments in timing.

The Corps has conducted projects similar to the proposed action around Dworshak on Corps owned, and some adjacent property. These projects are:

- Grandad Boat Ramp Extension Project, Clearwater County, Idaho-Biological Assessment USFWS File #352.3215.02 1-4-02-1-722 HUC #17060308 is complete.

- Little Bay Stewardship Project (Little Bay Stewardship Project adjacent to Dworshak, Orofino, Clearwater County, Idaho, Biological Assessment USFWS File # 351.3040 0ALS #1-4-01-1-787 and File # 351.3040 OALS #1-4-02-1-415) is complete.

- Elk Creek Stewardship Project (Elk Creek Meadows Stewardship Project, Clearwater County, Idaho – Concurrence, USFWS File #351.3040 OALS #1-4-05-1-754, dated 2

September 2005) has not yet been fully implemented. Vegetation has been cut and timber thinning has occurred on the Elk Creek project selected units. Burning has not taken place to date on selected burn units due to constraints involved with burning and the narrow burn window within each burn season.

- Ahsahka Stewardship Project (Ahsahka Stewardship Project-Clearwater County, Idaho-Concurrence USFWS File #352.0000 14420-2011-1-0019 dated 16 November 2010)(Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Ahsahka Stewardship Project, Clearwater River, Clearwater County, Idaho, HUCs 1706030601, 1706030606, and 1706030612 (one project), dated 16 December 2010, NMFS No. 2010/05314) has had section 7 consultation completed, and is awaiting implementation.

- Canyon Creek Recreational Facilities Enhancement Project –Clearwater County, Idaho-Concurrence USFWS File #352.0000 14420-2011-I-0039 received 10 January 2011. This project has not yet been implemented.

3. Project Description

3.1. Authority

Many of the activities subject to this consultation are authorized by the February 2011 Dworshak Reservoir Public Use Plan (USACE 2011).

Authority to manage Dworshak natural resources and to conduct timber harvest in support of a variety of project purposes is supported by the Dworshak Final Environmental Impact Statement (USACE 1975a);

> "In general, a well-managed forest is healthy and disease resistant. In order to maintain thrift in a forest, stand density must be controlled by thinning in younger stands. This will accomplish three objectives; release for thrifty growth; provide ground cover with forage value for wildlife; open the stand for visual and walking pleasure for the recreationist."
>
> "The North Fork Clearwater supports a considerable number of big game animals. The ability of the reservoir shorelands to support these animals during the winter months can be improved by manipulating the forest and brush canopy."
>
> "In order to develop the boat-in recreation sites, the road access recreation sites classed as future development, remote minicamp sites, foot access trails, and allow for disease control, wildlife habitat, and removal of unsafe trees, an estimated 7,000,000 board feet of saw logs annually will be produced in excess of requirements for reservoir operations."

Authority also comes from the Forest Cover Act (P.L.86-717).

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it is hereby declared to be the policy of the United States to provide that reservoir areas of projects for flood control, navigation, hydroelectric power development, and other related purposes owned in fee and under the jurisdiction of the Secretary of the Army and Chief of Engineers shall be developed and maintained so as to encourage, promote, and assure fully adequate and dependable future resources of readily available timber, through sustained yield programs, reforestation and accepted conservation practices, and to increase the value of such areas for conservation, recreation, and other beneficial uses: Provided, That such development and management shall be accomplished to the extent practicable and compatible with other uses of the project.'

Agency guidance for implementing land management activities on the project includes Engineering Regulation 1130-2-540, dated 15 Nov 1996, *Management of Natural Resources and Outdoor Recreation at Civil Works Water Resource Projects.*

"- Forest and Woodland Management. The Forest Cover Act provides a statutory mandate for multiple use forest management, or other vegetative cover management, on project lands and waters. Forest and woodland management will be applied to develop, maintain, protect, and/or improve vegetation conditions for timber, fish, wildlife, soils, recreation, water quality, and other beneficial uses."

"- Fish and Wildlife Management. Section 2 of the Forest Cover Act provides authority for the Corps to manage project lands and waters for any or all conservation purposes, including fish and wildlife conservation. The Corps will conduct fish and wildlife management activities which seek to maintain populations of targeted wildlife species through the manipulation and management of habitat. The Corps will coordinate and conduct its program in conjunction with other Federal, state, and local agencies having fish and wildlife management responsibilities using a variety of techniques including the placement of artificial structures and other practices."

"Wetlands Management. The Forest Cover Act provides for the development of other vegetative cover, such as wetlands, so as to yield maximum benefit and otherwise improve such areas". "Existing wetlands will be protected, conserved, and maintained. The development and maintenance of wetlands should integrate the needs of fish and wildlife and support national programs and efforts associated with the Endangered Species Act."

"Enhancement. PL 89-72 provides for the consideration of fish and wildlife enhancement opportunities at Corps water resources development projects. Enhancement measures/activities are those measures/activities taken above a stewardship level (i.e. level required to sustain fish and wildlife resources for the life of the project), and those measures/activities which produce an increase or concentration of animal numbers for the purpose of recreational benefits."

There are 18 provisional resource use objectives established for Dworshak (USACE 1996a). Several of the objectives focus on the forest resources of Dworshak. Objective number 11 explicitly states the need to "maintain a healthy forest ecosystem." The rationale to support this objective comes from the Forest Cover Act (Public Law 86-717) that provides for the protection of forest cover for reservoir areas that fall under the jurisdiction of the Chief of Engineers. It states that reservoir areas will be developed and maintained to assure future resources of available timber and to increase the value of such areas for conservation, recreation, wildlife, and other beneficial uses. To the extent practicable, such development and management would be accomplished in a manner compatible with other project uses. In order to carry out this national policy, the Corps will provide for the sustainable development of forest resources, as well as the establishment and maintenance of other conservation measures on reservoir areas so as to yield the maximum benefit and otherwise improve such areas.

The Corps has the authority to plan and execute fire pre-suppression and suppression activities based on Provisional Resource Use Objective (PRUO) 12 established by the CORPS and approved by the Chief of Operations.

Design Memorandum No. 15, *Plan for Development of Rocky Mountain Elk Habitat* (DM-15) (USACE 1977) presented a plan for the development and maintenance of winter range for Rocky Mountain Elk at Dworshak Dam and Reservoir. This report established the legal mitigation lands and requirements on Dworshak Reservoir. The Corps is still obligated to annually maintain the “hard core” Wildlife Mitigation Area for its designated purposes.

Recreation is one of five congressionally authorized purposes for Dworshak. The Federal Water Project Recreation Act of 1965 (PL 89-72, 89th Congress, 1st Session, dated 9 July 1965), as amended, established recreation potential at Dworshak Dam and Reservoir as a full project purpose. This purpose is primarily to enhance and/or maintain recreation amenities. Further, there are 18 provisional resource use objectives established for Dworshak (USACE 1996a). Several of the objectives focus on the recreational facilities and opportunities. Others discuss forest resources and aesthetics. Objective number 2 explicitly states the need to "provide and enhance camping and day use opportunities and facilities."

3.2. Project Area and Action Area

3.2.1. Footprint

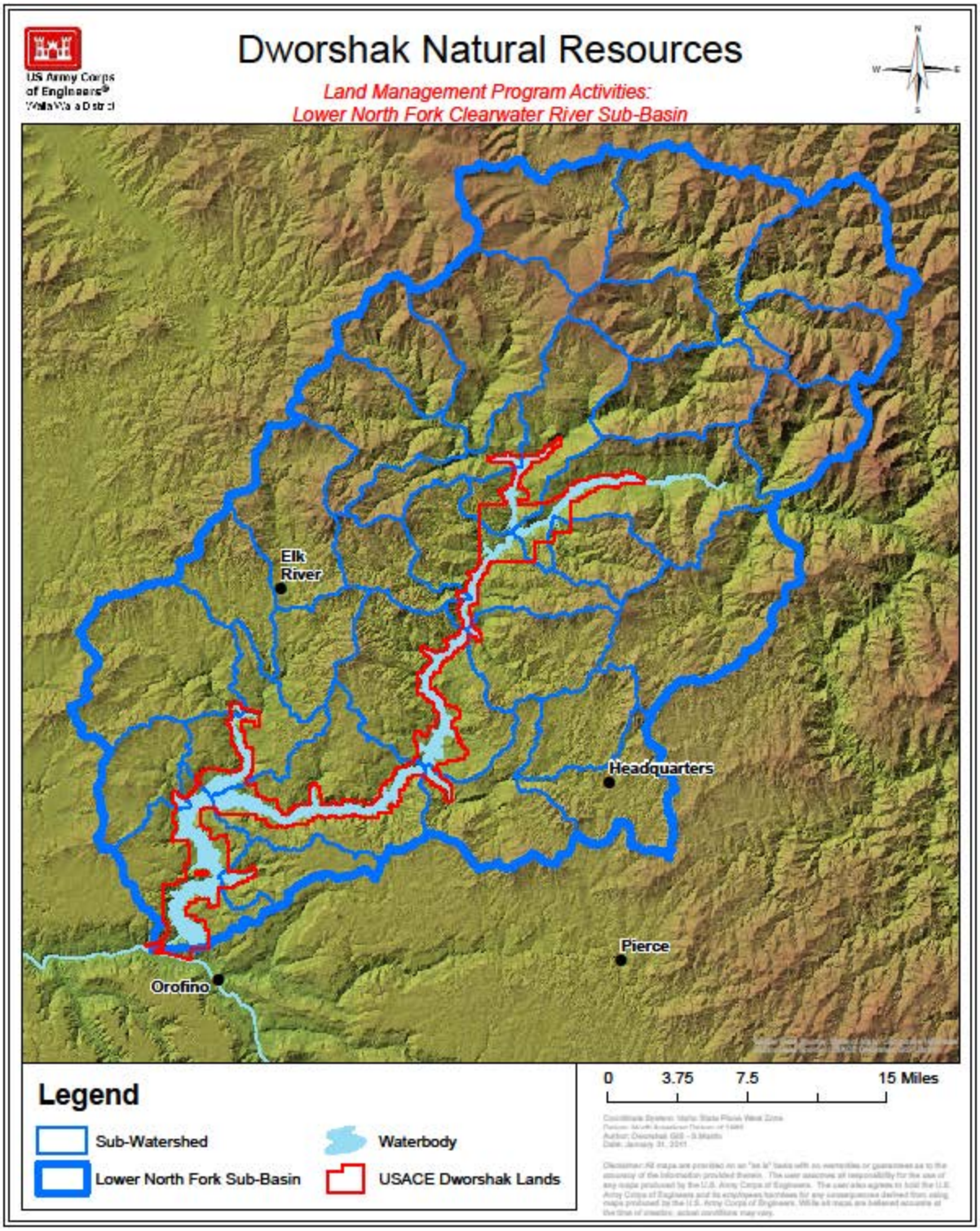
The footprint for the proposed action includes all Corps managed lands in the vicinity of Dworshak Dam and Reservoir in Clearwater County Idaho, except for those lands that drain directly into the North Fork Clearwater and Clearwater rivers downstream of Dworshak Dam. The footprint is, therefore, confined to the areas that drain directly into Dworshak Reservoir.

Those lands that drain directly into the North Fork Clearwater and Clearwater rivers were consulted on for the Ahsahka Stewardship Project. Beyond that consultation, the Corps does not envision any of the proposed work in this document being conducted in that area in the foreseeable future.

3.2.2. HUC, Township, Range, Section

The proposed action is in the Lower North Fork Clearwater subbasin (HUC 17060308) (Figure 2). The proposed project is located along the NFCR, in and around Dworshak upstream of Dworshak Dam.

Figure 2 HUC 17060308 and Dworshak project lands.



3.2.3. Quantification of Area Potentially Affected

The maximum area potentially affected on an annual basis is limited by quantities proposed, but may occur in any location in the 29,318 acres of land of Dworshak managed by the Natural Resource Team that drains into the reservoir.

Areas in and around Dworshak that drain into the North Fork Clearwater or Clearwater rivers, and not into the reservoir, are not included as part of the proposed action. Areas that were consulted on in the Ahsahka Stewardship Project are also not included at this time.

3.2.4. Action Area

The action area includes all Corps managed lands at Dworshak that drain directly into Dworshak Reservoir. The action area specific to bull trout is confined to Dworshak Reservoir (defined by 1,600 msl), and some free-flowing areas of reservoir tributaries above 1,600 msl, which includes: approximately 2,200 ft of free-flow Little NF Clearwater River (containing bull trout), a 1,500 ft section of free-flowing portion of Breakfast Creek, 600 ft of Reeds Creek, and 800 ft of Silver Creek. There is no free flowing portion of the NF Clearwater River on Corps lands. All free flowing portions are outside the action area. Floodwood Creek (containing bull trout) is outside of (and approximately 2/3 mi. upstream of) the Corps boundaries, and is outside of the action area (S. Martin, personal communication, November 4, 2011).

3.3. Project Purpose and Objectives

The primary purposes for this action are to enhance ecosystem integrity, forest health, wildlife habitat, and recreational opportunities. Safety and aesthetics are the primary focus for treatments within recreation areas, including high density recreation areas and primitive campsites (i.e. minicamps). In order to meet the purposes of the Dworshak Natural Resources Land Management Program (Program), the Program has been divided into the following management categories, or "activities."

- Access and Trails Management
- Boundary Management
- Fire Management
- Forest Management
- Road Management
- Wildlife habitat management
- Recreation

Each activity has specific goals and objectives that are designed to meet the purposes of the Program. The goals and objectives are outlined in the following.

3.3.1. Access and Trails Management

Goals:

- To reduce negative impacts to fish and wildlife habitat and non-motorized recreational users from unauthorized motorized access by actively managing access on Project lands. This active management will include public education, Title 36 enforcement and constructing, installing and maintaining access control structures designed to reduce and/or eliminate unauthorized access.
- To maintain and improve the existing trail system for non-motorized recreational trail users.
- To seek new opportunities for alternative access and recreational trail activities including but not limited to motorized, equestrian, and biking opportunities where the resource ecology and the public support.

Objectives:

- Actively manage access along the project boundaries to reduce negative impacts to fish and wildlife habitat and non-motorized recreational users from unauthorized motorized access.
- Public education and enforcement through the use of Title 36, Code of Federal Regulations, Part 327.
- To enhance user safety and recreational experience, perform maintenance activities including but not limited to clearing and brushing of the trail corridor, maintenance of the tread surface, installation and maintenance of bridge structures, surface water control structures, retaining structures, switchbacks and signage.
- Construct, install, and maintain access control structures to prevent unauthorized motorized access.
- Seek new opportunities for improved access for approved alternative methods, (motorized, horse, hike, bike, etc), where the resource and the public support.
- Work to improve existing access and prevent degradation of the resource.
- Respond to customer demands with analysis of access requests.

3.3.2. Boundary Management

Goals:

- To prevent unintentional trespass and negative impacts associated with timber trespass and other unauthorized use of government property by visually identifying property ownership through the surveying, marking and posting of the project boundary, sharing data with adjacent land owners, public education, and enforcement.
- Continue efforts to monument project boundary and cooperate with adjacent landowners to create opportunities for the sharing of data and costs for common boundary surveys.

Objectives:

- Prevent unintentional trespass and negative impacts associated with timber trespass and other unauthorized use of government property by visually identifying property ownership.

- Continue efforts to monument the Project boundary and cooperate with adjacent landowners.
    - Develop cooperative boundary plans with landowners adjacent to Corps land.
    - Share survey data, where applicable.

3.3.3. Fire Management

Goals:

- To maintain a fire protection system for lands managed by the Corps at Dworshak.
- To provide wildland fire prevention, detection, pre-suppression, and suppression capability resulting in no closures of the public access to Dworshak Reservoir.
- To limit all wildland fires to no more than two (2) acres in size in NFDRS fuel model "C"[1] and no more than one (1) acre in size in NFDRS fuel model "G"[2] (USFS 1999).
- To maintain trained fire suppression personnel in an available and ready status.
- To maintain fire suppression equipment to initiate first attack capability as well as provide limited extended attack capability.
- To maintain accurate continuous fire weather data. And to prevent all wildfires initiating on Corps property from crossing onto adjacent properties.
- To safely use a controlled fire to emulate the effects of a natural wildfire within a given habitat type in order to accomplish a set of desired outcomes as prescribed for the benefit of wildlife, forest health, fire fuels reduction and/or ecosystem integrity.

Objectives:

- Minimize the negative effects of wildfires, including impacts to the recreating public and to federal property, by maintaining a fire protection system capable of providing wildland fire prevention, detection, pre-suppression, and suppression.
- Use prescribed burning as a tool to help meet the ecological, wildlife, and forest health objectives of the project.
- Maintain several trained fire suppression personnel in an available and ready status.

3.3.4. Forest Management

Goals:

- Manage forestland along Dworshak Reservoir to meet various resource objectives including ecosystem integrity, forest health, wildlife habitat, and recreational opportunities. All forest management actions shall be designed such that ecosystem

[1] Open pine stands typify Model C fuels. Perennial grasses and forbs are the primary ground fuel but there is enough needle litter and branchwood present to contribute significantly to the fuel loading. Some brush and shrubs may be present but they are of little consequence. Situations covered by Fuel Model C are open, longleaf, slash, ponderosa, Jeffrey, and sugar pine stands. Some pinyon-juniper stands may qualify.

[2] Fuel Model G is used for dense conifer stands where there is a heavy accumulation of litter and downed woody material. Such stands are typically overmature and may also be suffering insect, disease, wind, or ice damage -- natural events that create a very heavy buildup of dead material on the forest floor. The duff and litter are deep and much of the woody material is more than 3 inches in diameter. The undergrowth is variable, but shrubs are usually restricted to openings. Types meant to be represented by Fuel Model G are hemlock-Sitka spruce, Coast Douglas-fir, and windthrown or bug-killed stands of lodgepole pine and spruce.

management principles are applied, aesthetics are preserved, and environmental degradation is minimized.

Objectives:
Provisional Resource Use Objectives (PRUO's) for Dworshak reservoir were established in 1990 to provide interim direction for the management of natural resources prior to the update of the Project Master Plan. The following PRUO's directly relate to forest management and were used as guidance during the development of this plan, particularly the goals and objectives.

- PRUO 1-Preserve the integrity, stability, and aesthetic beauty of the ecological community through comprehensive management, responsible care of public lands, waters, and resources, and (full and equal consideration of all alternatives and members of the community)
- PRUO 3-Provide an aesthetic, safe boating environment and enhance boating activities on the lake
- PRUO 4-Optimize fishing and hunting opportunities on project lands and waters
- PRUO 7 -Provide mitigation for fish and wildlife habitat losses caused by construction of the project
- PRUO 11-Manage project forest resources on a sustained development basis in light of other RUOs
- PRUO 12-Provide well planned and executed fire prevention, pre-suppression, and suppression programs

- Manage forestland along Dworshak Reservoir to meet various resource objectives, including ecosystem integrity, forest health, wildlife habitat and recreational opportunities. Forest management actions will include, but are not limited to, the following:
    - Use of large and small-scale timber sales
    - Pre-commercial thinning
    - Brush slashing
    - Prescribed burning
    - Road construction and re-construction
    - Planting of native plant species where it is necessary to meet specific management objectives

3.3.5. Road Management

Goals:
- Establish and execute a road system and maintenance schedule that that meets project transportation needs and prevents resource damage.

Objectives:
- Manage the road system within Project boundaries to meet transportation needs and prevent resource damage through inventory, assessment, construction, and maintenance of all roads.

- Classify all existing roads based on existing and desired future use, and maintain accordingly.
- Review property boundaries and potential points of new access, and post property ownership and/or rules accordingly. Numerous old logging and homestead roads exist throughout the Project. Many of these old roads are essentially closed, and not authorized for motorized use. Some old roads are discovered and used by the public when timber harvest activities occur near the Project.
- Consider and evaluate opportunities for future use and development.

3.3.6. Wildlife Habitat Management

Goals:

- Maintain the elk mitigation area for its intended purposes in DM 15.
- Conserve, protect, and/or enhance habitat for Rocky Mountain elk throughout Corps managed land surrounding Dworshak Reservoir at a watershed scale.
- Conduct forest management in such a way as to preserve, protect and/or enhance habitats for native wildlife species.

Objectives:

- Conserve, protect, restore, and/or enhance habitat and habitat components important to the survival and proliferation of threatened, endangered, special status, and other regionally important species on Project lands.
- Continually assess Dworshak's "Priority Habitats" based on the habitat needs of these and other native species present at Dworshak (ponderosa pine ecosystems; old growth forest communities; western white pine communities; isolated palustrine wetlands; and critical elk habitat).
- Combine information from the assessment of priority habitats with management objectives to initiate suitable forest management actions.
- Use objectives as guidelines when forest management actions are planned for other purposes.

3.3.7. Recreation Management

Goals:

- Manage forests with lands designated as recreation to enhance aesthetic value and reduce safety hazards.

Objectives:

- Remove trees within designated recreation areas that pose a notable threat to the recreation public.
- Conduct timber harvest and vegetation slashing to improve current and future conditions for public safety and aethetics.

3.4. Project Activities

Program management activities can be further broken down into Program management activity "elements." Program activities and their associated activity elements are listed in Table 2, along with maximum annual quantities (e.g. miles, acres, etc.) for each activity element.

Table 2 Dworshak programmatic activity elements.

Dworshak Programmatic Activity Elements	Maximum Quantity per Year
Access and Trails Management	
Gate and/or Barricade Installations	5 per year
Gate and/or Barricade Modifications	5 per year
Gate and/or Barricade Refurbishing	10 per year
Sign Installation/Maintenance	20 per year
Fence Repair and Maintenance	5 miles per year
Fence Removal	5 miles per year
Trail Corridor Brushing and Tread Maintenance	50 miles per year
Bridge Installation/Maintenance	5 per year
Surface Water Control Structure Installation/Maintenance	50 per year
Boundary Management	
Boundary Monument Installation	5 miles per year
Fire Management	
Broadcast Burning	1,000 acres a year
Pile Burning	100 piles per year
Slashing and/or Pruning	200 acres per year
Fire Lines	25 mini camps (approx. 1.25 mi), designated burn units
Forest Management	
Selective Harvest	750 acres a year
Road Management	
New Construction	5 miles per year
Road Reconstruction	15 miles per year
Road Maintenance	50 miles per year
Road Obliteration	2 miles per year
Road Demolition	1/4 mile per year
Culverts	50 per year
Wildlife Habitat Management	
Wetland Enhancement	2 per year
Planting	1,500 plants per year
Recreation Management	
Recreation Foot Trails	10 miles per year

Management activities at Dworshak are very interrelated. Activity elements have been identified for each management activity based on what activity an element falls into the majority of the time. However, any of the activity elements may occur as part of other management activities from time to time. For example, road management activities will occur as part of routine road management, but will also occur as part of fire management, forest management, and may even occur as part of recreation.

For illustration purposes, and to help demonstrate the interrelated nature of activity elements, an "X" has been placed in a box in Table 3 for each activity element (shown in the left column) that

may occur as part of a given management activity (Access, Boundary, Fire, Forest, Road, Wildlife Habitat, Recreation Management).

Table 3 Land management activities versus activity elements.

Management Activity							
Activity Element	**Access**	**Boundary**	**Fire**	**Forest**	**Road**	**Wildlife**	**Recreation**
Gates	X			X		X	X
Signs	X			X		X	X
Fences	X						
Trails	X						X
Monumentation		X					
Broadcast Burning			X	X		X	X
Pile Burning			X	X		X	X
Slashing and/or Pruning			X	X		X	X
Fire Lines			X	X		X	X
Selective Harvest			X	X		X	X
Snag Removal			X	X	X		X
Road Construction			X	X	X	X	X
Road Reconstruction			X	X	X	X	X
Road Maintenance	X	X	X	X	X	X	X
Road Obliteration	X		X	X	X	X	
Road Demolition	X		X	X	X	X	X
Culverts			X	X	X	X	X
Planting			X	X	X	X	X
Wetland Enhancement						X	

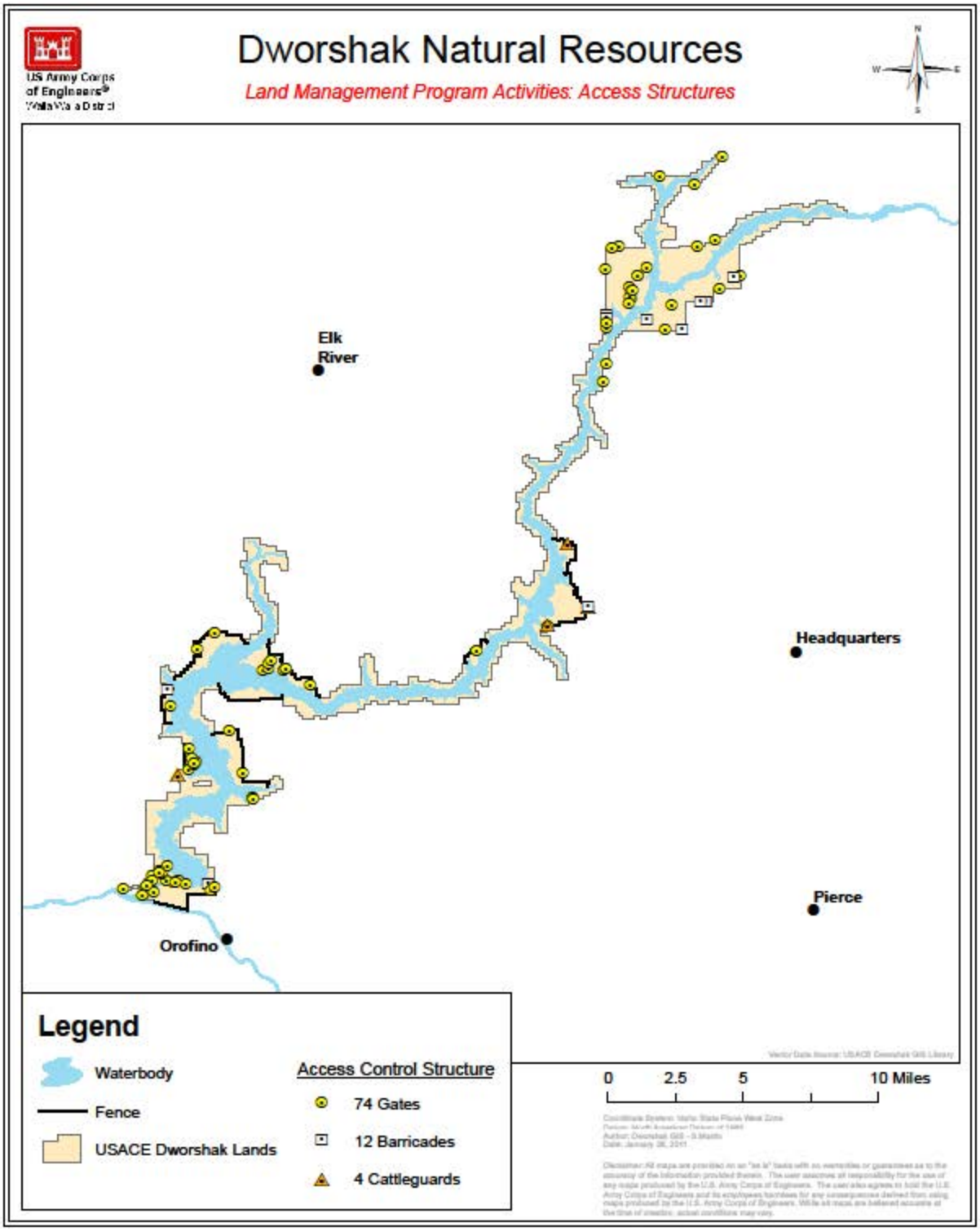
The following is a description of each project activity, and its associated element(s).

3.4.1. Access Management

Access to Dworshak managed lands is controlled by signage, gates, barricades, other physical barriers, fences, and boundary management (Figure 3). Access Management activities may occur throughout Corps-managed lands at Dworshak.

Access management is also important for ensuring access for fire management. This would include building and installing access control structures (gates and barricades) as well as posting the area fire danger ratings and the associated restrictions.

Figure 3 Access structures.



3.4.1.1. Gates

Gates are located at various locations on the boundary of the Corps' property, as well as within project lands. The primary purpose of the gates is to keep vehicles out of lands not open to vehicle use, but they also provide security in places.

3.4.1.1.1. Gate/Barricade Installation

The Corps proposes to install up to 5 gates per year. This will occur in previously disturbed areas using either equipment or hand tools. Gates will be placed into a hole dug with hand tools or machinery. Dirt will be tamped in place around the gate, and the hole will likely be filled with concrete to set the gate in position.

3.4.1.1.2. Gate/Barricade Modification

The Corps proposes to modify 5 gates per year. This will include routine repairs that would not warrant replacing the entire gate (i.e. welding on a wing).

3.4.1.1.3. Gate/Barricade Refurbishing

The Corps proposes to refurbish up to 10 gates or barricades per year. This will include routine activities that do not include modifying or replacing the gate (e.g. sanding, painting, and hanging signs).

3.4.1.2. Sign Installation/Maintenance

The Corps proposes to install or maintain up to 20 signs per year. This includes digging a post hole with hand tools up to 42 inches (in) deep, and placing the post. Post placement will be accomplished through tamping dirt, and may include filling the hole with concrete to prevent the post from falling, or being removed.

3.4.1.3. Fences

Dworshak contains approximately 34.4 miles of fencing. The project boundary incorporates 30.9 miles of this fencing, while the other 3.6 miles of fencing are located inside the project to provide security, guidance, and barriers. Due to the rough terrain, fencing the entire project would not be cost effective.

Inventory of existing and abandoned fences is ongoing, and numbers and locations of existing fences, both in use, and abandoned, will be updated as the inventory progresses.

3.4.1.3.1. Fence Repair/Maintenance

The Corps proposes to repair or maintain up to 5 miles of fence per year. This will include replacing metal t-posts or wooden posts. Because of the types of fencing used at Dworshak, and the type of terrain, fencing is installed primarily with hand tools.

3.4.1.3.2. Fence Removal

The Corps proposes to remove up to 5 miles of old fence per year. This will be done in steep terrain with hand tools, and is incidental to normal fence repair/maintenance.

3.4.1.4. Trails

Access to Dworshak Reservoir includes a complex system of roads and trails that serve both project operations and the public. There are also hiking trails in different areas around the lake where the topography allows. Most hiking trails provide access to the reservoir; however, drawdowns create exposed banks that are difficult to negotiate in most areas. There are networks of old logging and homestead roads throughout the reservoir lands, most originating beyond Dworshak boundaries and overgrown with vegetation. Some may be of value for future transportation routes or trails. As such, in 2005, the Corps evaluated the possibility of introducing ATV trails on Dworshak lands, and included the development of the development of motorized trails in the Public Use Plan for Dworshak (USACE 2011).

Fishing and hunting take place year round at Dworshak. Any vehicle capable of travel over snow is allowed on designated trails as they cross through Dworshak project boundaries. Currently there are no Corps designated snowmobile trails within project boundaries other than those that are a part of designated trail systems that cross project lands. Snowshoeing and cross country skiing are permitted on all Dworshak lands.

The tables in the following discussions are taken directly from the Public Use Plan (USACE 2011), and their numbering does not coincide with the rest of this document.

Recreation trails are emerging as important outdoor recreation facilities at Dworshak Reservoir (Table 2-11 from the Public Use Plan). Walking, jogging, and bicycling are all popular activities along the reservoir. Prior to the development of the Public Use Plan (USACE 2011), the trails on the project were only authorized for nonmotorized use.

Table 2-11. Dworshak Trail Inventory

Trail Type	Length	Difficulty
Hiking		
Merry's Bay Trail	1.5 miles one way	easy to moderate
Big Eddy Trail	10 miles one way	easy to moderate
Canyon Creek Trail	1.5 miles one way	easy to moderate
Cold Springs Trail	5.5 miles one way	easy to moderate
Dent Trail	1.8 miles one way	easy to moderate
Placid View Trail*	.5 miles loop	easy
Ocean Spray Trail*	2 miles loop	easy to moderate
*Part of Dworshak State Park outgranted to the Idaho Parks and Recreation.		
Horse -None designated, but currently allowed on all hiking trails		
Bike -None designated, but currently allowed on all hiking trails		
OHV -None designated --Little Meadow Creek ATV trail is a current pilot project that is being used to test impacts of ATV on the environment.		

At Dworshak, there has been a demand to use old logging road and trails for ATV use. In many places, ATV users have used these roads and created unauthorized trails (Figure 4). These trails now show signs of erosion, and there are other negative effects on the natural resources of the area (Photos 4). Although gates have been installed and trails closed, ATV users can easily find other routes to access the trails they have been using.

Figure 4 Unauthorized motorized trails at Dworshak.

The new Public Use Plan (USACE 2011) will restrict motorized access to designated trails, and all areas will be considered closed to motorized traffic unless posted as open.

Motorized access on approved trails will be allowed in, and restricted to, designated areas deemed appropriate and necessary by the Corps. All motorized access is subject to seasonal or

permanent closure based on road conditions, the presence of important species that would be impacted by the presence of motorized vehicles, or other reasons deemed appropriate by the Corps.

Any unauthorized trails will be considered an encroachment or trespass, and will be closed until such time as the trail may be evaluated for its potential to become a designated trail. Any trail designated on Dworshak lands will not be reserved for exclusive use, and must be open to general public access.

Proposed motorized trails will be evaluated for environmental compliance, implementation feasibility, and public acceptability prior to approval and construction. If deemed feasible trails will then be constructed to be a class 3 or 4 type trail as classified by the United States Forest Service. The following tables give guidance for general trail construction and motorized trail construction. For more detailed information on the US Forest Service trail planning, construction, and maintenance guidelines see FSH 2309.18

Table 6-2. General Trail Guidance

Trail Attributes	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail
General Criteria **Physical Characteristics to be Applied to All National Forest System Trails**		
Tread & Traffic Flow	• Tread obvious and continuous • Width accommodates unhindered one-lane travel (occasional allowances constructed for passing) • Typically native materials	• Tread wide and reltively smooth with few irregularities • Width may consistently accommodate two-lane travel • Native or imported materials • May be hardened
Obstacles	• Obstacles infrequent • Vegetation cleared outside of trailway	• Few or no obstacles exist • Grades typically <12% • Vegetation cleared outside of trailway
Constructed Features & Trail Elements	• Trail structures (walls, steps, drainage, raised trail) may be common and substantial • Trail bridges as needed for resource protection and appropriate access • Generally native materials used in Wilderness	• Structures frequent and substantial • Substantial trail bridges are appropriate at water crossings • Trailside amenities may be present
Signs	• Regulation, resource protection, user reassurance • Directional signs at junctions, or when confusion is likely • Destination signs typically present • Informational and interpretive signs may be present outside of Wilderness	• Wide variety of signs likely present • Informational signs likely (outside of Wilderness) • Interpretive signs possible (outside of Wilderness) • Trail Universal Access information likely displayed at trailhead

Table 6-3. General Motorized Trail Guidance

Trail Attributes	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail
	Additional Criteria for Motorized Trails **Apply in addition to Trail Class General Criteria**	
Motorized Trails **Motorcycle/ ATV** **(etc.)**	• Trail wide and suitable for one lane and occasional two-lane passage for managed use types. • Occasional moderate tread protrusions and short awkward sections, which require speed and maneuvering adjustments. • Tread infrequently graded. Obstacles cleared if they substantially hinder the managed use and difficulty level. • Tread surface generally native materials, with occasional on-site fill or imported materials, if more stable surface is desired. • Crossings may be wet fords; likely with hardening and armoring or simple bridges for resource protection and to ensure appropriate access. • Trails have frequent markers and are readily followed. • Signing size and type appropriate for managed speeds and potential nighttime use (signs likely reflectorized).	• Trail wide and suitable for the managed use type, and may consistently accommodate two-way passage. • Tread surface generally smooth with only small protrusions, which moderately affect speed and ease of travel. (Some roughness may be desired and incorporated to control/limit speed.) • Tread graded as needed. • Tread surface may include imported aggregate or intermittent paved sections if more stable surface is desired. • Crossings are typically either hardened or armored or a substantial bridge. • Recommended speeds or speed limits may be posted. • Trails have frequent markers and are easily followed. • Signing size and type appropriate for managed speeds and potential nighttime use (signs reflectorized).

Trails will be considered in locations where land use classifications permit, and they provide safe access to mini-camps or other recreation features around the reservoir. In addition, some desired trails may be part of a larger regional trail system. The designated trails will primarily follow old logging or homestead roads, although some shared roads may be considered. Potential ATV trails will only be permitted in areas classified as Recreation, Multiple Resource Management, Low Density Recreation; Multiple Resource Management, Wildlife Management; and Multiple Resource Management, Vegetation Management as updated in the land classifications presented in Section 5 of this report. Trails will not be allowed in areas classified as Environmentally Sensitive or Mitigation, unless on main public access roads already in use in those areas. Future ATV trails must not have significant impacts to other known sensitive habitat areas or other areas of significant ecological importance. Future trail planning efforts and accompanying Corps environmental compliance procedures will evaluate the effects of each proposed ATV trail. General trail construction guidelines are included in the following paragraphs. Specific trail criteria may be prescribed by the Corps for each trail, depending on location.

The purpose of ATV trails will be primarily to access mini-camp locations or other recreation features. No large loop trails are envisioned on Corps property due to topography constraints,

noise, and impacts to wildlife and environmentally sensitive areas. Recreational ATV use will only be allowed on designated trails, and no cross-country travel will be permitted. No ATV use will be permitted on exposed banks below the full-pool water mark, although some areas may be considered for designation as an area acceptable for ATV transport from boat to shore at all water levels. Not all mini-camps will be accessible by trail, even when topography and environmental factors allow. In some locations, mini-camps will be preserved for boat access only, or as possible equestrian or walk-in mini-camps.

All ATV trails will be opened on a seasonal basis, as determined by Corps staff. The trails will be monitored and evaluated annually, and may be closed at any time based on trail conditions, use, or other environmental requirements.

Areas that have been identified by Corps staff and the public as appropriate for designated ATV access include Elk Creek Meadows, Little Bay, Swamp Creek, Mini- Camp 26.0 (near Magnus Bay), Evans Creek, and Boehls Fire Camp. These areas were determined to be appropriate locations; however, additional study will be necessary before any of these areas may become a designated ATV route. Other areas may also be appropriate for designation, but are not identified at this time. Section 1.8.1 contains a description of the evaluation process for potential sites prior to development and designation.

Table 6-4. Trail Specifications for ATVs

Designed Use ALL-TERRAIN VEHICLE		Trail Class 3	Trail Class 4
Design Tread Width	Single Lane	60"	60" – 72"
	Double Lane	96" – 108"	96" – 120"
	Structures (Minimum Width)	60"	60"
Design Surface	Type	• Native with some onsite borrow or imported material where needed for stabilization, occasional grading • Intermittently rough • Sections of soft or unstable tread on grades < 5% may be present	• Native with imported materials for tread stabilization common, routine grading • Minor roughness • Sections of soft tread not common
	Protrusions	≤ 3" May be common, not continuous	≤ 3" Uncommon, not continuous
	Obstacles (Maximum Height)	6" May be common, left for increased challenge	3" Uncommon
Design Grade	Target Grade	5% – 15%	3% – 10%
	Short Pitch Maximum	25%	15%
	Maximum Pitch Density	15% – 30% of trail	10% – 20% of trail
Design Cross Slope	Target Cross Slope	3% – 8%	3% – 5%
	Maximum Cross Slope	10%	8%
Design Clearing	Height	6' – 8'	8' – 10'
	Width (On steep side hills, increase clearing on uphill side by 6" – 12")	60" – 72"	72" - 96"
	Shoulder Clearance	6" – 12"	12" – 18"
Design Turn	Radius	8' – 10'	8' – 12'

Dirt bikes will be allowed on all designated ATV trails. A dirt bike is defined as a two-wheel, single-rider motorcycle. Dirt bikes must remain on the trail and no cross-country travel will be permitted. Specific trails for dirt bikes only will be evaluated under similar requirements as ATV trails, when public input and desire warrants such studies.

Full-size vehicles are currently permitted only on designated roads within Corps project boundaries. Future access points for full-size vehicles will be evaluated on a case by case basis.

The design guidelines and environmental conditions will be evaluated in a similar manner to that of an ATV trail (Table 6-4), with the understanding that impacts from a full-size vehicle will be more significant than an ATV due to size and weight.

Areas identified by Corps staff and the public to be appropriate areas for full-size vehicle access include Little Meadow Creek ATV Camp, Camp 26.0 at Magnus Bay, Evans Creek, Elkberry Creek, and Boehls Fire Camp. Additional study will be necessary before any of these areas could become a designated route for full-size vehicles. Other areas may also be appropriate for designation, but have not been identified at this time.

Table 6-5. Trail Specifications for Motorized Vehicles Greater than 50 Inches

Designed Use FOUR-WHEEL DRIVE VEHICLE > 50"		Trail Class 3	Trail Class 4
Design Tread Width	Single Lane	72" – 96"	96" – 120"
	Double Lane	16'	16'
	Structures (Minimum Width)	96"	96"
Design Surface	Type	• Native, with some onsite borrow or imported material where needed for stabilization, occasional grading • Intermittently rough • Sections of soft or unstable tread on grades < 5% may be present	• Native, with imported materials for tread stabilization common, routine grading • Minor roughness • Sections of soft tread not common
	Protrusions	≤ 8" May be common and continuous	≤ 4" May be common and continuous
	Obstacles (Maximum Height)	24" Common, left for increased challenge	12" Uncommon
Design Grade	Target Grade	5% – 18%	5% – 12%
	Short Pitch Maximum	20%	15%
	Maximum Pitch Density	10% – 20% of trail	5% – 10% of trail
Design Cross Slope	Target Cross Slope	5% – 12%	5% – 8%
	Maximum Cross Slope	12%	8%
Design Clearing	Height	6' – 8'	8' – 10'
	Width (On steep side hills, increase clearing on uphill side by 6" – 12")	72" – 96"	96" - 144"
	Shoulder Clearance	6" – 12"	12" – 18"
Design Turn	Radius	15' – 20'	20' – 30'

Given the nature of the terrain around Dworshak, and the myriad of trail types on Dworshak, the necessity may arise to use explosives to remove rocks and other hard surfaces that cannot be altered by conventional methods.

Once a trail is identified for blasting the work would include the following:

- Exact locations of each hole will be marked on the ground based on potential to improve the wetland habitat or obliterate the road surface.
- Holes will be dug into the soil using either a rock bar or a post-hole digger.
- Explosives will be placed in the holes; charges may be tied together, and set off.
- Explosives will be discharged in such a manner as to adhere to the best management practices mentioned below for fish protection.
- Guards and warning signs will be posted during the entire blasting procedure.

See Appendix B for BMPs.

All trails will be maintained on at least an annual basis and probably on a bi-annual schedule with maintenance performed in the spring and in the early fall and for any weather event such as high winds that could cause extreme amounts of downfall on any given trail system.

The Corps proposes to create/maintain up to 25 miles of recreation trails per year

3.4.1.5. Bridge Installation/Maintenance

Bridges, for the purposes of the Dworshak Natural Resource Activities, are recreation trail bridges. These bridges are typically found on foot trails around the reservoir and are generally made of logs, or wood materials, and span intermittent (seasonal) streams that are non-fish bearing. An example of the types of bridges found on recreation trails at Dworshak can be seen in Figure 5. Pre-treated wood (i.e. pressure treated) will be used in bridge construction. However, only those woods treated in the BMP manner will be used for construction. Also, to minimize impacts to aquatic environments, installations will occur during work windows of low to no-flow stream periods to minimize the potential for leaching into streams.

Figure 5 Typical bridge on recreation trails at Dworshak.

Most of the work done on these bridges in with hand tools, as the terrain precludes the use of machinery. Materials may be dropped in by helicopter or carried in.

The Corps proposes to install/maintain up to 5 bridges per year.

3.4.1.6. Surface Water Control Structure Installation/Maintenance

These structures are for the purposes of reducing wash-outs and erosion of trails. They may include the installation of culverts similar to those used for roads, but smaller, and on intermittent stream crossings along recreation trails.

The Corps proposes to install/maintain up to 50 water control structures per year.

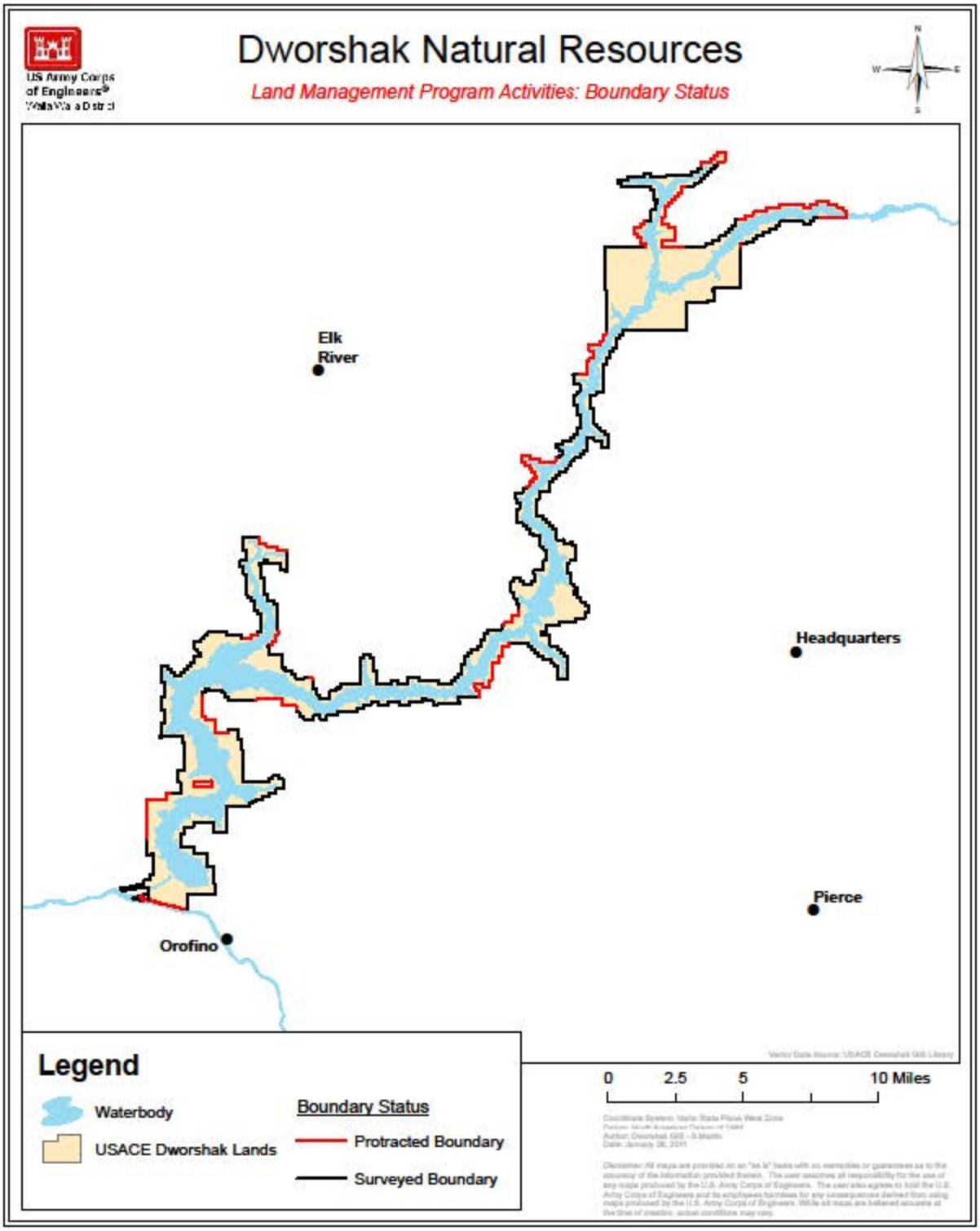
3.4.2. Boundary Management

The monumentation on the Dworshak boundary serves both the project and the public by identifying Dworshak lands. Approximately 74 percent of project lands are monumented (Figure 6). However, despite the monumentation, encroachment problems exist, primarily due to livestock and timber trespass. In addition, the frequency of encroachment issues is on the rise, due to an increase in private ownership of lands adjacent to the reservoir. Timber has been cut in

order to create views of the lake; and ATV riders from adjacent lands cut fences, break and/or cut gate locks, and create trails on Corps lands.

Inventorying of existing boundary monumentation is ongoing, and numbers and locations of existing monuments will be updated as the inventory progresses.

Figure 6 Boundary status.



3.4.2.1. Boundary Monumentation

The purpose for surveying, marking, and posting the Corps boundary is to prevent unintentional trespass and other unauthorized uses of government property by visually identifying property ownership. Lack of identified markings allows the public to go onto cut trees, and until there is a legally recognized boundary in adherence with federal and state cadastral laws and regulations, the Corps will have a hard time defending any enforcement actions.

Dworshak has 184 miles of boundary. Of that, approximately 140 miles has been surveyed, marked, and posted. That leaves 44 miles of boundary. On average, approximately 1 to 2 miles of that boundary is surveyed per year, with a maximum of 4 miles per year surveyed.

The following paragraph describes the common activities associated when a boundary survey occurs:

> Utilizing GPS, the land surveyor establishes control points to establish a known location. When the locations of the control points have been determined to a suitable level of accuracy, the surveyor then executes a traverse. Usually, this is accomplished by using the path of least resistance between two points. For example, the surveyor will use existing roads that parallel the boundary setting up a tripod with a total station to measure the distance between set-ups. The surveyor then continues to measure these distances until reaching the other control point. The surveyor gets from point A to B by foot and sometimes, if they're lucky, by using ATV's on established roads and trails. No ground disturbance would occur from this activity. It is possible that a line would be brushed out between set-ups. After calculating the position of the true boundary line, the surveyor then brushes out the true line, sets the monumentation in accordance with the BLM's Manual of Surveying Instructions, and then drives aluminum posts in the ground within a visible interval or at a maximum of 200 feet between boundary posts. All work is accomplished with the use of hand tools. No motorized equipment is used in this process. The monumentation is usually set in a hole approximately two feet deep by eight inches in diameter. These holes are dug with the use of hand tools such as shovels, bars, and clamshell shovels.

The Corps proposes to monument up to 5 miles of the Dworshak boundary per year.

3.4.3. Fire Management

The Corps can be held financially responsible for fires that escape project lands and burn onto an adjacent landowner's property. For this reason, in 1986, the Corps entered into a Reciprocal Fire Protection Agreement (RFPA) with the State of Idaho, Department of Lands to provide wildland fire protection and suppression for project lands. Recently this agreement has been replaced with a contract. The State meets all requirements of the RFPA through the use of the Clearwater-Potlatch Timber Protection Association (CPTPA).

Snags will be protected as wildlife habitat to the greatest extent practicable, unless a snag presents a safety hazard to operation personnel, in which case it will be removed.

There will be up to several years of planning associated with any given prescribed burn, but the potential exists for any area of Dworshak lands to be within a burn unit.

3.4.3.1. Prescribed Burning

Prescribed burning is an efficient and effective way to enhance ungulate forage, to reduce fuel loads and to create seedbeds for the natural regeneration of conifers or planting. It's been used very successfully around the reservoir to meet each of the above objectives for wildlife habitat improvements and to meet ecological restoration objectives. Wildfire is a natural ecological process and prescribed burning, if executed appropriately, can effectively emulate that process.

The Corps plans to continue using prescribed fire to meet a variety of forest management objectives. Our prescribed burning program currently utilizes the knowledge and expertise of CPTPA to accomplish our large prescribed burns. Small burns may be conducted by Dworshak staff. This will continue to be our direction unless the situation warrants a change. .

Today the Corps has the responsibility to continue to manage the elk mitigation area for its intended purposes. This requires periodic treatments to ensure that suitable winter forage is available. One such treatment necessary for the development of suitable winter range is prescribed fire. Many of the preferred browse species, especially redstem ceanothus, require heat scarification of the seed coats to bring about germination. The Corps must use prescribed fire in order to adequately meet its mitigation requirements.

Prescribed fire will also be used in ecological restoration projects. Burns will be implemented where appropriate to reach a desired future condition through emulating the natural effects of wildfire. In order to meet ecological objectives in dry forest types, prescribed fire will typically follow logging. Timber sale units or portions of units, which contain habitat types that historically received frequent under-burns and have the appropriate conditions, will be proposed for prescribed burning. Post harvest conditions such as the juxtaposition and amount of ground fuel will determine the potential to conduct an effectual prescribed burn (Kilgore and Curtis, 1987).

Although it is more expensive, trees will be topped and limbed in place to allow for more fuels on the ground to bring about an effective prescribed burn. Prior to human fire control methods, historic fires in the area likely took place in the heat of August. Prescribed burning in August to emulate natural fires would be dangerous, as temperatures and relative humidity would make controlling the burn extremely difficult. Therefore, by leaving more ground fuels a safe and effective the burn can occur in the fall. This way the fire behavior will be similar to natural fire conditions, but will be easier to control due to lower ambient temperatures, higher relative humidity, and higher fuel moistures.

Prescribed burning will occur after vegetation has been thinned and selected trees harvested. Selected units will be lit by drip torch and, in some cases, by helicopter. Burns will likely occur no earlier than September and no later than November 15. If conditions do not warrant a safe burn (e.g., conditions are not within temperature, fuel moisture, and relative humidity levels that

allow for a safe and controllable burn), the burning will be delayed until the burn season of the following year. A unique approved burn plan will be created for each prescribed burn. They will be created cooperatively by the Corps and/or the CPTPA.

Burning will most likely occur between September 1 and November 15, but specific environmental conditions in which a safe and effective prescribed burn can occur may vary based on fuels, slope, weather, aspect and other factors, which may push the burn dates outside of the identified dates one way or another.

Prescribed burning includes controlled broadcast burning and pile burning.

3.4.3.1.1. Broadcast Burning

Broadcast burning is the act of applying fire in a prescriptive manner over a broad area, typically over several acres. Broadcast burning at Dworshak is, at no time, uncontrolled. Broadcast burning, as part of prescribed treatments, is used at Dworshak for a variety of reasons including; reduce fuel loading, improve wildlife habitat and to restore ecological forest condition. The Corps generally conducts broadcast burning in the fall, but occasionally executes these burns in the spring. It involves ignition, control, and patrol. Ignition can be accomplished with a variety of tools (i.e. drip torch, propane torch, helitorch). Control really involves keeping the fire within prescription regarding intensity and location. However, in the unlikely event that a fire burns out of prescription, it is considered a wildfire, and is treated as such. Thus the best way to describe control is readiness. It includes having people and equipment available, some examples are; firefighting crews with hand tools (e.g. pulaski, shovels, McLeod), dozers, water truck, fire engines, and hose-lays with pumps. The fire is then monitored or "patrolled" for up to several days following the burn to ensure that it does not spread outside of the designated burn area.

Assessment of the environmental conditions (fuel moisture, relative humidity, ambient air temp, wind speed, and direction) of the site will be conducted prior to each burn. This is typically done multiple times prior to ignition, usually every week or so as conditions start looking favorable. The conditions will then be assess 24 hours before ignition and again right before ignition.

The Corps proposes to broadcast burn up to 1,000 acres per year in designated burn units.

3.4.3.1.2. Slashing and/or Pruning

Additional optional work includes brush slashing and pile burning. All brush slashing will be done by hand.

Slash resulting from the harvest operation will be lopped and scattered to facilitate use of prescribed fire. Maximum average slash depth after lopping and scattering is not expected to exceed 18 inches. Scattering of slash will be done to create a uniform fuel bed to successfully carry the fire and to reduce potential for crown fires. Native seral conifer species require mineral soil scarification to germinate (Steele and Geier-Hayes 1995, Schubert 1974). In some areas, where excessive fuels are generated by the lop and scatter prescription or in units where the historic fire regime did not consist of frequent under-burns, slash may be dozer-piled and burned

to reduce fuel loads. Scarification produced by dozer piling should prepare a seed bed for future browse regeneration and native seral conifers. Upon completion of the timber sale, all debris and slash at the landings will be machine piled and burned. The landing site will then be seeded with a native grass seed mix and fertilized.

The Corps proposes to perform slashing and/or pruning of up to 200 acres per year.

3.4.3.2. Pile Burning

In many places, slash will be gathered into piles, where it will be burned. Slash piling will typically be accomplished by heavy machinery, but may, at times, be done by hand, depending on the topography.

Pile burning includes the ignition, control and patrol of burning piled woody debris. Piles of woody debris are most often created to consume/remove logging slash (tree tops and limbs). They are always ignited in the late fall or winter when wildfire risk is very low. Ignition is typically accomplished with either drip torches or propane torches.

Like broadcast burning, pile burning reduces fuel loading in a more controlled fashion, but doesn't promote as much forage seed germination as the burn covers less area. Piles will be ignited during cool moist weather, late fall and winter, to reduce the potential for fire to spread.

The Corps proposes to burn up to 100 slash piles per year.

3.4.3.3. Fire Lines

The Corps proposes to annually restore a total combined length of approximately 1.25 miles of fire lines (firebreaks) around up to 25 designated camp sites (minicamps).

Fire lines will also be created around designated burn units to the minimum extent necessary as needed for burning. Fire lines will be cleaned out around designated camp sites in order to prevent the unintentional spread of camp fires outside of designated camp sites in the event that a fire gets out of control of campers.

Additional fire prevention work around mini camps involves: cleaning and removing organic materials from around fire grills, tent pads, and picnic tables.

This will include "brushing out" the fire lines around a maximum of 25 mini camps as designated by the Corps each year. This will include cutting down all over hanging brush and trees less than 6 inches DBH for a horizontal distance of five (5) feet on both sides of the center of the fire line and to a vertical distance of ten (10) feet above the ground level. Trees greater than 8 inches DBH within the "Brush out" zone shall be pruned to a height of eight (8) feet the entire circumference of the tree. Slash that is created shall be scattered to a safe distance outside the fire lines. Slash will not be scattered over or on any access trail leading to or from the camp site. Locations of the camps to receive fire line brushing will be designated by the NRM Team prior to the commencement of the general mini-camp maintenance work each year.

Fire lines around designated burn units will be constructed using bull dozers and hand tools to prevent the spread of fire to outlying areas. These breaks will be re-seeded to native grasses following management activities.

The fire lines around designated burn units will be created prior to burning the unit as part of the burning process, and to prevent the unintentional spreading of fire outside of the designated burn unit. Once fire management activities cease in a given burn unit, the fire lines will be reseeded with native seed. Fire line Rehabilitation work around designated burn units may be done by CPTPA as well. This work may include pulling fire line materials back into the area it was cleared from for line construction, grass seeding the area within the fire perimeter, construction of erosion control measures, etc.

3.4.4. Forest Management

The Corps utilizes timber harvests and other active forest management tools to meet resource use objectives. Timber harvesting for ecological restoration and forest health will primarily involve thinning overstocked forest stands, and is not for the purposes of clearing, nor will it clear the landscape of trees. However, small clear-cuts (less than 5 acres) may be used in areas of extensive insect or disease infestations to promote forest health. Selected harvesting will be used to allow for promotion of a healthier and more natural ecosystem that should eventually reflect historic conditions around the reservoir. Trees selected for removal will be primarily smaller trees, allowing for better health and continued growth of well established individual trees. Attention will be given to the optimal distance between trees, allowing for better root expansion and development, as well as moisture uptake ability by the root systems.

The objective within select recreational areas will be to remove all trees posing a risk to recreationalists (hazard trees) and thin the smaller diameter trees to improve aesthetics and reduce fuel loading. For select multiple resource management areas, the overstory will be thinned selecting for the removal of trees showing evidence of disease and/or beetle damage and are less resistant to wildfire. Trees posing a safety risk to loggers will also be selected for removal. Following harvest, the slash may be piled and burned, broadcast burned, or not treated.

Areas for treatment will be selected by the project Forester in consultation with the Dworshak Wildlife Biologist. A new GIS vegetation layer for Dworshak is currently in production. Under a Memorandum of Understanding, the Bureau of Land Management completed a comprehensive forest inventory of Dworshak. They completed their inventory (777 plots) and submitted a final report in 2009. The data will now be used as ground truth data for a remote sensing based classification using the latest satellite imagery to create a detailed forest inventory. With the GIS forest vegetation layer, Dworshak staff will be able to more easily identify areas with overstocked forest stands exhibiting elevated amounts of disease and insect infestations. Prior to the development of the final GIS layer, the current data will be used to the same end, but will be more time consuming.

Areas selected for treatment will undergo a more detailed forest inventory (timber cruise) to evaluate the potential for a small or large scale timber sale. It is anticipated that most areas

selected for treatment will include the selective harvest of timber and a timber sale. Timber harvest without a timber sale, such as pre-commercial tinning, may be used as an option. Timber harvests may include several harvest and yarding methods including "in-woods" processing, tractor yarding, cable yarding, and/or helicopter yarding. Treating slash may include hand or machine piling or scattering and pile or broadcast burning.

Forest stands throughout Dworshak in need of ecological restoration, forest health treatment and/or recreation facilities maintenance or enhancement will be identified by the project Wildlife Biologist and Forester in consultation with the Dworshak recreation staff if appropriate.

Snags will be protected as wildlife habitat to the greatest extent practicable, unless a snag presents a safety hazard to operation personnel, in which case it will be removed.

3.4.4.1. Selective Harvest

Trees for retention within harvest units will be identified through marking and all other merchantable trees within the harvest units will be available for harvest using a tractor, line skidder or, in some cases, a helicopter. Helicopter logging will be used only when necessary due to the added production expense. Harvest on steep slopes exceeding 40 percent will use helicopters and line skidding machines to yard logs to landings where they will be prepared for truck transport to mills. Helicopter yarding greatly reduces ground disturbance on steep slopes and reduces the need for roads and log landings in the immediate area.

The Corps proposes to selectively harvest up to 750 acres per year (ac/yr), which includes pre-commercial thinning. Pre-commercial thinning is basically forest thinning, cutting down trees, without taking the logs to market. Pre-commercial thinning is typically conducted on young overstocks stands in which cutting down the smaller subordinate trees will improve the forest health and particularly increased the vigor of the remaining larger trees. The Corps may put out a timber sale contract for over 1,500 acres at one time, but the harvest will occur over several years.

3.4.5. Road Management

The road management program primarily focuses on the maintenance of existing roads and associated drainage structures. However, road management activities will also be implemented as part of Access, Boundary, Fire, Forest, Wildlife Habitat, and Recreation Management. Work associated with the Program will require the use of existing primitive, gravel, and paved surface roads. Existing roads and historic road beds will be utilized during the proposed projects to the maximum extent possible. However, there will likely be the need for some additional access in areas that have no current or historic roads.

All projects will seek to provide access and haul roads first using any existing maintained roads, second maintaining and/or reconstructing existing roads and lastly constructing new roads. Nearly all roads either reconstructed or newly constructed will be temporary. Most will be grass seeded and have erosion bard installed once temporary use has seized. Others will be obliterated or decommissioned.

To accommodate timber harvests, roads will generally be used to gain access, to transport logs to the mill, and for landing areas. For selected treatment areas all existing roads will be evaluated and mapped using GPS. Where slopes exceed 40percent helicopter yarding will be used to transport logs to selected landings.

Roadwork will require the use of heavy equipment (e.g. dozers, tractors, excavators, and road graders).

Dworshak has approximately 16.2 miles of paved roads, 27.3 miles of gravel roads, and 95.7 miles of dirt roads. These figures are for all the Dworshak roads and includes roads in out-grants and roads not maintained by the NRM Team. Inventorying of existing roads is ongoing, and numbers and locations of existing roads, both in use, and abandoned, will be updated as the inventory progresses. Road Management maps are located in Appendix A.

3.4.5.1. New Construction

The construction of new roads will require the felling of timber at least 20 feet on either side of the road centerline. Clearing and grubbing will remove all trees, logs, brush, stumps, roots, slash, and other woody debris and materials embedded in the ground. The road width (running surface) for both new and reconstructed roads will be 14 feet. The cut slope is cut down and leveled out to form the subgrade width with a proper fill slope ration (common is 1 ½:1). All native and gravel surfaced sale area roads will be one lane with pullouts appropriately sized for log trucks. Pit run rock will be applied to the native surface in areas that are steep or poorly drained and at all live water crossings.

New construction includes work associated with associated ditches, other surface drainage and culvert installation for the proper functionality of the roads.

Roads to be constructed or maintained for natural resource management activities, such as harvest operations, may require blasting of rocks and other hard surfaces that cannot be altered by conventional methods. The potential for this work is extremely low as generally rocky outcroppings and the like are nearly always avoided during road layout. However, the possibility that a particular rocky outcropping cannot be avoided and must be blasted exists, but is remote.

Once a road is identified for blasting the work would include the following:

- Exact locations of each hole will be marked on the ground based on potential to improve the wetland habitat or obliterate the road surface.
- Holes will be dug into the soil using either a rock bar or a post-hole digger.
- Explosives will be placed in the holes; charges may be tied together, and set off.
- Explosives will be discharged in such a manner as to adhere to the best management practices mentioned in Appendix B for fish protection.
- Guards and warning signs will be posted during the entire blasting procedure.

See Appendix B for BMPs.

The Corps proposes up to 5 miles of new road construction per year. Annual averages may be as little as 1 mile, but may be as much as 5 miles in a year associated with a timber sale.

3.4.5.2. Road Reconstruction

Road reconstruction will consist of reconditioning and preparing the roadbed and shoulders, cleaning and shaping drainage ditches, trimming vegetation from cut and embankment slopes, and cleaning, repairing, and upgrading the drainage structures of existing roads. It also includes work for associated ditches, other surface drainage, and culvert installation. Subsequent to project completion, all roads and skid trails will be barred and grass seeded to reduce the potential for erosion. Roadbed surfaces in RHCAs will be graveled to limit suspended sediment. Sediment capture devices will be installed between work areas and streams to prevent escapement of sediment into the streams.

The Corps proposes up to 15 miles of road reconstruction per year.

3.4.5.3. Road Maintenance

Road maintenance work includes adding gravel, blading, brushing, and ditch and culvert clean-out. It also includes maintenance of the road's associated ditches and other surface drainage, and may include placing new layer of crushed gravel.

The Corps proposes to maintain up to 50 miles of roads per year.

3.4.5.4. Road Obliteration

Road obliteration is the process of re-contouring a road surface to match the surrounding landscape thus rendering the road inconspicuous for the purpose of removing any and all existing culverts, constructing drainage dips (water bars) into the road surface, and seeding all disturbed and exposed soil with a native grass seed mix once completed. The roadbed will then be allowed to re-vegetate naturally over time. The fill material will then be dug up and placed back onto the road surface along with any additional material needed to restore the natural contour of the adjacent slope. This may also include placing brush, slash, and logs on the finished surface to reduce future erosion. All disturbed and exposed soil will then be seeded with a native grass seed mix once completed. The resulting area will then be allowed to re-vegetate naturally over time. This work is generally done with heavy equipment such as; a rubber tired backhoe, an excavator, dozer, etc."Roads and or trails or portions of each to be obliterated will be evaluated and selected by the Natural Resource Specialist charged with access management in consultation with Dworshak's Wildlife Biologist.

Roads will be obliterated typically for one of two purposes. The first and probably most often reason is to return the road surface back to a natural state for a host of reasons (provide natural habitat, prevent future maintenance needs, minimize risk of erosion etc.). The second is to prevent unauthorized motor vehicle access. The biggest reason is to get it off of the Corps' inventory if it's not planned for use, so that the road does not need to be maintained.

Roads will be obliterated using a variety of sources including; Corps NRM staff, a contractor, or the construction division. It could be any road, but would typically be roads that that were recently created and aren't planned for use again for a long time, or may be very old roads that haven't been used for a long time.

Road obliteration will likely involve the use of heavy machinery (typically an excavator) and/or explosives. Explosives would largely only be used on the demolition (described below) of small sections of road to prevent unauthorized motor vehicle access and where vehicle access is limited.

It also includes removal of all drainage structures, (surface and culverts), recontouring slope, possible planting of trees and brush species, and reseeding of the disturbed area with native seed.

Once a road is identified for blasting the work would include the following:

- Exact locations of each hole will be marked on the ground based on potential to improve the wetland habitat or obliterate the road surface.
- Holes will be dug into the soil using either a rock bar or a post-hole digger.
- Explosives will be placed in the holes; charges may be tied together, and set off.
- Explosives will be discharged in such a manner as to adhere to the best management practices mentioned in Appendix B for fish protection.
- Guards and warning signs will be posted during the entire blasting procedure.

See Appendix B for BMPs.

The Corps proposes up to 2 miles of road obliteration per year

3.4.5.5. Road Demolition

Road demolition is the act of using heavy equipment or explosives to place a large hole in the road surface or to completely destroy a small section of the road to prevent vehicle passage. Road demolition will include the use of explosives for the purposes of removal of all drainage structures, (surface and culverts), re-contouring slope, and possible planting of trees and brush species. This will prevent unauthorized motor vehicle access and where vehicle access is prohibited. Demolition has also been defined as "decommissioning" of roads in previous plans and specifications at Dworshak. "Decommission" is the process of returning to an old existing road only for the purpose of removing any and all existing culverts, constructing drainage dips (water bars) into the road surface, and seeding all disturbed and exposed soil with a native grass seed mix once completed. The roadbed will then be allowed to re-vegetate naturally over time. The idea is that the individual road is either not anticipated to be used in the foreseeable future, or is deemed to be unserviceable due to failures that may have occurred in the past. The road may be reclassified as a trial at this point. This work is generally done with heavy equipment such as; a rubber tired backhoe, an excavator, etc.

There is a large volume of unauthorized motor vehicle use on Corps land surrounding Dworshak Reservoir resulting in negative impacts to soils, vegetation, wildlife, water quality and aesthetics as well as having the potential to affect resident fish and aquatic ecology, recreation, cultural resources and ESA-listed species. The Dworshak access management program utilizes one or a combination of education, signage, and physical barriers (when necessary) to prevent unauthorized access. Many of these are gates and barricades, which require annual inspection and maintenance. Obliterating all or portions of roads and trails could be used to prevent unauthorized access at a lower maintenance cost. Road obliteration may be the only physical barrier option in areas where access is limited. In these cases explosives will be used to obliterate a portion of these roads.

The Corps proposes up to 1/4 mile of road demolition per year

3.4.5.6. Culverts

Any culverts that may be installed in the vicinity of Dworshak Reservoir will be above the OHWM of the reservoir, typically in ephemeral streams. No ESA-listed fish bearing streams will have culverts installed in them. Dworshak's Wildlife Biologist reviewed the tributaries identified in StreamNet (2010), and they are all much bigger streams than would be crossed for access. .

Culvert work will include repair of existing culverts, replacement of existing culverts, or installation of new culverts.

There are currently approximately 500 culverts on Corps-managed lands at Dworshak. Inventorying of the culverts is ongoing, and numbers and locations of existing culverts, both in use, and abandoned, will be updated as the inventory progresses.

Pipe culverts and pipe-arch culverts will be bedded on a selected granular or fine readily compactable soil material having a depth of not less that 10 % of the diameter or height of the drainage structure concerned. The types and sizes of culvert will be site specific and will be wide enough to accommodate a 100-year flood. Culverts will be laid in the stream bed and clean fill will be placed over them. Fill width will be limited to the minimum necessary to complete the crossing, and the fill will not reduce existing stream widths. Manipulation of the stream banks will be limited to the culvert sites. Materials needed for construction will be obtained from and stored outside of the riparian habitat conservation areas (RHCAs).

Culvert work includes cleaning inlets, outlets, and rebuilding catch basins as needed.

The Corps proposes installation of up to 50 culverts per year

3.4.6. Wildlife Habitat Management

3.4.6.1. Wetland Enhancement

The primary purpose for wetland enhancement is to improve Dworshak wetlands for breeding amphibians, resulting in increased reproductive success. Idaho Partners in Flight (IPIF) has designated non-riverine wetlands as a high priority habitat, and established an objective of obtaining a net increase in the number of wetland acres in Idaho (IPIF 2000). Dworshak has a large number of small isolated wetlands that warrant protection and/or enhancement.

Currently, many existing wetlands around Dworshak are silting in and provide minimum adequate reproductive habitat for the species present; Pacific Chorus Frog (*Pseudacris regilla*s) and Columbia Spotted Frog (*Rana luteiventris*). The objective is to preserve the existing shallow water habitat present at the site while converting a portion of the silted in area to a combination of deep and shallow water habitat. Creating some deeper water habitat would allow the wetland to hold standing water longer into the spring and summer and greatly improve the conditions for amphibian reproduction.

Additionally, a new and more deadly strain of a fungus known as the Chytrid fungus is currently causing massive die-offs of amphibians throughout the world. If the fungus enters a wetland many times all amphibians parish. Scientists are encouraging all land managers to conserve, protect and enhance any isolated wetlands as they have less probability of encountering the virus and could act as a source population if declines continue. Currently many wetlands on Corps land are silting-in and provide minimum adequate reproductive habitat for the species present; pacific chorus frog (*Pseudacris regillas*), Columbia spotted frog (*Rana luteiventris*) and western toad (*Bufo borealis*). Further, researchers indicate that the length of the hydro-period is directly correlated with amphibian reproductive success. The longer surface water remains within any given wetland the greater the reproductive success and the species richness ad abundance. Ideal wetland habitats for amphibian reproduction include topographic relief from extremely shallow areas with minor ridges (micro-topography) to deeper wetland habitats that include some upland characteristics (macro-topography). The objective is to preserve the existing shallow water habitat present at these sites if present while converting a portion of the silted-in area to a combination of deep and shallow water habitat.

Wetlands will be evaluated and selected for enhancement by the Project Wildlife Biologist. The depth and extent of excavation will vary with existing size and condition of the wetlands and the surrounding landscape. A combination micro-topography (60% shallow water habitat) and macro-topography (40 percent deep water habitat) will be targeted for each wetland. A target depth of 3 ft will be the objective for deep water habitat and 6 to 12 inches for shallow water habitat.

Wetland enhancement work will includes deepening existing small isolated wetlands with heavy machinery or explosives. The majority of wetlands will be treated using machinery (i.e. backhoe) and hand tools. Access to some of the sites is limited to foot travel, which precludes the use of machinery to accomplish the objectives. Therefore, in these areas, the use of explosives is planned for the enhancement effort. Roads could be built to facilitate the use of

machinery, but the environmental impacts from the road building and machinery use would be substantially greater than the impacts from the use of explosives.

Once a wetland is identified for blasting the work would include the following:

- Exact locations of each hole will be marked on the ground based on potential to improve the wetland habitat or obliterate the road surface.
- Holes will be dug into the soil using either a rock bar or a post-hole digger.
- Explosives will be placed in the holes; charges may be tied together, and set off.
- Explosives will be discharged in such a manner as to adhere to the best management practices mentioned below for fish protection.
- Guards and warning signs will be posted during the entire blasting procedure.

See Appendix B for BMPs.

The Corps proposes to deepen up to 2 wetlands per year.

3.4.6.2. Planting

Planting of redstem ceanothus (*Ceanothus sanguineus*) and other forage plants within Dworshak Dam and Reservoir's elk mitigation area is proposed to meet the elk habitat maintenance requirements of Design Memorandum No. 15. Specific forage species, specific areas to be planted within the mitigation area, and exact timing of plantings will be specified by the Dworshak Wildlife Biologist. Other areas with the potential for planting may occur outside of the mitigation area, and will also be identified by the Dworshak Wildlife Biologist, if any are proposed in the future.

Planting a will involve digging a hole will by hand for each plant, approximately one foot deep and one foot in diameter. A Bobcat with an auger is available for use if site-specific conditions permit their use.

Planting may occur anywhere on Corps-managed lands at Dworshak, but the bulk will be the Grandad Mitigation Area.

The Corps proposes to plant up to 1,500 plants per year.

3.4.7. Recreation Management

Recreation Management activities associated with the Dworshak Natural Resources Land Management Program are typically captured in Access, Forest, Road, Wildlife Management. However, there are also recreation trails around Dworshak Reservoir that are the responsibility of the Natural Resource Team, and are part of the Program. These trails fall solely within Recreation Management.

3.5. Project Timeline

The proposed action will occur annually between 2011 and 2021, with quantities of each activity limited to those described above for a given year.

3.6. Proposed Conservation Measures

The Corps proposes the following conservation measures as part of the proposed action.

3.6.1. Impact Minimization Measures

The following impact minimization measures will be implemented by the Corps:

1) PACFISH/INFISH will be used as a guide in creating and maintaining RHCA buffers around all water sources. All tributaries to the reservoir within the project boundary are intermittent streams, with the exception of those portions of the Little NF Clearwater River (containing bull trout), Breakfast Creek, Reeds Creek, and Silver Creek that are within the action area. All of the intermittent streams in the action area are not ESA-listed fish bearing streams. PACFISH/INFISH guidelines suggest a RHCA encompassing 50 ft either side of these streams. The Corps' plan is to meet the PACFISH/INFISH guideline as a minimum on all intermittent streams unless the topography is such that inside of 50 ft the slope breaks and surface water would no longer drain into the stream in question. The land type within the project boundary is classified as "breaklands" by the USFS. Due to the type of landscape associated with breaklands, there are frequent changes in relief among these drainages creating narrow drainages less than 100 ft in width. For example, if a given stream drainage is only 40 ft wide (20 ft either side) protecting vegetation (prohibiting harvest) for 50 ft either side of the stream does nothing but limit our opportunity for wildlife habitat or ecological restoration work. Using the same understanding, the Corps will likely protect well over 50 ft if the slope breaks over 50 ft (e.g. 75 ft). In terms of the conditions within the RHCAs described by INFISH we plan to adhere to all once the RHCAs are established.
2) Fuel and lubricants will be stored outside RHCAs in the staging area.
3) Refueling within RHCAs will be avoided.
4) Equipment will be staged outside RHCAs when not in use.
5) Equipment will be inspected for leaks and cleaned in the staging area prior to RHCA entry. Any detected leaks will be repaired before the vehicle enters an RHCA.
6) A spill prevention and control plan will be developed and discussed to equipment operating personnel prior to instream work.
7) A hazardous materials spill kit will be required on site during work on any blasting project.
8) Ephemeral stream channels will not be used as forwarder/skid trails, landing sites, or road locations. Equipment will cross ephemeral channels at designated crossings to minimize soil disturbance. Vegetative debris will be placed in the designated crossings to reduce soil displacement and compaction.

9) Contamination of waterbodies by drip torch fuel will be avoided. Refueling and storage of drip torch fuel will occur outside of RHCAs. Crossing any waterbody with a drip torch containing fuel will be prohibited.
10) All burning will be executed in accordance with developed burn plans[3].
11) Fires will not be ignited within RHCAs.
12) Fires will only be allowed to back-down within RHCAs. The Corps will also require:
    a. Handlines on overly steep slopes and select when possible ridge tops for dozer lines,
    b. that firelines do not run along streams in RHCAs, but may, at times, have to run into RHCA's,
    c. waterbars on all firelines (firelines will need to tie into wet draws to prevent escaped fire).
13) Once initial prescribed burns are executed and fuel loads are reduced, the stewardship project area will be monitored to evaluate the need for subsequent prescribed burns.
14) All snags will be left unless they present a hazard to logging activities. Leaving the dominant and codominant trees will also provide for snag replacement trees.
15) Minimizing development of new roads.
16) Using best management practices to control erosion damage, particularly on roads.
17) All roads will have erosion bars installed where needed upon project completion.
18) Re-vegetation of road surfaces with native grass seed mix upon project completion where needed.
19) Erosion and sediment control measures include:
    a. Prohibiting harvest from RHCAs.
    b. Measures in place to monitor for and reduce the potential for the establishment of invasive plants in disturbed areas associated with broadcast and pile burning include the Corps requires contractors to ensure that their equipment is clean. The Corps also conducts annual inventories of noxious weeds and target recently burned areas as priority for inventories. Currently the Corps treats all known noxious weeds populations.
    c. Seeding all roads and landings.
    d. Using berms, water bars, cross-draining, diversions, sediment traps, out sloping, and/or silt fences.
    e. Scattering slash material.
    f. Closing work sites during heavy rains and snowfall.
20) Access restriction barriers will be installed to prevent unauthorized motorized access.
21) In the unlikely event that a redd is observed, it will be avoided. However, there is no spawning in the action area in the reservoir. .
22) A no disturbance zone, with a radius of 150 feet, will be maintained around all known and active raptor nests from March 1 through August 31. If tree removal is needed

[3] The only suppression activities that the Corps would execute would be initial attack which would involve smothering a spot fire with flappers or dirt (shoveling), creating a small handline or applying water via a bladder bag or an ATV mounted spray rig. Extended attack would be accomplished by the Clearwater/Potlatch Timber Protection Association (CPTPA)(http://www.cptpa.com/). They have jurisdiction to fight fires on any land within their fire district and depending on the fire they could use any variety of fire suppression methods. If CPTPA is required to execute substantial fire suppression activities as a result of an "out of control" prescribed burn they will take any measure necessary to suppress the fire.

within this no disturbance zone, the removal will be conducted between October 1 and November 1. In addition neither the nest tree(s), nor any other trees within 50 feet of the nest tree, may be removed. A Corps wildlife biologist will survey the sale area prior to harvest activity to determine if there are active raptor nests within the units.

23) Eagles:
    a. Avoid clear-cutting or removal of overstory trees within 330 feet (100 meters) of both active and alternate nests at any time.
    b. Avoid timber harvesting operations, including road construction and chain saw and yarding operations, during the nesting season within 660 feet (200 meters) of the nest. The distance may be decreased to 330 feet around alternate nests within a particular territory, including nests that were attended during the current nesting season but not used to raise young, after eggs laid in another nest within the territory have hatched.
    c. Selective thinning and other silviculture management practices designed to conserve or enhance habitat, including prescribed burning close to the nest tree, should be undertaken outside the nesting season.
    d. If burning during the nesting season is necessary, do the following:
        i. Conduct burns only when adult eagles and young are absent from the nest tree (i.e., at the beginning of, or end of, the nesting season, either before the particular nest is active or after the young have fledged from that nest).
        ii. Take precautions such as raking leaves and woody debris from around the nest tree to prevent crown fire or fire climbing the nest tree.
        iii. Avoid construction of log transfer facilities and in-water log storage areas within 330 feet (100 meters) of active and alternate nests nest
    e. To avoid disturbing nesting bald eagles and their young, do not fly aircraft within 1000 feet (305 meters) of the nest, except where eagles have demonstrated tolerance for such activity
24) Activity will be limited within 1 mile of any identified active gray wolf dens from April 1-June 15.
25) Blasting: see Appendix B for:
    a. Protection of fish
    b. Protection of migratory birds.

3.6.2. Best Management Practices

Typical types of best management practices would depend on site-specific conditions, but would generally include the following.

1) Preferred order of retention species will be based on existing stand composition.
2) Retain all trees within 50 feet on each side of draws showing scoured flow channel or having flowing water.
3) Retain all trees within 50 feet of seeps, springs, and bogs.
4) Retain all trees within 50 feet of raptor nests.
5) Retain all trees within 100 feet of the ordinary high water mark of the reservoir.
6) Retain all trees within 100 feet of each minicamp.

7) Retain all snags and culls (unless they present a safety hazard).
8) Select and remove trees with faded needles to enhance forest health.
9) Select and remove trees to improve forest health if evidence of insect or disease attacks is observed in centralized locations affecting numerous trees. This should further provide a more natural mosaic.
10) In helicopter-yarded stands, generally the minimum diameter at breast height (DBH) tree marked will be 9 inches. Top diameter specifications will be 6 inches.
11) Do not retain any trees with an 80 % or greater crown ratio; mainly grand fir, Douglas fir, or open ground ponderosa pine in planed burn units. These trees will likely burn if left in place.
12) Ensure diversion of surface runoff around road construction.
13) Place berms to prevent runoff to local creeks around road construction.
14) Use erosion bars and sediment traps for road construction.
15) Care will be taken to minimize the visual intrusiveness of the operation on the reservoir user.
16) Road obliteration work will be conducted during dry conditions when the potential for erosion is minimal.
17) All disturbed surfaced roads and trails shall be grass seeded with native grass species upon completion.
18) Ensure diversion of surface runoff around road obliteration work.
19) Place sediment traps and/or silt fences to prevent runoff to local creeks around road obliteration work.
20) Any instream work will be done under dry conditions either through dewatering or done when intermittent streams are dry.
21) Blasting: see Appendix B for:
    a. Protection of fish
    b. Protection of migratory birds.

3.7. Mitigation

Mitigation should not be required under the Clean Water Act, as there will be no in-water work, or fill in the waters of the United States. 1

Mitigation for the proposed action related to issuance of permits under the Clean Water Act may be required as part of the permitting process.

3.8. Interdependent and Interrelated Actions

Recreation is an interrelated and interdependent action. Recreation may increase in treated areas. The increase in recreation is not expected to cause any measurable increase in environmental impacts over current recreation use of Dworshak.

3.9. Ongoing and Previous Projects in the Action Area

There are several similar fire, forest, and road management projects that have, and are occurring in the project area, as previously discussed. The following list also includes several recreation-related projects, the nature of which would be covered under a Recreation Program:

- 2011-Canyon Creek Recreation Enhancement
- 2011-Ahsahka Stewardship
- 2009-Three Meadows Campground Clearwater Power Easement
- 2009-Freeman Creek Campground Dock Replacement
- 2009-Freeman Creek Boat Dock Replacement
- 2008-Freeman Creek Swing Set Installation
- 2008-Freeman Creek Standpipes
- 2008-Freeman Creek Campground CXT Restroom
- 2008-Dworshak Large Boat Mooring Buoys
- 2007-Three Meadows Access Road Repair
- 2007-Freeman Creek Playground Equipment
- 2007-Canyon Creek Road Easement Extension
- 2007-Big Eddy Marina Anchor repair
- 2006-Dworshak Nutrient Supplementation
- 2005-Install Large-Vessel (Houseboat) Mooring Buoys, Bruce's Eddy
- 2003-Hudson and Robinson Creek Prescribed Burns
- 2002-Granddad Boat Ramp Extension
- 1998-Bishop-Chute Creeks Timber Salvage Sale
- 1995-Freeman Creek Boat Ramp Extension
- 1994-Weitas Creek Timber Sale
- 1994-Indian Creek Timber Sale
- 1994-Dent Acres Campground Boat Ramp Extension

3.10. Monitoring

Implementation and effectiveness monitoring would be implemented on a schedule determined by the Wildlife Biologist at Dworshak. Implementation monitoring would occur during each project by personnel conducting the activity and by Dworshak's Wildlife Biologist. Adjustments to IMMs would occur as required based on the professional judgment of Dworshak's Wildlife Biologist.

Not all activities that are part of the proposed action would require effectiveness monitoring. For example, monitoring the effectiveness of gate and/or barricade refurbishing would not be valuable. However, monitoring the effectiveness of a prescribed burn to determine if the burn objectives were met would be extremely valuable. Those activities that would have effectiveness monitoring activities associated with them would include:

- Fire Management
- Wildlife Habitat Management

Monitoring will also provide valuable information on how effective the IMMs are in reducing impacts to species and habitats. Monitoring would indicate whether or not adjustments in IMMs would be needed to provide effective impact minimization. For example, buffer zones around raptor nests could easily be evaluated during the avian surveys routinely conducted by Dworshak's Wildlife Biologist.

An example of the Corps monitoring plans can be found in Appendix C.

3.11. Project Tracking

Project tracking in the form of a spreadsheet, sent to USFWS annually in conjunction with any monitoring reports, would allow for tracking of which projects are implemented each year and the location of those projects.

4. Status of Species and Critical Habitat

4.1. Species Lists from NMFS and USFWS

On 13 June 2011, the Corps reviewed the current list of threatened, endangered, and candidate species that pertain to the area affected by this action under jurisdiction of the National Marine Fisheries Service (NMFS) (http://www.nwr.noaa.gov/ESA-Salmon-Listings/upload/snapshot-7-09.pdf), as well as the list for species under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) for Clearwater County, Idaho (http://www.fws.gov/idaho/species/IdahoSpeciesList.pdf).

4.2. Identification of Listed Species and Critical Habitat

Table 4 Federal Register notices for final rules that list threatened and endangered species, designate critical habitats, or apply protective regulations to listed species considered in this consultation. Listing status: 'T' means listed as threatened under the ESA; 'E' means listed as endangered; "P" means proposed for listing or designation.

Species	Listing Status	Critical Habitat	Protective Regulations
Chinook salmon (*Oncorhynchus tshawytscha*)			
Snake River fall-run	T 6/28/05; 70 FR 37160	12/28/93; 58 FR 68543	6/28/05; 70 FR 37160
steelhead (*O. mykiss*)			
Snake River Basin	T 1/05/06; 71 FR 834	9/02/05; 70 FR 52630	6/28/05; 70 FR 37160
bull trout (*Salvelinus confluentus*)			
Columbia River DPS	T 6/10/98; 63 FR 31647 31674	9/02/05; 70 FR 56211 56311: 10/18/10; 75 FR 63898	
Canada lynx (*Lynx canadensis*)			
Contiguous U.S. DPS	T 3/24/00; 63 FR 16051 16086	2/25/09; 74 FR 8615 8702	
North American Wolverine (*Gulo gulo luscus*)			
Candidate	C 12/14/2010: 75 FR 78030 78061		

SR fall Chinook salmon and SRB steelhead do not occur upstream of Dworshak Dam. Anadromous fish have not been able to pass Dworshak dam since its completion in 1972. No species under the jurisdiction of NMFS occur upstream of Dworshak Dam, within the action area, or within Dworshak Reservoir. There will be no effect on species or designated critical habitat under the jurisdiction of NMFS.

4.3. Identification of Designated Critical Habitat

Critical habitat has been designated for bull trout in the reservoir. There is no designated critical habitat for SR fall Chinook salmon or SRB steelhead within the reservoir, or the action area.

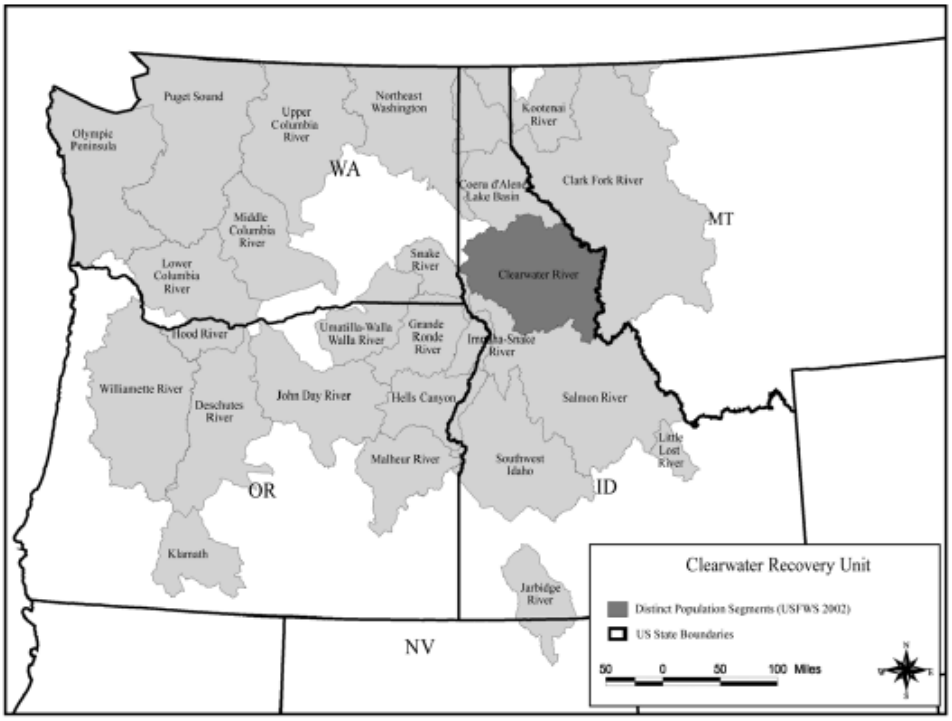
4.4. Status of Species

4.4.1. Bull Trout

4.4.1.1. Listing History

The USFWS issued a final rule listing the Columbia River population of bull trout as a threatened species on June 10, 1998 (63 FR 31647). Bull trout are currently listed throughout their range in the coterminous United States as a threatened species. Bull trout critical habitat was designated in 2005, and a new proposed final rule was issued in early 2010 for critical habitat throughout Idaho. In the Columbia River Basin, bull trout historically were found in about 60 % of the basin. They now occur in less than half of their historic range. Populations remain in portions of Oregon, Washington, Idaho, Montana, and Nevada. In the Klamath River Basin, bull trout occur in 21 % of their historic range. The Clearwater River Recovery Unit (CRRU) 21 (Figure 7) forms part of the range of the Columbia River Distinct Population Segment. The CRRU includes the entire CRB upstream from the confluence with the SR. Bull trout are distributed throughout most of the large rivers and associated tributary systems within the CRRU, and they exhibit adfluvial, fluvial and resident life history patterns (CSS 2001). The CRRU consists of 7 core areas, with a total of 45 local populations and 27 potential local populations distributed among the core areas (USFWS 2002).

Figure 7 Location of CRRU (USFWS 2002).



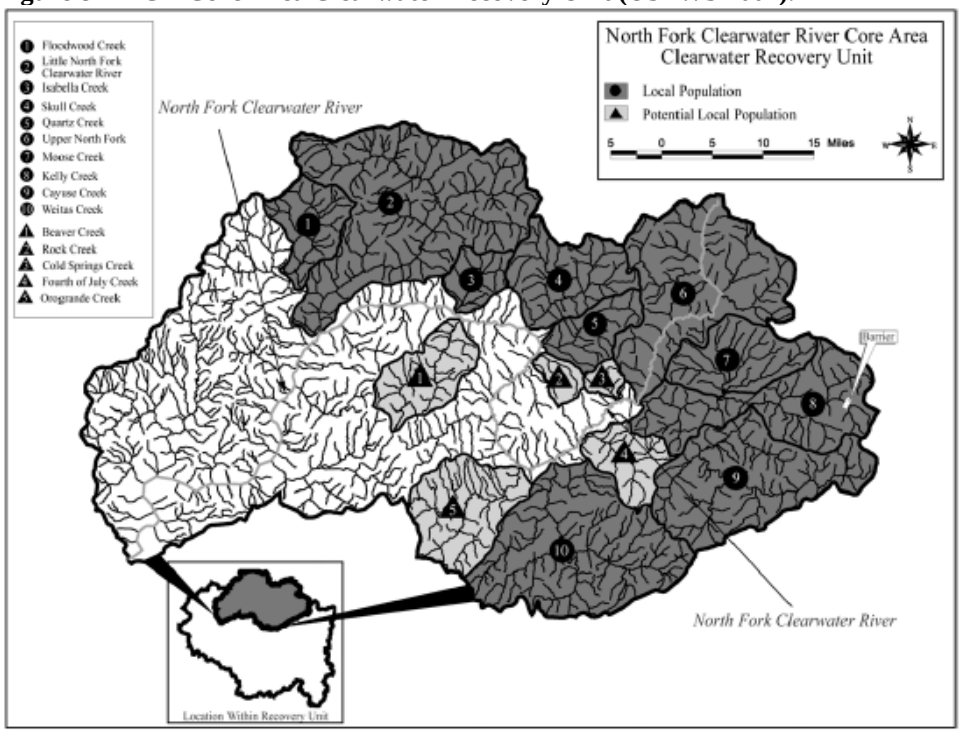
The CRRU is one of 22 recovery units designated for bull trout in the Columbia River basin (Figure 7). The CRRU includes the entire CRB upstream from the confluence with the SR. Except for some high elevation lakes and streams with natural barriers, bull trout were historically likely able to move among most areas within the recovery unit. However, Dworshak Dam now isolates bull trout in the NFCR from fish in the remainder of the basin. The CRB is included in a single recovery unit because it likely functioned as a unit historically (USFWS 2002).

The CRRU has been divided into seven core areas for purposes of recovery planning. These core areas include the NFCR, Fish Lake (an isolated basin in the NFCR watershed), Lochsa River, Fish Lake (an isolated basin in the Lochsa River watershed), Selway River, South Fork CR, and the Lower and Middle Fork CR (USFWS 2002).

The NFCR core area (Figure 8) is located in Clearwater, Idaho, and Shoshone Counties. It includes the NFCR River and all its tributaries upstream of Dworshak Dam. The core area is approximately 632,360 hectares (1,562,561 acres). Elevations range from 441 meters (1,445 feet) near the reservoir to 2,440 meters (8,000 feet) at the headwaters. Major tributaries within the core area include; Elk Creek, Little NFCR, Beaver Creek, Quartz Creek, Skull Creek, Orogrande Creek, Weitas Creek, and Kelly Creek (USFWS 2002).

The NFCR flows 46 kilometers (29 miles) from its headwaters to Dworshak with an average annual discharge of 100 cubic meters per second (3,520 cubic feet per second) from Dworshak Dam. Long-term discharge and temperature data have been recorded by the U.S. Geological Survey at Canyon Creek, just upstream of Dworshak.

Figure 8 NFCR Core Area Clearwater Recovery Unit (USFWS 2002).



The NFCR has been identified by the State of Idaho as a Special Resource Water. This State designation recognizes the NFCR as having at least one, if not all, of the following characteristics: (1) the water is of outstanding high quality, exceeding cold water biota standards; (2) the water is of unique ecological significance; (3) the water possesses outstanding recreational or aesthetic qualities; and (4) intensive protection of the quality of the water is in the paramount interest of the people of Idaho (USFWS 2002).

4.4.1.2. Life History/Biological Requirements

Individual bull trout may exhibit resident or migratory life history strategies. Resident bull trout carry out their entire life cycle in the stream in which they spawn and rear. Migratory bull trout spawn in tributary streams, but eventually travel to larger streams (or lakes) where they mature. Habitat components that appear to influence bull trout distribution and abundance include water temperature, cover, channel form and stability, valley form, spawning and rearing substrates and migratory corridors (with resting habitat). All life history stages of bull trout are associated with complex forms of cover, including large woody debris, undercut banks, boulders, and deep pools.

Bull trout normally reach maturity in four to seven years and may live as long as twelve years. They generally spawn from August to November during periods of decreasing water temperatures. Migratory bull trout may travel over one hundred miles to their spawning grounds. Egg incubation is normally 100 to 145 days and fry remain in the substrate for several months.

Bull trout are opportunistic feeders. Their diet requirements vary depending on their size and life history strategy. Resident and juvenile bull trout prey on insects, zooplankton, and small fish. Adult migratory bull trout mainly eat other fish.

4.4.1.3. Distribution

Bull trout are distributed throughout most of the large rivers and associated tributary systems within the CRRU. Bull trout exhibit adfluvial, fluvial, and resident life history patterns within the CRRU. Fluvial and resident bull trout populations have been commonly documented throughout the current range of bull trout in the CRRU. There are two naturally adfluvial bull trout populations within the CRRU; one is associated with Fish Lake in the upper NFCR drainage, and the other is associated with Fish Lake in the Lochsa River drainage (USFWS 2002).

Wydoski and Whitney (2003) indicate that all four life history types of bull trout (anadromous, adfluvial, fluvial, and resident) require water temperatures below 15°C (59° F). In Idaho, bull trout were found at elevations from 2000 to 3800 feet in elevation with gradients ranging from 1.9 to 8.3 % (Wydoski and Whitney 2003).

StreamNet (2010) shows the distribution of bull trout throughout the Lower North Fork subbasin (Figure 9). The information indicated that bull trout use 27% (242.0 miles) of the total stream miles (901.76 miles) in the HUC (Table 5). Distribution in the reservoir appears to be limited to streams higher in the reservoir above the action area (StreamNet 2010). Bull trout are known to use the reservoir for overwintering at times that correspond with the drawdown season, which results in lower water levels throughout the reservoir.

Figure 9 Bull Trout Distribution in Lower North Fork Clearwater (HUC 17060308) (StreamNet 2010)

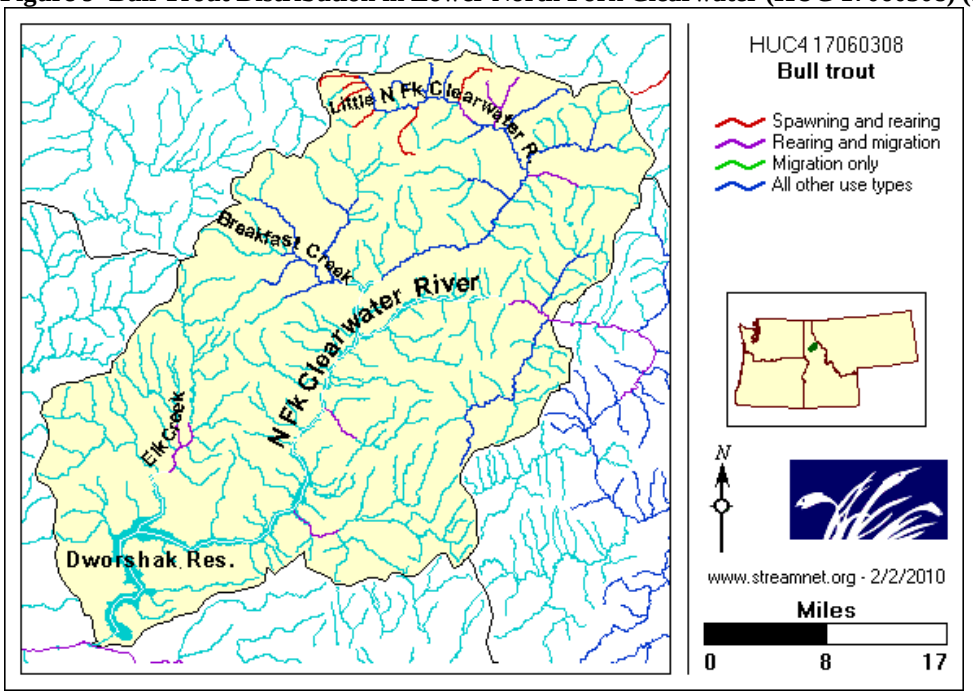


Table 5 Lower North Fork Subbasin Bull Trout Life History Usage (StreamNet 2010).

Species	Run	Use Type	Miles of Stream Used (mi)	% of Stream Miles Used
Bull trout	N/A	Spawning and rearing	20.35	2%
		Rearing and migration	34.22	4%
		Year-round use	113.04	13%
		Nodal (adult residence)	65.21	7%
		Unknown	9.22	1%
Total: Total Stream Miles in the defined area: 901.76			242.0	27%

4.4.1.4. Factors for Decline

4.4.1.4.1. Historical Pressures on the Species

Bull trout are estimated to have occupied about 60 percent of the Columbia Basin and presently occur in only about 45 percent of their historic range. The decline of bull trout is primarily due to habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, past fisheries management practices and the introduction of non-native species. Declining salmon and steelhead populations could also negatively impact bull trout populations by reducing the number of juvenile salmon and steelhead that bull trout might prey on.

4.4.1.4.2. Current Pressures on the Species

Bull trout habitat is sensitive to stream channel changes. Altered flow regimes, sedimentation rates, bank erosion, and reduced channel complexity all reduce the quality of bull trout habitat.

4.4.1.4.3. Limiting Factors for Recovery

Barriers between isolated populations are a limiting factor for most of the bull trout subpopulations in the Columbia Basin.

4.4.1.5. Local Empirical Information

Dworshak Dam is a barrier to upstream fish passage. The reservoir has an isolated sub-population of migratory bull trout. Migratory bull trout formerly linked resident bull trout to the overall gene pool for this species. Migration barriers have isolated these populations, potentially causing a loss of genetic diversity. In some cases, reservoirs such as Libby, Hungry Horse, and Dworshak provide habitat that is used by adfluvial populations of bull trout (USFWS 2000).

Available historical data does not suggest bull trout spawning/early rearing habitat was inundated when Dworshak or the Lower SR dams were completed; all evidence suggests that the impounded areas were historically used as adult/subadult foraging and over-wintering areas. This use continues today for these age groups (USFWS 1998).

4.4.1.5.1. Current Local Population Information

Spatial and temporal distribution, migration patterns, spawning sites, and basic life history information of bull trout in Dworshak are currently being investigated by IDFG. IDFG's investigation began in the spring of 2000 and, as of 2002, 163 adult bull trout had been captured, radio-tagged, and monitored. Preliminary findings indicated extensive use of the reservoir by bull trout for over-wintering. Bull trout enter the reservoir after spawning in the larger tributaries. They may remain in the tributaries for extended periods of time after spawning or migrate to the reservoir immediately depending on the abundance of prey in the specific tributary. For example, bull trout spawning in the Little NFCR have been documented to begin their downstream migration immediately following spawning and reach the reservoir in early September. Whereas spawning adults in the mainstem reach the reservoir in late October presumably due to a large spawning population of kokanee in the mainstem. Bull trout will spend the entire winter in the reservoir and begin their upstream migration in late May to early June. The highest concentrations of wintering bull trout have been documented as occurring between Cranberry Creek and Elkberry Creek (D. Schiff, personal communication, 2003).

4.4.1.5.2. Ongoing Monitoring

The Idaho Department of Fish and Game (IDFG) continues to monitor bull trout in Dworshak.

4.4.2. Canada Lynx

4.4.2.1. Listing History

The Canada lynx was listed as a threatened species in 2000. In 2003, in response to a court-order to reconsider the listing, USFWS clarified their final listing decision. Recent observations of lynx are primarily from the Cascade Range and the Blue Mountains. Canada lynx likely have never been as abundant in the lower 48 States as they were in northern Canada and Alaska because there is less lynx and snowshoe hare habitat at the southern part of the range.

4.4.2.2. Life History/Biological Requirements

Canada lynx are medium-sized cats, generally measuring 75-90 centimeters long (30-35 inches) and weighing 8-10.5 kilograms (18-23 pounds). Canada lynx are smaller than the European lynx with a shorter tail and longer hind legs. They have large feet adapted to walking on snow, long legs, tufts on the ears, and black-tipped tails. They are highly adapted for hunting snowshoe hare, the primary prey, in the snows of the boreal forest.

Lynx in the contiguous United States are at the southern margins of a widely-distributed range across Canada and Alaska. The center of the North American range is in north-central Canada. Lynx occur in mesic coniferous forests that have cold, snowy winters and provide a prey base of snowshoe hare (Ruggiero et al. 2000). These forests are generally described as boreal forests. In North America, the distribution of lynx is nearly coincident with that of snowshoe hares. Lynx survivorship, productivity, and population dynamics are closely related to snowshoe hare density in all parts of its range. A minimum density of snowshoe hares (greater than 0.5 hare per hectare

(1.2 hares per acre)) distributed across a large landscape is necessary to support survival of lynx kittens and recruitment into and maintenance of a lynx population.

In the United States, lynx inhabit conifer and conifer-hardwood habitats that support their primary prey, snowshoe hares. Both timber harvest and natural disturbance processes, including fire, insect infestations, catastrophic wind events, and disease outbreaks, can provide foraging habitat for lynx when resulting understory stem densities and structure provide the forage and cover needs of snowshoe hare). These characteristics include a dense, multi-layered understory that maximizes cover and browse at both ground level and at varying snow depths throughout the winter (crown cover within the lower 4.5 meters (15 feet) in order to provide cover and food for snowshoe hares to 2 meters (6 feet) high at maximum snow depths). Despite the variety of habitats and settings, good snowshoe hare habitat has a common denominator – dense, horizontal vegetative cover 1-3 meters (3-10 feet) above the ground or snow level.

The southernmost extent of the boreal forest that supports lynx occurs in the contiguous United States in the Northeast, western Great Lakes, northern and southern Rockies, and northern Cascades. Here the boreal forest transitions into other vegetation communities and becomes more patchily distributed. As a result, the southern boreal forests generally support lower snowshoe hare densities, hare populations do not appear to be as highly cyclic as snowshoe hares further north, and lynx densities are lower compared to the northern boreal forest.

Individual lynx maintain large home ranges (reported as generally ranging from 31 to 216 kilometers^2 (km^2), or 12-83 mi^2. Thus, a lynx population can only persist in a large boreal forested landscape that contains appropriate forest types, snow depths, and high snowshoe hare densities. In the Northeast, lynx were most likely to occur in areas that support deep snow (greater than 268 centimeters [106 inches] annual snowfall) associated with regenerating boreal forests in landscapes 100 km^2 (40 mi^2) or greater in area. The Corps assumes areas with smaller patches of boreal forest are unlikely to provide a sufficient amount of habitat suitable to support a lynx population.

Lynx are highly mobile and have a propensity to disperse long distances, particularly when prey becomes scarce. Lynx also make long distance exploratory movements outside their home ranges. Areas or habitats used by lynx during dispersal or exploratory movements are poorly understood at this time. Dispersing lynx may colonize suitable but unoccupied habitats, augment existing resident populations, or disperse to unsuitable or marginal habitats where they cannot survive. Numerous lynx mortality records exist from anomalous habitats or habitats where no records support evidence (either current or historical) of a reproducing population. Many of these records correspond to post-population peaks in Canada, with some lag time for immigration. The Corps finds no evidence of lynx populations becoming established in such areas.

4.4.2.3. Distribution

The Canada lynx occurs throughout Canada and Alaska, in the extreme northeastern and north-central U.S., and in the northern and central Rocky Mountains (ICDC 2010). In western states, most lynx occurrences (83%) were associated with Rocky Mountain Conifer Forest, and most

(77%) were within the 1,500-2,000 m (4,920-6,560 ft) elevation zone (McKelvey et al. 2000*b*). Primary vegetation that contributes to lynx habitat is lodgepole pine, subalpine fir, and Engelmann spruce (Aubry et al. 2000). Within Idaho populations occur north of the Salmon River in the west and north of the Caribou Range in the east (McKelvey et al. 2000). The total population size in Idaho is unknown, but it is thought to be less than 100 individuals (ICDC 2010). In extreme northern Idaho, northeastern Washington, and northwestern Montana, cedar-hemlock habitat types may also be considered primary vegetation. In central Idaho, Douglas-fir on moist sites at higher elevations may also be considered primary vegetation. Secondary vegetation that, when interspersed within subalpine forests, may also contribute to lynx habitat, includes cool, moist Douglas-fir, grand fir, western larch, and aspen forests. Dry forest types (e.g., ponderosa pine, climax lodgepole pine) do not provide lynx habitat (USACE 2006).

4.4.2.4. Local Empirical Information

The IDFG, using 12 remote camera stations and live traps, conducted surveys for furbearers and carnivores throughout Dworshak in 2000 and 2001. Eleven species of furbearers and carnivores were documented. No lynx were observed within the study area. However, lynx have been documented in 2 locations north of Breakfast Creek, one on the Floodwood Road in 1997 and once at Stocking Meadows Ridge in 1998 (USACE 2006). The exact location of the Floodwood sighting is unknown. The Floodwood road begins at Clarkia, Idaho and ends on the top of Smith Ridge by the Clearwater National Forest boundary and varies greatly in elevation, diving into canyons and climbing to the tops of ridges. With respect to Stocking Meadows, it is about 3 miles from the nearest edge of a Corps boundary and lies 1,600 feet higher than the nearest segment of Corps boundary (2,200 feet Corps versus 3,800+ feet Stocking Meadows).

4.4.2.4.1. Current Local Population Information

There are no known local populations of Canada lynx in the action area.

4.4.2.4.2. Ongoing Monitoring

There are no known ongoing monitoring efforts for Canada lynx at Dworshak.

4.4.3. North American Wolverine (Candidate)

4.4.3.1. Listing History

The North American wolverine is currently a candidate species, and was petitioned for listing as threatened or endangered by the USFWS on December 14, 2010.

4.4.3.2. Life History/Biological Requirements

Wolverines are opportunistic feeders, consuming a variety of foods depending on availability. They primarily scavenge carrion, but also prey on small animals and birds and eat fruits, berries, and insects. Wolverines have an excellent sense of smell, enabling them to find food beneath deep snow. Breeding generally occurs from late spring to early fall. Females undergo delayed

implantation until the following winter to spring, when active gestation lasts from 30 to 40 days. Litters are born between February and April, containing one to five kits, with two to three kits being the most common number. Wolverines have large spatial requirements; the availability and distribution of food is likely the primary factor in determining wolverine movements and home range). Wolverines can travel long distances over rough terrain and deep snow, with adult males generally covering greater distances than females. Home ranges of wolverines are generally extremely large, but vary greatly depending on availability of food, gender, age, and differences in habitat (USFWS 2011).

Wolverine habitat consists entirely of alpine, arctic, and sub-arctic regions. Snow cover during the spring is essential for females who use deep snow banks for denning throughout the pregnancy and weaning periods. Habitat areas for wolverines are usually isolated and described as "patchy," often separated by large areas of unsuitable habitat. Almost all wolverine habitat in the contiguous U.S. is federally owned and managed. Suitable wolverine habitat in Oregon is considered to be the high-elevation forests of the Cascade Range, and of the Blue Mountains, Wallowa Mountains, and Ochoco Mountains. There is potential for wolverines from the Rocky Mountain population to enter Oregon from Idaho, Wyoming, or Montana.

4.4.3.3. Distribution

Reproductive dens in Idaho were located in snow-covered boulder talus in subalpine cirque basins (Copeland 1996; Magoun and Copeland 1998). Home ranges of adult wolverines range from less than 100 square kilometers (km2) to over 900 km2 (38.5 square miles (mi2) to 348 mi2) (Banci 1994). Copeland (1996) found that annual home ranges of resident adult females in central Idaho averaged 384 km^2 (148 mi^2), while the annual home ranges of resident adult males averaged 1,522 km^2 (588 mi^2) (USFWS 2011).

4.4.3.4. Local Empirical Information

Wolverines have not been documented at Dworshak and are not on species lists maintained by the Dworshak Wildlife Biologist. Although it is possible, it is likely that wolverines may not occur at elevations consistent with Dworshak Reservoir, as the upper most elevations in the timber forest at Dworshak are at the lower end of the recorded inhabited elevation of wolverines. Combined with the amount of anthropogenic influence at the reservoir, and the solitary nature of wolverines, it seems highly unlikely that wolverines would occur near the reservoir (R. Davis, personal communication, May 17, 2011).

4.4.3.5. Current Local Population Information

There are no known local populations of wolverine in the action area.

4.4.3.6. Ongoing Monitoring

There are no known ongoing monitoring efforts for wolverine at Dworshak.

4.5. Status of Critical Habitat

In 1993, NMFS determined that the critical habitat designations for SR fall-run Chinook salmon would focus on the physical and biological features of the habitat that are essential to the conservation of the species. In 2005, in designating critical habitat for SRB steelhead NMFS focused on certain habitat features called "primary constituent elements" (PCEs) that are essential to support one or more of the life stages of salmon and steelhead. The 2005 designations also analyzed areas that will provide the greatest biological benefits for listed salmon and balance the economic and other costs for areas considered for designation.

There is no designated or proposed critical habitat in Dworshak for SR fall Chinook salmon or SRB steelhead.

4.5.1. Bull Trout

4.5.1.1. Geographical Extent of Designated Critical Habitat

Bull trout critical habitat was designated in 2005.The USFWS revised the designation in 2010. A final rule was published on October 18, 2010.

Unit 21: Clearwater River Unit. The CR Critical Habitat Unit (CHU) is located east of Lewiston, Idaho, and extends from the SR confluence at Lewiston on the west to headwaters in the Bitterroot Mountains along the Idaho–Montana border on the east in Nez Perce, Latah, Lewis, Clearwater, Idaho, and Shoshone Counties. This unit includes five Critical Habitat subunits (CHSUs): Lower/ Middle Fork CR; NFCR (and Fish Lake); South Fork CR; Lochsa River (and Fish Lake); and the Selway River. In the CR CHU, 2,702.1 km (1,679.0 mi) of streams and 6,721.9 ha (16,610.2 ac) of lake and reservoir surface area are designated as critical habitat. Figure 10 shows bull trout critical habitat in relation to Corps lands at Dworshak.

Bull trout critical habitat in the action area is limited to Dworshak Reservoir (defined by 1,600 msl), and some free-flowing areas of reservoir tributaries above 1,600 msl, which includes: approximately 2,200 ft of free-flow Little NF Clearwater River (containing bull trout), a 1,500 ft section of free-flowing portion of Breakfast Creek, 600 ft of Reeds Creek, and 800 ft of Silver Creek. There is no free flowing portion of the NF Clearwater River on Corps lands (Figure 11). All free flowing portions are outside the action area (S. Martin, personal communication, November 4, 2011).

Bull trout may occur throughout the reservoir, and are generally dispersed through the reservoir. However, most bull trout leave the reservoir by April and return to the reservoir in September (S. Wilson, personal communication, November 8, 2011). The highest concentrations of wintering bull trout have been documented as occurring between Cranberry Creek and Elkberry Creek (D. Schiff, personal communication, 2003). Bull trout may also occur in the portions of the Little NF Clearwater River,

Figure 10 Designated Critical Habitat for Bull Trout in Unit 21- North Fork Subunit (USFWS 2010d). The map includes all of the Corps lands at Dworshak.

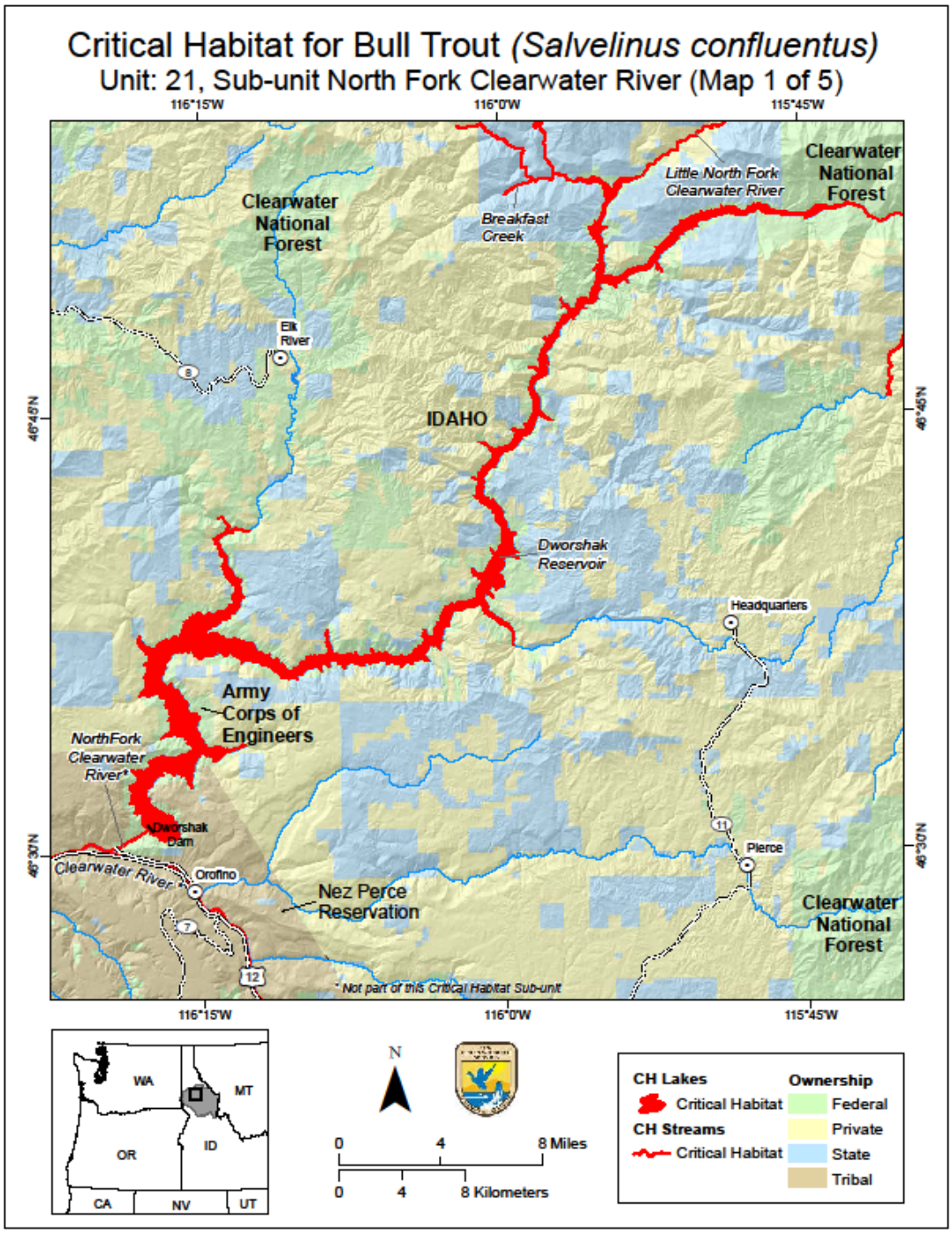
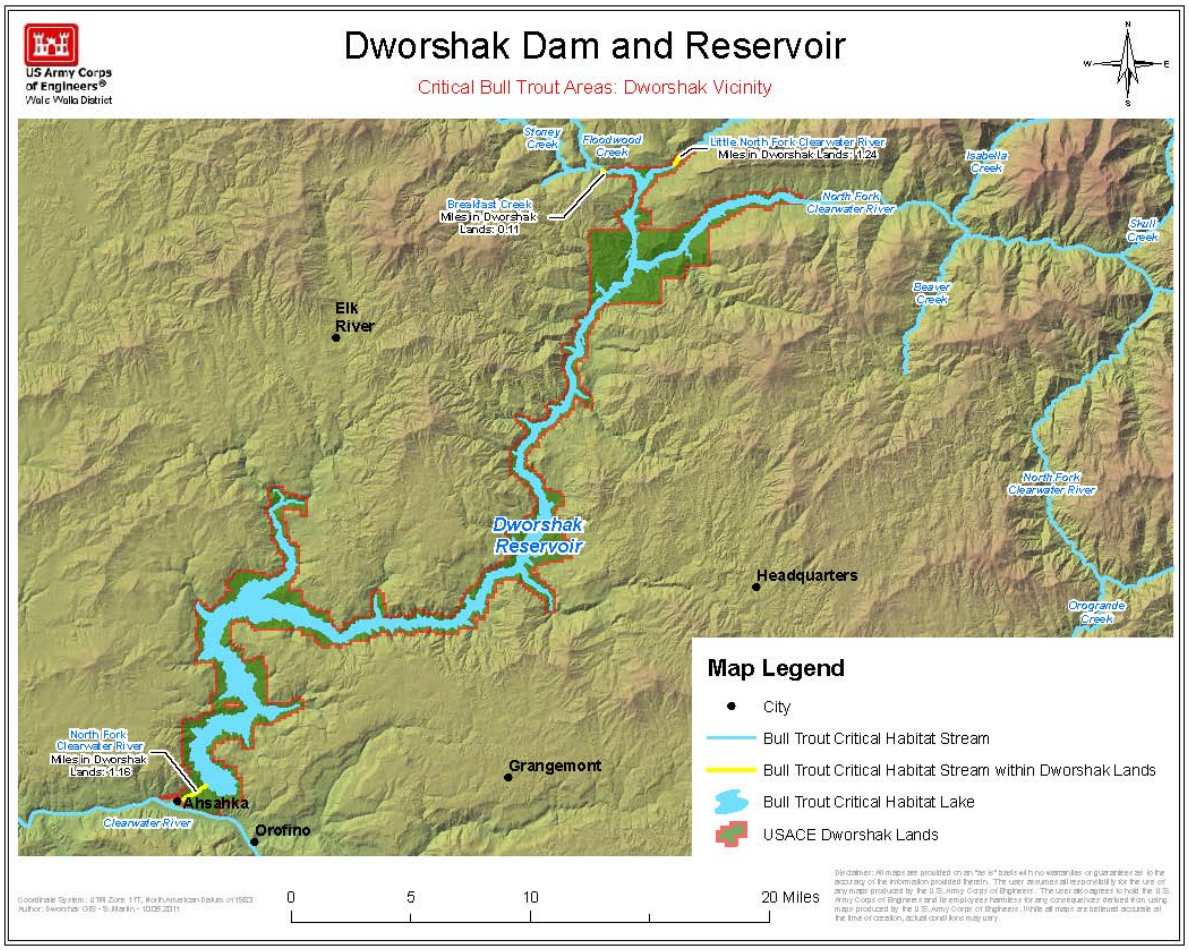


Figure 11 Final bull trout critical habitat (blue) in relation to Corps lands at Dworshak (green bordered in red).



4.5.1.2. Essential Elements of Designated Critical Habitat

Primary Constituent Elements for Bull trout based on the needs identified in 50 CFR 17 (75 FR 63898) and the current knowledge of the life-history, biology, and ecology of the species and the characteristics of the habitat necessary to sustain the essential life history functions of the species, the USFWS has identified the following PCEs for bull trout critical habitat (Table 6).

Table 6 Primary constituent elements (PCEs) of critical habitats designated for bull trout.

PCEs		
1	Water Quality	Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.
2	Migration Habitat	Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent, or seasonal barriers.
3	Food Availability	An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.
4	Instream Habitat	Complex river, stream, lake, reservoir, and marine shoreline aquatic environments, and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structure.
5	Water Temperature	Water temperatures ranging from 2 to 15 °C (36 to 59 °F), with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range will depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.
6	Substrate Characteristics	In spawning and rearing areas, substrate of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system.
7	Stream Flow	A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, minimal flow departure from a natural hydrograph.
8	Water Quantity	Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.
9	Nonnative Species	Sufficiently low levels of occurrence of nonnnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.

4.5.2. Canada lynx

4.5.2.1. Geographical Extent of Designated Critical Habitat

No critical habitat for Canada lynx has been designated within the proposed action area.

4.5.2.2. Essential Elements of Designated Critical Habitat

No critical habitat for Canada lynx has been designated within the proposed action area.

5. Environmental Baseline

The geographical area for which the environmental baseline is being established is discussed in the Action Area section of this document, and includes both Timber Management and Recreation and Reservoir Operation activities.

NMFS describes the environmental baseline in terms of the biological requirements for habitat features and processes necessary to support all life stages of each listed species within the action area. This holds true for bull trout as well, however, the biological requirements for bull trout differ slightly. For the action area, the biological requirements for fish species are the habitat characteristics that support successful completion of spawning, rearing, and freshwater migration.

The climate of the Clearwater Basin is characterized by mild summers and long, cold winters. Mean annual temperatures in the basin range from less than 32°F (0°C) at the highest elevations to over 50°F (10°C) at the lowest elevations. Seasonal temperatures have a fairly uniform pattern. Subfreezing weather is common during the months of October to May, when temperatures reach well below 0°F (-17.8°C), while mild temperatures prevail during the summer months. The average daytime summer temperature is around 88°F (31°C), while the winter nighttime average is approximately 28°F (2.2°C).

Precipitation, which averages 51 inches annually for the overall basin, ranges from 24 inches near the dam to nearly 80 inches near the summit of the Bitterroot Mountain Range. Precipitation has a seasonal pattern, with about 40 percent occurring during the months of November through January. During high snow years, more water storage is needed, and the reservoir is drawn down in anticipation of snowmelt to prevent flooding. In low snow years, the reservoir is allowed to fill early, often increasing access to the shoreline recreational facilities.

Dworshak Reservoir lies within the Clearwater River Basin in north-central Idaho. Elevations in this basin range from 738 feet mean sea level (msl) at the mouth of the Clearwater in Lewiston, Idaho, to over 8,000 feet msl in the peaks of the Bitterroot Mountain Range. The portion of the Clearwater Basin that lies west of Dworshak is characterized by barren hills and plateaus intersected by cultivated valleys.

The 53.6-mile-long reservoir is formed in the North Fork and Little North Fork valleys. Steep slopes dominate the shoreline and project lands, although a few flat or low-slope areas can also be seen (Plates 2A and 2B). These low areas are the primary location of the majority of existing developed recreation sites.

The North Fork Clearwater River originates in a mountainous area underlain by metamorphic and igneous granite rocks. In the lower portion of the reservoir, the valley floor is mantled by stream-deposited material. The lower valley walls are covered by a thin residual soil, with soil depth increasing at higher elevations. Rock outcroppings occur frequently along the canyon walls in the lower reservoir, but seldom appear on the upper two-thirds of the reservoir.

Soils vary from desertic soils to the forest soils more typical of the area. At Dworshak, many unstable soils have developed on parent rock that was, at one time, subjected to tremendous heat and pressure. These soils are generally thin and underlain by an impervious parent rock. This rock contributes to the basin's high runoff characteristics. Many of the soils at Dworshak are highly susceptible to erosion, which precludes their use for further development.

The higher slopes along the reservoir are covered in many places with residual soils that are the product of weathering metamorphic rocks. Because of the instability associated with these soils and the weaker rock masses, particularly in the steeper areas, construction activity is difficult. In some locations along the reservoir, a fairly flat bench occurs between the steeper mountainous terrain and the maximum pool elevation. These flat areas are generally associated with the clays and poorly indurated shales mentioned above. The clay-deposited areas have the hummocky topography, seep areas, and ponded water typical of slide areas.

The most common types of surface soil are sandy loam, loam, and silt loam, with some clay content indicated in each. Because of the natural forest conditions, layers of organic material have accumulated on the surface soil. Soils and slopes are a significant influencing factor at Dworshak. The National Resources Conservation Service (NRCS) Soil Capability Class Classification System describes the soils at Dworshak for the purposes of this report.

There are two major types of soils in this area: Bandmill-Riswold Complex 5 to 20 percent slopes (93%) and Elkridge-Riswold Complex 40 to 70 percent slopes (7%). The Bandmill-Riswold Complex of these soil types are well drained with low to moderate erodibility (Kw = .24-.37).

Capability class is the broadest category in the land capability classification system. Class codes 1 through 8 are used to represent both irrigated and non-irrigated land capability classes. Capability subclass is the second category in the land capability classification system. Class codes e, w, s, and c are used for land capability subclasses.

The subclass represents the dominant limitation that determines the capability class. Within a capability class, where the kinds of limitations are essentially equal, the subclasses have the following priority: e, w, s, and c. Subclasses are not assigned to soils or miscellaneous areas in capability classes 1 and 8.

All of the soils at Dworshak have erosion potential. However, for the purpose of forest and wildlife management, this is not a major concern. The erosion potential of the soil is a significant factor in determining locations for recreational features, including campgrounds, trails, roads, and other amenities. Locations of recreational amenities should avoid areas that have visible signs of existing erosion and excessive slopes. Construction methods and design criteria must also address the limitations imposed by the soils at Dworshak Reservoir.

Dworshak Reservoir and environs encompass a diversity of forest habitats, and contain several rare plant species and unique plant communities. The unusual flora of the area is due, in part, to its location in a core area of inland-maritime climate. Biodiversity of the area is further enhanced by its location between two ecoregions: the Bitterroot Mountains Section of the

Northern Rocky Mountains Province and the Palouse Prairie Section of the Columbia Plateau Province (McNab and Avers, 1994).

Bunchgrass steppe vegetation extends into the lower reaches of the canyon on warm aspects, and elements of Palouse prairie flora, including several regional endemic species, merge with those of moist, western red cedar (*Thuja plicata*) forests of the Clearwater Mountains. Major forest cover types of the area are ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), and western red cedar.

Soil data for the Clearwater Basin indicates that fourteen forest habitat types, as described by Cooper et al. (1991), occur on Corps-managed land surrounding Dworshak Reservoir. Based on regional geology, topography, soils, and climate; disturbance has played a significant role in shaping the composition, form, and structure of these forests.

Historic ecosystem processes included the deposition of ash through volcanic activity, glaciation, flooding, landslides, wind events, and wildfire. Several of these processes have occurred with high enough frequency and severity to be considered when managing natural resources. Although these types of events are natural occurrences, modern man has had substantial effect on their frequency and magnitude, either directly or indirectly. Resource managers should take care in planning new road construction to minimize the potential for landslides. Similarly, forest management practices can affect the impact of wind events as well. By overharvesting, remaining trees are left with little protection to withstand even moderate wind events. However, of these natural ecological processes, none have been more altered by man then wildfire.

Wildfire was historically the most dramatic process to shape North Idaho forests. The impacts of fire to an ecosystem are dependent on the localized fire regime. The exclusion of fire from fire-dependent ecosystems can alter forest composition, form and structure, nutrient cycling, soil properties, erosion potential, and fish and wildlife habitat.

Active efforts to suppress fires from Pacific Northwest ecosystems, including lands surrounding Dworshak Reservoir, began in the early 1900s. Years of fire suppression in the basin have resulted in dramatically altered fire regimes. There has been a significant reduction in the frequency of low-severity fire regimes (ground fires). The reduction in low severity fire frequency has drastically altered the composition, form, and structure of many drier forest types throughout the basin. Unnatural forest change occurs when fire-intolerant tree species (e.g., grand fir) are allowed to mature in the absence of fire, and take over areas historically dominated by fire tolerant species (e.g. ponderosa pine). In contrast, wetter forest types, where frequent low-severity burns were not part of their historic fire regime, are not altered as drastically with the absence of fire. Reduced fire frequencies result in increased forest fuel loads as well, and more severe fires would be expected under more natural conditions.

Most hiking trails provide access to the reservoir; however, drawdowns create exposed banks that are difficult to negotiate in most areas. Bank erosion at high pool has also created ledges that cause difficulty accessing the reservoir in some locations.

Historically, the reservoir remained at full pool from Memorial Day to Labor Day. This allowed for the majority of the recreation areas to be used during the peak summer recreation season. The 1995 FCRPS BO has changed operational procedures, so that reservoir drawdowns begin much earlier to help reduce water temperatures and restore a more natural flow in the Clearwater and Snake Rivers. Currently, full pool lasts for only a few weeks around the Fourth of July. This change of operations has limited access to recreational areas on the reservoir, and necessitates an analysis of alternative resource planning considerations.

The lower North Fork AU is home to numerous terrestrial vertebrates and has been inhabited by the North American wolverine (*Gulo gulo*), fisher (*Martes pennanti*), Townsend's big-eared bat (*Corynorhinus townsendii*), western toad (*Bufo boreas*), and Coeur d'Alene salamander (*Plethodon idahoensis*). Inundation of habitat following the construction of Dworshak Dam has reduced the occurrence of many terrestrial focal species in this area. Migratory corridors used by the wide-ranging North American wolverine have likely been compromised by the creation of Dworshak, as have structurally complex riparian areas used by the fisher. Both Townsend's big-eared bat and the western toad are rare and are threatened by loss or fragmentation of habitat. The Coeur d'Alene salamander has been documented throughout several portions of the AU. Based on surveys conducted in the 1980s, the NFCR drainage represented the core distribution area for Coeur d'Alene salamanders in the Clearwater sub-basin. Recent surveys, however, have been unable to confirm the occurrence of the Coeur d'Alene salamander in many of the previously occupied locations, suggesting the possibility of localized population extirpation.

With the exception of the lower 1.9 miles of the mainstem NFCR, passage of anadromous species into the Lower North Fork Assessment Unit (AU) is completely blocked by Dworshak Dam. Dworshak is located entirely within the Lower North Fork AU and provides a substantial fishery for kokanee (*Oncorhynchus nerka*), smallmouth bass (*Micropterus dolomieu*), rainbow trout (*O. mykiss*), and other native salmonids. Limitations to the Dworshak fishery are primarily related to dam operations resulting in highly variable flows and fluctuating water levels.

Bull trout distribution is restricted to the highest elevation tributaries of the Lower North Fork AU, and to Dworshak. Although westslope cutthroat trout (*O. clarkii henshawi*) are known to be widely distributed throughout most of the AU, limited information is available on the status of populations. Strong populations of both bull trout and westslope cutthroat trout exist in the Little NFCR drainage. Resident salmonids throughout the AU tributary systems are impacted by sediment and temperature issues associated with land use activities, as well as by introductions of exotic species. Brook trout are widely distributed throughout the AU, however little is known about their population status in most areas (Ecovista 2003).

The NFCR feeds Dworshak from the mountains of Idaho. The dam begins at RM 1.9 on the NFCR, just upstream from the confluence with the CR in the town of Ahsahka, Idaho. The drainage area associated with the reservoir is 2440 square miles. There are 175 miles of shoreline in the reservoir, and the gross storage capacity is 3,468,000 acre-feet. The maximum structural height of the dam is 717 feet (ft). The maximum operating pool is 1600 feet mean sea level (msl) with a normal operating range from 1600 msl down to 1445 msl.

Dworshak Dam and a large part of the reservoir are located within the boundaries of the Nez Perce Reservation. Each summer, from July through September, Dworshak is drafted 80 feet from full pool (1600 msl) to provide 1.2 million acre-feet of flow augmentation to benefit juvenile fall Chinook emigrating through lower Snake Reservoirs. As part of the Nez Perce Water Rights Agreement, the Nez Perce Tribe has the permanent right to use 200,000 acre-feet (of the 1.2 million acre-feet) for flow augmentation and temperature control in August and/or September (Haller).

Cold water releases from Dworshak benefits juvenile fall Chinook as well as returning adult fall Chinook and steelhead. Excessive cold water releases in early July can retard the growth of Clearwater fall Chinook so salmon managers attempt to balance the needs of the Clearwater fish, which tend to over-winter in lower Snake, and the SR fish, which out-migrate primarily in June and July. Operational decisions are made on a weekly basis during the summer with the TMT (except for the Tribe's 200kaf, the operation of which is developed by the Dworshak Board, consisting of the Nez Perce Tribe as Chair, the Corps, NMFS, Idaho Department of Water Resources and Bonneville Power Administration) and are guided by temperature modeling by the Environmental Protection Agency (EPA) and the Corp of Engineers. The goal is to not exceed the State of Washington temperature standard of 68 degrees as measured in the tailrace of the reservoir (Haller).

Fluctuations in pool elevation leave 80 to 155 feet of exposed banks in the reservoir below the ordinary high water mark (OHWM). These banks (Figures 12 and 13) were historically submerged under reservoir water, and were stripped of trees and vegetation during construction of the reservoir. The now exposed banks release a great deal of suspended sediment and routinely create turbidity in the reservoir because of rising and lowering reservoir elevations, as well as wind and water erosion events.

Figure 12 Example of Exposed Banks in Dworshak (in Elk Creek Meadows Area).

Figure 13 Example of Exposed Banks in Dworshak (in Elk Creek Meadows Area).

The reservoir area has a great deal of existing and historic roads. Some of the roads are in use, some are historic logging roads. Roads adjacent to the reservoir are generally limited to old logging road beds, with the exception of recreation areas such as Dworshak State Park, Three

Meadows, and roads such as Old Dent Road, Wells Bench Road, and Dent Bridge Road. The lack of roads is likely the result of the steep topography of the area.

There are a few un-named intermittent streams and small isolated wetlands within the action area. The intermittent streams run into Dworshak Reservoir**.** RHCAs will be used as a guideline for these streams and wetlands, 50 feet either side of the streambed, as described by INFISH. No trees will be harvested within the RHCA in accordance with INFISH guidelines. No measurable impacts to water quality are expected from this project.

5.1. Matrix of Pathways and Indicators (MPI)

NMFS uses the "Matrix of Pathways and Indicators" (MPI) (NMFS 1996) to summarize important environmental parameters and levels of condition for each. USFWS adopted a similar strategy in 1997 based on NMFS' matrix. The NMFS matrix is divided into six overall pathways (major rows in the matrix):

- Water Quality
- Channel Condition and Dynamics
- Habitat Access
- Flow/Hydrology
- Habitat Elements
- Watershed Conditions

Each represents a significant pathway by which actions can have potential effects on anadromous salmonids and their habitats, and could be used for analyzing bull trout habitat as well.

After review of the description of the proposed action, the environmental baseline, and using the matrix to determine if the potential impacts of the proposed action, the Corps has determined that the proposed action will not restore or degrade the function of habitat indicators of the environmental baseline, but will maintain existing baseline conditions within the action area. For the purposes of the MPI checklist, "maintain" means that the function of an indicator does not change (i.e., it applies to all indicators regardless of functional level).

Table 7 Checklist for Documenting Environmental Baseline and Effects of Proposed Action on Relevant Anadromous Salmonid Habitat Indicators

PATHWAYS	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION		
Indicators	Properly Functioning	At Risk	Not Properly Functioning	Restore	Maintain	Degrade
Water Quality:						
Temperature			X		X	
Sediment			X		X	
Chem. Contam./Nut.			X		X	
Habitat Access:						
Physical Barriers			X		X	
Habitat Elements:						
Substrate			X		X	
Large Woody Debris	X				X	
Pool Frequency			X		X	
Pool Quality			X		X	
Off-Channel Habitat			X		X	
Refugia			X		X	
Channel Cond. & Dyn.:						
Width/Depth Ratio			X		X	
Streambank Cond.			X		X	
Floodplain Connectivity			X		X	
Flow/Hydrology:						
Peak/Base Flows			X		X	
Drainage Network Increase			X		X	
Watershed Conditions:						
Road Dens. & Loc.		X			X	
Disturbance History			X		X	
Riparian Reserves			X		X	
Watershed Name: Lower North Fork Clearwater subbasin (HUC 17060308)			Location: Dworshak Reservoir, Clearwater County, Idaho			

5.2. Baseline Conditions Justification

All habitat indicators are not properly functioning in Dworshak Reservoir, except for the large woody debris and road density indicators. Baseline conditions improve in streams once out of the influence of the reservoir and its elevation fluctuations, but the overall condition at a watershed scale is as shown in Table 7 (above).

Large woody debris. There are adequate sources of woody debris in riparian areas throughout the reservoir. Density and diameter of woody pieces in every area of the reservoir is more than enough to justify properly functioning.

Road density. Dworshak encompasses approximately 45,697 acres, or 71.4 square miles. There are 139.2 miles of roads, so the road density at Dworshak is 1.95 miles per square mile, which is less than the 2 miles per square mile that qualifies as properly functioning in the MPI (NMFS 1996).

6. Effects of the Action

The proposed project area includes areas upstream of Dworshak Dam identified in the Action Area section of this document. This area encompasses a watershed that has very different baseline elements than it would if it were on a flowing river or stream because of its location above the dam and the existence of the reservoir.

Effects are analyzed for Access, Boundary, Fire, Forest, Road, Wildlife Habitat, and Recreation Management activities, as many of the elements are common to more than one activity (Table 8), and will have the same potential effects.

Table 8 Dworshak management activities.

	Management Activity						
Activity Element	**Access**	**Boundary**	**Fire**	**Forest**	**Road**	**Wildlife**	**Recreation**
Gates	X			X		X	X
Signs	X			X		X	X
Fences	X						
Trails	X						X
Monumentation		X					
Broadcast Burning			X	X		X	X
Pile Burning			X	X		X	X
Slashing and/or Pruning			X	X		X	X
Fire Lines			X	X		X	X
Selective Harvest			X	X		X	X
Snag Removal			X	X	X		X
Road Construction			X	X	X	X	X
Road Reconstruction			X	X	X	X	X
Road Maintenance	X	X	X	X	X	X	X
Road Obliteration	X		X	X	X	X	
Road Demolition	X		X	X	X	X	X
Culverts			X	X	X	X	X
Planting			X	X	X	X	X
Wetland Enhancement						X	

6.1. Project Effects

The proposed project area includes areas upstream of Dworshak Dam identified in the Action Area section of this document. This area encompasses watershed that has very different baseline elements than it would if it were on a flowing river or stream, because of its location above the dam and the existence of the reservoir.

6.1.1. Access Management

Access management activities have the potential to create turbidity and sedimentation, as well as toxic contamination. However, given the extremely limited nature of the work associated with Access Management, the Impact Minimization Measures, and the limited disturbance, the potential for adverse effects will be greatly reduced.

The effects of trail development and maintenance are the same (albeit lesser than) those for road construction and maintenance, and are discussed in the road management section (below).

Blasting activities have the potential to produce hydroacoustic stressors for bull trout in the area. However, given the use of BMPs designed to protect fish (ADFG 1991) (see Appendix B), bull trout may be exposed to, but are not likely to respond to the hydroacoustic stressors produced, if exposed, as the BMPs will spatially separate bull trout from the blasting-related effects. Those few individuals that may be in the reservoir during blasting activities are not likely to have responses sufficient to reduce their individual performance.

6.1.2. Boundary Management

Boundary management activities have the potential to create turbidity and sedimentation, as well as toxic contamination. However, given the extremely limited nature of the work associated with Boundary Management, the Impact Minimization Measures, and the limited disturbance, the potential for adverse effects will be greatly reduced.

6.1.3. Fire Management

6.1.3.1. Burning

Under-burning intensity will be low and localized. Fire line construction will expose soil but will also help protect against the loss of streamside shade. Fire lines will be rehabilitated and seed will sprout within a year. Fire line construction will not disturb the stream bank. Under-burning will be monitored by Corps personnel, and burn units will be field checked after prescribed fire treatments to determine whether prescriptions (*i.e.* tree mortality, mineral soil exposure, fuel load reductions) have been met. Further burning may be delayed and future prescriptions modified if prescription objectives have not been met. Activities associated with under-burning are extremely unlikely to reduce shade or deliver sediment to streams due to these minimization measures, and therefore such effects are discountable. Under-burning will leave overstory trees intact; therefore, reduction in large wood recruitment will not occur.

6.1.3.2. Fire Lines

Fire lines constructed around camp sites or around designated burn units have similar effects to Road Management Activities, and, as such, will be discussed in the Road Management section below.

6.1.3.3. Slashing

There should be no measurable effect from slashing.

6.1.4. Forest Management

6.1.4.1. Selective Harvest

Trees identified for retention will be marked by a crew and remaining trees will be available for harvest using a tractor, or line skidder. Harvest treatments would primarily use cable yarding methods. Logging on steep slopes exceeding 40 % will use line skidding machines to yard logs to landings where they will be prepared for truck transport to mills. This process greatly reduces ground disturbance on these slopes.

Timber harvesting can increase sediment delivery to streams, diminish large wood recruitment to streams, reduce stream shade, and alter hydrology within and downstream of the action area. In the proposed action, ground-based yarding will expose soil within the thinning units. Exposed soil heightens the risk that sediment will be eroded and delivered to nearby streams. Increased sediment delivery results in: (1) Increased stream turbidity; (2) increased substrate embeddedness; (3) loss of interstitial spaces and decreases in forage abundance; (4) reduced pool quality; and (5) increased width/depth ratios. Increased width: depth ratios elevate the risk of stream warming and reduce habitat quality for rearing individuals.

Measures such as using existing skidder and forwarder trails, limiting trail size and frequency, and trail rehabilitation will reduce the amount of exposed soil. All ground-based hauling will occur outside RHCAs. Vegetation within the no-cut buffers will act as a filter and reduce the amount of suspended sediment reaching streams. A review by Belt *et al*. (1992) of studies in Idaho (Burroughs and King 1985, Ketcheson and Megehan 1990) and elsewhere (Trimble and Sartz 1957, Packer 1967, Swift 1986) concluded that non-channelized sediment flow rarely travels more than 300 feet and that 200- to 300-foot riparian “filter strips” are generally effective at protecting streams from sediment. Streams located within 300 feet of the thinning units may experience increases in sedimentation, however, well vegetated buffers of at least 150 and 100 feet will substantially reduce the amount of sediment delivered to those streams. RHCA buffers and measures to reduce exposed soil will reduce sediment delivery to streams to immeasurable amounts (NMFS 2009).

Forest management activities within a distance equal to one site-potential tree height of streams have the potential to change the distribution, size, and abundance of woody material available for recruitment into streams (Ralph *et al.* 1994, Murphy 1995, Spence *et al.* 1996). Because wood recruitment potential declines rapidly moving away from the stream, a buffer of 50 feet likely includes the majority of streamside large wood recruitment potential, depending on stand age and other factors (McDade *et al.* 1990, Van Sickle and Gregory 1990, Welty *et al.* 2002). All tree thinning will occur outside of the RHCA buffers that have widths of at least 50 feet. That combined with the minimal thinning likely precludes any measurable reduction of wood recruitment to streams from streamside stands of trees (NMFS 2009).

All tributaries to the reservoir within the project boundary are intermittent streams. INFISH guidelines suggest a RHCA encompassing 50 ft either side of these streams. The Corps’ plan is to meet the INFISH guideline as a minimum on all intermittent streams unless the topography is such that inside of 50 ft the slope breaks and surface water would no longer drain into the stream

in question. The land type within the project boundary is classified as "breaklands" by the USFS. Due to the type of landscape associated with breaklands, there are frequent changes in relief among these drainages creating narrow drainages less than 100 ft in width. For example, if a given stream drainage is only 40 ft wide (20 ft either side), protecting vegetation (prohibiting harvest) for 50 ft either side of the stream does nothing but limit the opportunity for ponderosa pine restoration. Using the same understanding the Corps will likely protect well over 50 ft if the slope breaks over 50 ft (e.g. 75 ft). In terms of the conditions within the RHCAs described by INFISH the Corps plans to adhere to all once the RHCAs are established.

Timber harvesting can change the distribution of precipitation that reaches the ground, the evaporation rate from the ground, rates of interception or evaporation by foliage, soil water storage capacity, and the amount of water that reaches streams. Stednick (1995) found that in general, 20% of the forest cover must be removed before a measurable increase in annual water yield was observed. In a local study in the Upper Umatilla River Watershed, effects on water yield and peak stream flows were not observed below 50% removal of forest cover (Hervey and Fowler 1995). Because forest cover reduction will be below the thresholds stated above, no measureable change in water yield or peak stream flows should result (NMFS 2009).

Trees that have imminent or likely potential to fall and constitute public safety issues (*i.e.* hazard trees) will be felled along some of the forested roads in the project area. Hazard trees cut within RHCAs will be left on site, adding to the recruitment of wood to the riparian area, as RHCAs buffers will be left during prescribed burns. Trees selected for hazard removal will mostly be dead snags, which lack the crown that provides the majority of stream shade, and therefore, this activity will cause only localized reductions in shade that are unlikely to measurably increase stream temperatures. The remaining hazard trees to be removed will be trees that are overhanging or leaning in the direction of the road and not in the direction of adjacent streams.

Effects from road work as part of Forest Management Activities are included in the effects from Road Management section (below).

6.1.5. Road Management

During project design, a concerted effort was made to minimize the potential for sedimentation of streams through the use of existing roads and implementing sediment control measures. Where possible, existing roads will be used to minimize the need to construct new roads. Blading off existing roadbeds drastically reduces the amount of potential erosion compared to constructing new roads. All roads used during harvest and burning operations will be maintained following sale activities to a standard appropriate for their future intended use. Existing roads will be used to transport logs to mills. Also ignition of prescribed fires will not occur within RHCAs.

The potential effects from roads are likely to be the same as the potential effects from constructing firebreaks in the burn areas, and will, therefore, be analyzed as such, and included in the effects portion of this document in the following as part of road construction effects.

It should be emphasized that culverts will be placed in intermittent non ESA-listed fish bearing

streams as part of the proposed action. These intermittent streams are above the OHWM of the reservoir.

Roads can significantly elevate erosion and sediment delivery, disrupt subsurface flows essential to the maintenance of base flow, and can contribute to increased peak flows (Rhodes et al.1993). Increases in fine sediment delivery to streams reduce pool volume, embed substrate, reduce forage abundance, increase channel widths, and exacerbate seasonal water temperature extremes. The proposed new road construction includes the placement of culverts in intermittent, non-fish-bearing streams.

Increases in fine sediment delivery to these streams are likely if sediment from the instream culvert construction area is suspended during high flows. The IMMs stated above will reduce sediment reaching downstream ESA-listed fish habitat in the reservoir to insignificant amounts. The limited amount of sediment suspended during higher flows will not be measurable compared to turbid background conditions. The amount of sediment created by road construction and culvert installation is unlikely to result in any measurable changes in substrate embeddedness, forage abundance, pool volumes, or channel widths.

The proposed roads will bisect intermittent, non-fish-bearing streams at culvert sites. These roads may affect drainage network through increased surface runoff due to road surface compaction. Precipitation landing on the road surface will be transported to streams rapidly through ditch lines and then into the reservoir. This may affect the magnitude of peak flows, as the hardened road surfaces will accelerate water transport during precipitation events. However, the seasonal nature of these intermittent streams will limit any observable change to peak flows or floodplain connectivity.

Riparian vegetation that is disturbed during road construction and culvert installation will be left on site and added to the riparian system. When streamside vegetation is removed, summer water temperatures usually increase in direct proportion to the increase in sunlight that reaches the water surface (Meehan 1991). However, the limited amount of disturbed vegetation will not result in measureable reductions in shade or increases in water temperatures. The lack of water in the intermittent streams during the driest and hottest time of the year precludes any water temperature increase in summer as a result of shade reduction along the stream crossings. Seeding with native species after culvert installation will eventually replace the disturbed vegetation as seedlings establish mature heights and seeds sprout within a year.

Rebuilding road prisms and conducting maintenance on existing roads will expose soil, increasing the risk of sediment being delivered to nearby streams. RHCA buffers between exposed soil and streams, and IMMs such as sediment fencing, working in the dry whenever possible, minimizing the construction area, and planting and seeding, will reduce sediment delivery to streams. Reconditioned roads inside RHCAs have a greater risk of delivering sediment to nearby streams than those outside RHCAs, especially those approaching stream crossings. However, except for steam crossings, thick stands of vegetation of 50 feet or more in width occur between rehabilitated roads and streams. It is unlikely that measurable amounts of sediment will be delivered to streams due to the well vegetated buffers and impact minimization methods stated above.

It is unlikely that the proposed reconstruction of existing roads (some of which are in RHCAs) will increase sediment delivery to streams for the following reasons: 1) most of the reopened roads are outside RHCA buffers; and 2) existing road beds and culverts will be used (no new further construction only reconditioning). Fallen vegetation lying across the reopened road and hazard trees will be the only vegetation removed due to reopening of the closed roads.

Blasting activities have the potential to produce hydroacoustic stressors for bull trout in the area. However, given the use of BMPs designed to protect fish (ADFG 1991) (see Appendix B), bull trout may be exposed to, but are not likely to respond to the hydroacoustic stressors produced, if exposed, as the BMPs will spatially separate bull trout from the blasting-related effects. Those few individuals that may be in the reservoir during blasting activities are not likely to have responses sufficient to reduce their individual performance.

6.1.6. Wildlife Habitat Management

6.1.6.1. Planting

Planting activities have the potential to create turbidity and sedimentation, as well as toxic contamination. However, given the extremely limited nature of the work associated with planting, the Impact Minimization Measures, and the limited disturbance, the potential for adverse effects will be greatly reduced.

6.1.6.2. Wetland Enhancement

Blasting activities have the potential to produce hydroacoustic stressors for bull trout in the area. However, given the use of BMPs designed to protect fish (ADFG 1991) (see Appendix B), bull trout may be exposed to, but are not likely to respond to the hydroacoustic stressors produced, if exposed, as the BMPs will spatially separate bull trout from the blasting-related effects. Those few individuals that may be in the reservoir during blasting activities are not likely to have responses sufficient to reduce their individual performance.

6.2. Effects on Listed Species

Effects on listed species will be similar for most of the management activity elements, and are therefore, for the sake of simplicity, analyzed collectively.

Bull trout use Dworshak Reservoir for overwintering. However, due to the nature of the action, reservoir conditions, and proposed IMMs and BMPs, it is unlikely that the fish or habitat in the reservoir will be adversely affected.

6.2.1. Elevated Suspended Sediment and Turbidity

No measurable elevations of suspended sediment and turbidity will occur in the reservoir as a result of timber harvest, yarding, slashing, or prescribed burning activities due to impact minimization measures reducing the amount of exposed soil and RHCA buffers between the

harvest units and streams will act as sediment filters. Therefore, the effects of elevated suspended sediment and turbidity on listed species of fish as a result of proposed timber harvest, yarding, slashing, and prescribed burning are insignificant.

Due to the current management of Dworshak water reserves, the effects of this project on the water quality of the reservoir would be minimal due to the high background levels of suspended sediment, and the common turbidity. Current objectives of flow augmentation to enhance downstream conditions for migration of threatened and endangered salmon result in dramatic drawdowns (80 to 155'), exposing up to 200' of mineral soil around the perimeter of the 54 mile reservoir for most of the year. This creates potential for high levels of erosion and sedimentation. Impacts to water quality resulting from this project would be negligible in comparison to erosion caused by annual drawdowns, and will likely be undetectable beyond background levels in the reservoir.

Road construction and rehabilitation are likely to increase sediment delivery to adjacent streams. Minimizing the amounts of exposed soil and IMMs will limit the amount of suspended sediment and minimize adverse effects to ESA-listed fish. Based on previous projects of a similar nature, the turbidity plume resulting from culvert installation and road construction is not likely to extend beyond 600 feet (NMFS 2009), and therefore will not reach locations inhabited by ESA-listed fish which are greater than 600 feet away. The disturbance and turbidity created by culvert installation will cause some juvenile fish to temporarily abandon these areas (Lloyd *et al.* 1987). However, some fish are likely to remain in the affected areas despite the perturbation (Quigley 2003). During that time, these remaining juvenile fish are likely to experience decreased feeding and stress (Redding *et al.* 1987, Lloyd *et al.* 1987, Servizi and Martens 1991), thereby increasing the likelihood that they will be killed or injured. However, given that the culvert installation will be on intermittent streams that are non-fish bearing, combined with the use of RHCAs, it is unlikely that any individual fish would be affected, either upstream or downstream of the dam.

6.2.2. Chemical Contamination

Operation of equipment requires the use of fuel and lubricants, which, if spilled into the channel of a water body or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can cause lethal and sub-lethal chronic effects to other aquatic organisms (Neff 1985). Construction equipment will be staged outside of RHCAs, and all equipment will be cleaned and fueled in these staging areas. Equipment will be inspected and cleaned prior to any instream work. These impact minimization measures will significantly reduce hydrocarbon and other contaminant levels.

The IMM stated above will reduce the risk of chemical contamination to a level not likely to kill or injure any listed species or have any population-level effect, or have an effect on critical habitat. Because of the IMMs, effects from chemical contamination on ESA-listed species and their designated and proposed critical habitat are not reasonably certain to occur, and are therefore discountable.

6.2.3. Blasting

Blasting activities have the potential to produce hydroacoustic stressors for bull trout in the area. However, given the use of BMPs designed to protect fish (ADFG 1991) (see Appendix B), bull trout may be exposed to, but are not likely to respond to the hydroacoustic stressors produced, if exposed, as the BMPs will spatially separate bull trout from the blasting-related effects. Those few individuals that may be in the reservoir during blasting activities are not likely to have responses sufficient to reduce their individual performance.

6.2.4. Riparian Vegetation Reduction

As described above, the proposed action will not remove enough streamside shade to cause a measurable increase in stream temperature. Therefore, no measurable effect on listed species is likely as a result of the minimal amount of stream shade reduction.

Timber harvesting has the potential to displace some wolves during harvesting activities. However, as the reservoir area is used for recreation on a regular basis, and lands adjacent to Corps managed lands are regularly used for harvesting, the wolves in the area should be accustomed to such activities, and the displacement should be minimal.

Overall, harvesting activities should help promote forest health, and promote better health within the local elk populations, which should, in turn, promote better health of the local wolf populations. The benefit may take time to be realized, and may not be easily quantified in the short-term.

6.3. Effects on Critical Habitat

Effects on designated critical habitat and associated PCEs will be similar for most of the management activity elements, and are therefore, for the sake of simplicity, analyzed collectively.

Since there is no designated critical habitat for SR fall Chinook salmon or SRB steelhead upstream of Dworshak Dam, the proposed action will have no effect on any SR fall Chinook salmon or SRB steelhead designated critical habitat.

6.3.1. Bull Trout

Water quality: The proposed action will have no significant effect on short-term and long-term water quantity. Timber harvest may slightly reduce water loss to evapotranspiration, resulting in increased water yield from the watershed. Any increase in water yield should be so small that it could not be detected or measured. The effect on this PCE is expected to be insignificant.

Migration corridors: Migration is not likely to be significantly altered because of the lack of migration occurring in the work in the area, the intermittent nature of the affected streams affected, the fact that the affected streams are non fish bearing, the fact that the culvert sites are

located well above the OHWM of the reservoir, and the short duration of the instream work during culvert placement. The effect on this PCE is expected to be insignificant.

Food availability: A minor decrease in the abundance of macroinvertebrates may occur up to 600 feet downstream of instream work sites for a period of a few weeks as a result of increased fine sediment in stream substrates. However, these streams are intermittent and non ESA-listed fish bearing. It is likely that any decrease in the abundance of macroinvertebrates will occur only at culvert installation sites. Because of the conditions on-site (as seen in Figures 12 and 13) and the fluctuation in reservoir levels, it is likely that the reduction in abundance of macroinvertebrates will be immeasurable, and any potential adverse effects are expected to be insignificant.

Instream habitat: The proposed project will have no effect.

Water temperature: The proposed project will have no effect.

Substrate characteristics: The turbidity generated by instream work may eventually be deposited as fine sediment in downstream substrates of the reservoir. Substrates in the reservoir portion of the action area are not suitable for bull trout spawning. Substrate fine sediment and embeddedness may temporarily increase as a result of the proposed action in the reservoir, with little to no effect on suitability for bull trout spawning. Most of the fine sediment will be remobilized downstream from culvert installation sites during the next high flow event. IMMs limiting exposed soils and suspended sediment will limit any increases in substrate embeddedness. The effect on this PCE is expected to be insignificant.

Stream flow: The proposed project will have no effect.

Water quantity: The proposed project will have no effect.

Nonnative species: The proposed project will have no effect.

6.3.2. Canada Lynx

No critical habitat for Canada lynx has been designated within the proposed action area.

6.3.3. Gray Wolf

No critical habitat rules have been published for the gray wolf.

6.4. Cumulative Effects

The action area is used heavily for year-round recreation activities. These activities are reasonably certain to continue, and will not result in any increased measurable cumulative effects on ESA-listed species when analyzed with the proposed action. Seasonal drawdowns of the reservoir will continue for the foreseeable future, continuing the annual fluctuation of the reservoir, and perpetuating the current conditions within the reservoir.

6.5. Effects Determination

Tables 8 and 9 contain a summary of the effects determination and determination rationale for bull trout and bull trout critical habitat. The term “action component” describes the potential effect or pathway for potential effect for a given activity or element.

Table 9 Tracking table for species effects.

Effects Tracking Table for Corps Projects Dworshak Recreation and Forest Health Timber Sales									
Species	**Action Component 1**	**Action Component 2**	**Action Component 3**	**Action Component 4**	**Action Component 5**	**Action Component 6**	**Action Component 7**	**Action Component 8**	**Action Component 9**
Bull Trout	**Access, Boundary Management**	**Access, Boundary Management**	**Fire, Forest, Road Management, Recreation**	**Fire, Forest, Road Management, Recreation**	**Fire, Forest, Road Management, Recreation**	**Fire, Forest, Road Management, Recreation**	**Wildlife Habitat Management**	**Road, Wildlife Habitat Management**	**Wildlife Habitat Management**
Effects of the Action (Predicted Stressor)	Sediment and Turbidity	Toxins	Sediment and Turbidity	Toxins	Felling of Trees in Streams	Riparian Vegetation Reduction	Sediment and Turbidity	Blasting	Toxins
Impact Minimization Measure(s)	Hand Tools for all but gate installation	Hand Tools for all but gate installation	Erosion control, reseeding, selective harvest, RHCA buffers	Spill Prevention Plan, spill kit	RHCA buffers	RHCA buffers	Hand Tools for planting, RHCA buffers,	ADFG 1991	Spill Prevention Plan, spill kit
Stressor Likely to be Produced?	yes	no (insignificant)	yes	yes	no	no	yes	yes	yes (insignificant)
Species Likely to be Exposed to Stressor?	no	no	yes	yes (insignificant)			no	yes	no
Species Likely to Respond to Stressor?			yes (insignificant)	no				yes (insignificant)	
Response Likely to be Sufficient to Reduce Individual Performance?			no					no	
Effects Determination	no effect	no effect	NLAA	NLAA	no effect	no effect	no effect	NLAA	no effect

Table 10 Tracking table for critical habitat.

Effects Tracking Table for Corps Projects Dworshak Recreation and Forest Health Timber Sales									
Critical Habitat	**Action Component 1**	**Action Component 2**	**Action Component 3**	**Action Component 4**	**Action Component 5**	**Action Component 6**	**Action Component 7**	**Action Component 8**	**Action Component 9**
Bull Trout	**Access, Boundary Management**	**Access, Boundary Management**	**Fire, Forest, Road Management, Recreation**	**Fire, Forest, Road Management, Recreation**	**Fire, Forest, Road Management, Recreation**	**Fire, Forest, Road Management, Recreation**	**Wildlife Habitat Management**	**Road, Wildlife Habitat Management**	**Wildlife Habitat Management**
Effects of the Action (Predicted Stressor) (should not introduce effects not listed for species)	Sediment and Turbidity	Toxins	Sediment and Turbidity	Toxins	Felling of Trees in Streams	Riparian Vegetation Reduction	Sediment and Turbidity	Blasting	Toxins
Impact Minimization Measure(s)	Hand Tools for all but gate installation	Hand Tools for all but gate installation	Erosion control, reseeding, selective harvest	Spill Prevention Plan, spill kit	RHCA buffers	RHCA buffers	Hand Tools for planting, RHCA buffers,	ADFG 1991	Spill Prevention Plan, spill kit
Stressor Likely to be Produced?	yes	no (insignificant)	yes	yes	no	no	yes	yes	yes
Effects on PCEs									
Water Quality	insignificant	insignificant	insignificant	insignificant	no effect	no effect	insignificant	insignificant	insignificant
Migration Habitat	insignificant	insignificant	insignificant	insignificant	no effect	no effect	insignificant	insignificant	insignificant
Food Availability	insignificant	insignificant	insignificant	insignificant	no effect	no effect	insignificant	insignificant	insignificant
Instream Habitat	no effect	no effect	no effect	no effect	no effect	no effect	no effect	no effect	no effect
Water Temperature	no effect	no effect	no effect	no effect	no effect	no effect	no effect	no effect	no effect
Substrate Characteristics	insignificant	insignificant	insignificant	insignificant	no effect	no effect	insignificant	insignificant	insignificant
Stream Flow	no effect	no effect	no effect	no effect	no effect	no effect	no effect	no effect	no effect
Water Quantity	no effect	no effect	no effect	no effect	no effect	no effect	no effect	no effect	no effect
Nonnative Species	no effect	no effect	no effect	no effect	no effect	no effect	no effect	no effect	no effect
Effects(s) on Conservation Value of PCEs-5th Field HUC	insignificant	insignificant	insignificant	insignificant	no effect	no effect	insignificant	insignificant	insignificant
Effects Determination	insignificant	insignificant	insignificant	insignificant	no effect	no effect	insignificant	insignificant	insignificant

6.5.1. Listed Species

The Corps determined that the proposed action will have **no effect** on SR fall Chinook salmon SRB steelhead, wolverine and **may affect, but is not likely to adversely affect** bull trout.

The effects of the action will include minor and temporary increases in turbidity and fine sediment in the substrate, and a slight, temporary reduction in natural cover in the reservoir and would be insignificant (Table 9). Although sediment effects are harmful to ESA-listed fish species, they will be limited in intensity, extent, and duration.

Any potential sediment effects on bull trout that may be present in the reservoir during activities associated with the proposed action would be **insignificant** when compared to the levels of suspended sediment within the reservoir that are part of the baseline condition, and the distribution of bull trout in the reservoir.

Because of the implementation of IMMs, effects from riparian vegetation reduction on ESA-listed species are not reasonably certain to occur.

The proposed action will have **no effect** on Canada lynx (Table 10).

6.5.2. Critical Habitat

Because of the limits on the intensity, extent and duration of the adverse effects on the environment, the PCEs of the bull trout designated critical habitat in the action area are likely remain functional, or retain their current ability to become functionally established, to serve the intended conservation role for the species. Therefore, the Corps has determined that the proposed action **may affect, but is not likely to adversely affect** bull trout designated critical habitat.

There is no designated or proposed Canada lynx critical habitat in the area.

6.5.3. Summary.

Table 11 Effects determination summary.

Species	Species Determination	Critical Habitat Determination
NMFS		
SR Fall Chinook	No Effect	No Effect
SRB Steelhead	No Effect	No Effect
USFWS		
Bull trout	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
Canada lynx	No Effect	No Effect
North American Wolverine	No Effect	None Designated

7. Conclusions

The proposed project is designed to programmatically manage forest and wildlife resources within Corps-managed lands at Dworshak Dam and Reservoir. The primary purposes for this action are to enhance ecosystem integrity, forest health, wildlife habitat, and recreational opportunities. This will be accomplished through a series of activities, along with their associated elements, as outlined in this document.

The Corps has proposed a number of IMMs as part of the proposed action that will alleviate the certainty for any potential adverse effects to likely adversely affect ESA-listed species or their designated and proposed critical habitats. The analysis of others in relation to baseline conditions also leads to the conclusion that other potential adverse effects that may result from the proposed action would be insignificant.

8. Essential Fish Habitat

The action area (as discussed in the Action Area section of the ESA portion of this document) includes areas designated as EFH under the MSA for various life-history stages of Chinook and Coho salmon. The Lower North Fork Clearwater sub-basin (HUC 17060308) has been identified as inaccessible historic EFH for Chinook salmon (PFMC 1999).

8.1. Description of the Proposed Action

The Pacific Fishery Management Council (PFMC) designated EFH for groundfish, coastal pelagic species, and Chinook salmon, Coho salmon, and Puget Sound pink salmon (PFMC 1999). The proposed action and action area for this assessment are described in the ESA portion of this document.

8.2. Effects of the Proposed Action

Based on information provided above, and the analysis of effects presented in the ESA portion of this document, the Corps concludes that the effects on Chinook salmon EFH are the same as those for designated and proposed critical habitat for the fish species listed in this document designated critical habitat and are described in detail in *Effects on Critical Habitat* section of the ESA portion of this document. The proposed action may result in short-term adverse effects on a variety of habitat parameters, but will be minimal. These adverse effects are:

- Increased turbidity and sedimentation will occur from construction activities. A turbidity plume is likely to extend up to 600 feet downstream of culvert installation sites or roads.
- A short-term minor decrease in macroinvertebrates may occur as a result of increased fine sediment in stream substrates due to work associated with these activities. However, there is no proposed work in fish-bearing streams, and the streams in which work will be performed are intermittent. Therefore, the effect on EFH is de minimis.

- Removal of a few hazard trees currently providing stream shade will reduce natural cover. However, adherence to RHCA buffers will reduce the effect to a level that is insignificant or discountable.
- Due to the use of heavy equipment, there is an increased risk of chemical contaminant release. However, proposed IMMs and BMPs reduce the risk to a level that is insignificant or discountable.

8.3. Proposed Conservation Measures

Proposed conservation measures include:

- IMMs and BMPs listed in the ESA portion of this document.
- Environmentally critical habitats such as spawning gravels that may be encountered, and endangered species habitats should be avoided.

8.4. Conclusions by EFH

Based upon the project description, the project design, the minimal short-term potential impacts associated with the project above the dam, the unlikelihood of impacts below the dam, and the proposed conservation measures (BMPs and IMMs), the Corps believes there will **be no adverse effects to EFH**.

9. References

ADFG (Alaska Department of Fish and Game). 1991. Blasting standards for the protection of fish. Available at: http://www.adfg.alaska.gov/static/license/uselicense/pdfs/adfg_blasting_standards.pdf

Cooper, S. V., K. E. Neiman, R. Steele, D. W. Roberts. 1991. *Forest Habitat Types of Northern Idaho: A Second Look Approximation*. Gen. Tech. Rep. INT-236. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station.

ICDC (Idaho Conservation Data Center). 2010. Canada lynx. Idaho Department of Fish and Game, Boise. Available at: http://fishandgame.idaho.gov/cms/tech/CDC/cwcs_appf/Canada%20Lynx.pdf

IDFG (Idaho Department of Fish and Game). 2010. Wolves at a glance. Available at: http://fishandgame.idaho.gov/cms/wildlife/wolves/living/glance.cfm

INFISH (Inland Native Fish Strategy). 1995. Environmental Assessment: Decision Notice of Finding of No Significant Impact. Interim Strategies for managing fish-producing watersheds in eastern Oregon and Washington, Idaho, western Montana and portions of Nevada. U.S. Department of Agriculture, Forest Service, Intermountain, Northern, and Pacific Northwest Regions. 412 p. + app. (Available from Don Chapman Consultants, 3653 Rickenbacker, Ste. 200, Boise, ID 83705.) 412 p. + app. (Available from Don Chapman Consultants, 3653 Rickenbacker, Ste. 200, Boise, ID 83705.)

IPIF (Idaho Partners in Flight). 2000. Idaho Bird Conservation Plan Version 1.0. Available at: http://www.blm.gov/wildlife/plan/pl_id_10.pdf

Kilgore, B. M. and G. A. Curtis 1987. Guide to understory burning in ponderosa pine-larch-fir forests in the Intermountain West. Gen. Tech. Rep. INT-233. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station.

Lloyd, D.S., J.P. Koenings, and J.D. LaPerriere. 1987. Effects of turbidity in fresh waters of Alaska. North American Journal of Fisheries Management 7:18–33. Available at: http://water.washington.edu/Outreach/Publications/Salmon%20and%20Turbidity.pdf

Mack, C., J. Rachael, J. Holyan, J. Husseman, M. Lucid, B. Thomas. 2010. Wolf conservation and management in Idaho; progress report 2009. Nez Perce Tribe Wolf Recovery Project, P.O. Box 365, Lapwai, Idaho; Idaho Department of Fish and Game, 600 South Walnut, Boise, Idaho. 67 pp. Available at: http://fishandgame.idaho.gov/cms/wildlife/wolves/manage/09report.pdf

McKelvey, Kevin S., K. B. Aubry, and Y. K. Ortega. 1999. History and Distribution of Lynx in the Contiguous United States. Pp. 207-264. In L.F. Ruggiero, K.B. Aubry, S.W. Buskirk, G.M. Koehler, C.J. Krebs, K.S. McKelvey, and J.R. Squires (eds.) Ecology and

conservation of lynx in the United States. RMRS-GTR-30WWW. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Neff, J.M. 1985. Polycyclic aromatic hydrocarbons. Pages 416–454 in G.M. Rand and S.R. Petrocelli, editors. Fundamentals of aquatic toxicology. Hemisphere Publishing, Washington, D.C.

NMFS (National Marine Fisheries Service). 2008. Endangered Species Act Section 7(a) (2) Consultation Biological Opinion And Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation on Remand for Operation of the Federal Columbia River Power System, 11 Bureau of Reclamation Projects in the Columbia Basin and ESA Section 10(a) (I) (A) Permit for Juvenile Fish Transportation Program (Revised and reissued pursuant to court order, *NWF v. NMFS*, Civ. No. CV 01-640-RE. (D. Oregon)) May 5, 2008. Portland, Oregon.

NMFS (National Marine Fisheries Service). 1996. Making Endangered Species Act determinations of effect for individual and grouped actions at the watershed scale. The National Marine Fisheries Service Environmental and Technical Services Division, Habitat Conservation Branch, Seattle, WA. Available at: http://www.nwr.noaa.gov/Publications/Reference-Documents/upload/matrix_1996.pdf

NMFS (National Marine Fisheries Service). 2005. Endangered and Threatened Species: Final Listing Determinations for 16 Evolutionarily Significant Units of West Coast Salmon, and Final 4(D) Protective Regulations for Threatened Salmonid ESUs. Final Rule. Federal Register 70:123:37160-37204.

PFMC (Pacific Fishery Management Council). 1999. Amendment 14 to the Pacific Coast Salmon Plan. Appendix A: Description and identification of essential fish habitat, adverse impacts, and recommended conservation measures for salmon. Pacific Fishery Management Council, Portland, Oregon. March. Available at: http://www.pcouncil.org/salmon/salfmp/a14.html

Quigley, J.T. 2003. Experimental field manipulations of stream temperatures and suspended sediment concentrations: behavioral and physiological effects to juvenile Chinook salmon. Master's Thesis. Simon Fraser University, Burnaby, British Columbia, Canada.

Redding, J.M., C.B. Schreck, and F.H. Everest. 1987. Physiological effects on Coho salmon and steelhead of exposure to suspended solids. Transactions of the American Fisheries Society 116:737–744.

Rhodes J.J. D.A. McCullough, and F.A. Espinosa. 1993. A Course Screening Process for Potential Application in ESA Consultations. Columbia River Intertribal Fish Commission, Portland.

Schubert, G. H. 1974. Silviculture of southwest ponderosa pine: the status of our knowledge. Rocky Mountain Forest and Range Exp. Sta. Res. Paper RM-123. 71pp.

Steele, R. and K. Geier-Hayes 1995. Major Douglas-fir Habitat Types of Central Idaho: A Summary of Succession and Management. Gen. Tech. Rep. INT-GTR-331. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station.

StreamNet 2010. Database. Available at: http://www.streamnet.org.

Servizi, J.A., and Martens, D.W. 1991. Effects of temperature, season, and fish size on acute lethality of suspended sediments to Coho salmon. Canadian Journal of Fisheries and Aquatic Sciences 48:493–497.

U.S. Laws, Statutes, *etc.* PL 87-874, *Flood Control Act of 1962*; PL 85-624, *The Fish and Wildlife Coordination Act;* PL 86-717, *The Forest Cover Act;* and 5 Code of Federal Regulations, Section 402.12.

U.S. Laws, Statutes, etc. Public law 87-874, Flood Control Act of 1962. Public law 85-624, The Fish and Wildlife Coordination Act, and Public law 86-717, The Forest Cover Act.

USACE (U.S. Army Corps of Engineers). 1997. Environmental Assessment: Bishop-Chutes Creek Timber Salvage Sale: Dworshak Dam and Reservoir, Ahsahka, Idaho. U. S. Army Corps of Engineers District Walla Walla, Washington.

USACE (U.S. Army Corps of Engineers). 1977. Plan for Development of Rocky Mountain Elk Habitat, Dworshak Dam and Reservoir, North Fork Clearwater River, Idaho. Walla Walla District, November 1977. Available at: http://www.nww.usace.army.mil/dworshak/reports/dm15/default.htm

USACE (U.S. Army Corps of Engineers). 2006. Environmental Assessment: Elk Creek Meadows Stewardship Project: Dworshak Dam and Reservoir, Ahsahka, Idaho. U. S. Army Corps of Engineers District Walla Walla, Washington.

USACE (U.S. Army Corps of Engineers). 1970. Public Use Plan: for the development and management of Dworshak Reservoir, North Fork Clearwater River, Idaho. U. S. Army Corps of Engineers District Walla Walla, Washington.

USACE (U.S. Army Corps of Engineers). 1975a. *Final Environmental Impact Statement for Dworshak Dam and Reservoir, North Fork Clearwater River Idaho,* September 1975. Walla Walla, Washington.

USACE (U.S. Army Corps of Engineers). 1975b. *Forest and Herbaceous Resource Inventory and Supplemental Forest Management Plan, Dworshak Project Final Report. U.S.* Army Corps of Engineers, Walla Walla District.

USACE (U.S. Army Corps of Engineers). 1982. *Limnology of Dworshak Reservoir in a Low-Flow Year. Final Report* . U.S. Army Corps of Engineers. Walla Walla, Washington.

USACE (U.S. Army Corps of Engineers). 1986. *Water Control Manual for Dworshak Dam and Reservoir, North Fork Clearwater River Idaho,* November 1986. Walla Walla, Washington.

USACE (U.S. Army Corps of Engineers). 1996a. *Dworshak Master Plan, Plan of Study,* 1995-1996, Draft. U.S. Army Corps of Engineers, Walla Walla District, Planning Division. Walla Walla, Washington.

USACE (U.S. Army Corps of Engineers). 1996b. *Dworshak Dam and Reservoir, Operational Management Plan, Draft*. U.S. Army Corps of Engineers, Walla Walla District, Operations Division. Walla Walla, Washington

USACE (U.S. Army Corps of Engineers). 2002. Environmental Assessment: Little Bay Stewardship Project: Dworshak Dam and Reservoir, Ahsahka, Idaho. U. S. Army Corps of Engineers District Walla Walla, Washington.

USACE (U.S. Army Corps of Engineers). 2006. Environmental Assessment: Elk Creek Meadows Stewardship Project: Dworshak Dam and Reservoir, Ahsahka, Idaho. U. S. Army Corps of Engineers District Walla Walla, Washington.

USACE (U.S. Army Corps of Engineers). 2011. Dworshak Reservoir Public Use Plan: Ahsahka, Idaho. Supplement to Design Memorandum No. 10. Public Use Plan for the development and management of public access at Dworshak Reservoir. February. Available at: http://www.nww.usace.army.mil/planning/er/dworshak/pub-use-plan.pdf

USFS (U.S. Forest Service, Clearwater National Forest). 2000. Section 7 watershed biological assessment North Fork Clearwater River drainage Clearwater River subbasin - determination of effects of ongoing and proposed activities based on the matrix of pathways and indicators of watershed condition for bull trout. Clearwater National Forest, Supervisor's Office, Orofino, Idaho. 316pp.

USFS (U.S. Forest Service, Clearwater National Forest). 1999. The National Fire Danger Rating System – 1978. Fuel Model Definitions. Fire Applications Support. U.S. Forest Service. Updated December 6, 1999. Available at: http://www.fs.fed.us/fire/planning/nist/nfdr.htm

USFWS (Fish and Wildlife Service) 1998. Bull Trout Interim Conservation Guidance. USFWS Lacey, Washington. 103pp.

USFWS (Fish and Wildlife Service) 2000. Biological Opinion for Army Corps of Engineers, Bonneville Power Administration and Bureau of Reclamation. USFWS (Regions 1-6). 98 pp.

USFWS (U.S. Fish and Wildlife Service). 2000a. Grizzly Bear Recovery in the Bitterroot Ecosystem: U.S. Fish and Wildlife Service Selected Alternative. Available at: http://www.fws.gov/pacific/news/grizzly/glizzlyQandA.htm

USFWS (Fish and Wildlife Service) 2000b. Questions and Answers About Gray Wolves in North America. USFWS webpage http://midwest.fws.gov/wolfllearn/qandas.htm

USFWS (U.S. Fish and Wildlife Service). 2002. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon. 137 pps.

USFWS (U.S. Fish and Wildlife Service). 2005. Elk Creek Meadows Stewardship Project, Clearwater County, Idaho – Concurrence File #351.3040. OALS #1-4-05-1-754. Boise, Idaho. September.

USFWS (U.S. Fish and Wildlife Service). 2007. Wolf recovery in North America. USFWS. Available at: http://www.fws.gov/home/feature/2007/gray_wolf_factsheet-region2.pdf

USFWS (U.S. Fish and Wildlife Service). 2010a. Endangered Species Act protections reinstated for Northern Rocky Mountain wolf population. USFWS Office of External Affairs. News release, August 16, 2010. Retrieved August 27, 2010 from: http://www.fws.gov/mountain-prairie/pressrel/10-55.htm

USFWS (U.S. Fish and Wildlife Service). 2010b. Gray wolves in the Northern Rocky Mountains: news, information, and recovery status reports. USFWS Mountain Prairie Region.

USFWS (U.S. Fish and Wildlife Service). 2010c. Service review of the 2009 wolf population for the NRM DPS, Helena, Montana. USFWS Wolf Recovery Program. Wolf Recovery Coordinator for the NRM DPS, Helena, Montana. Letter dated April 26, 2010. Available at: http://www.fws.gov/mountain-prairie/species/mammals/wolf/post-delisting-wolf-monitoring/doc20100428072425.pdf

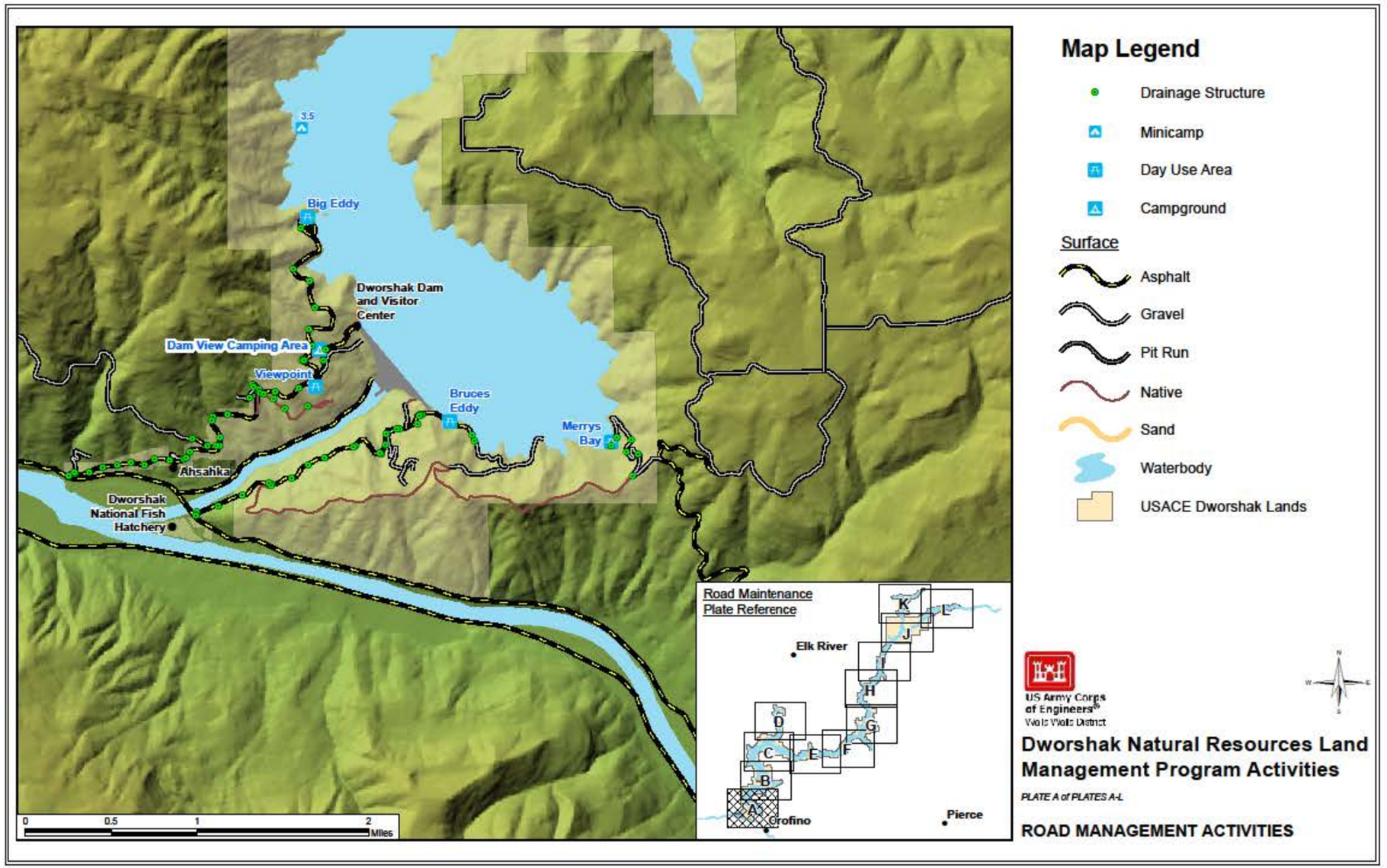
USFWS (U.S. Fish and Wildlife Service). 2011. Species profile: North American wolverine (*Gulo gulo luscus*). Environmental Conservation Online System. Available at: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0FA

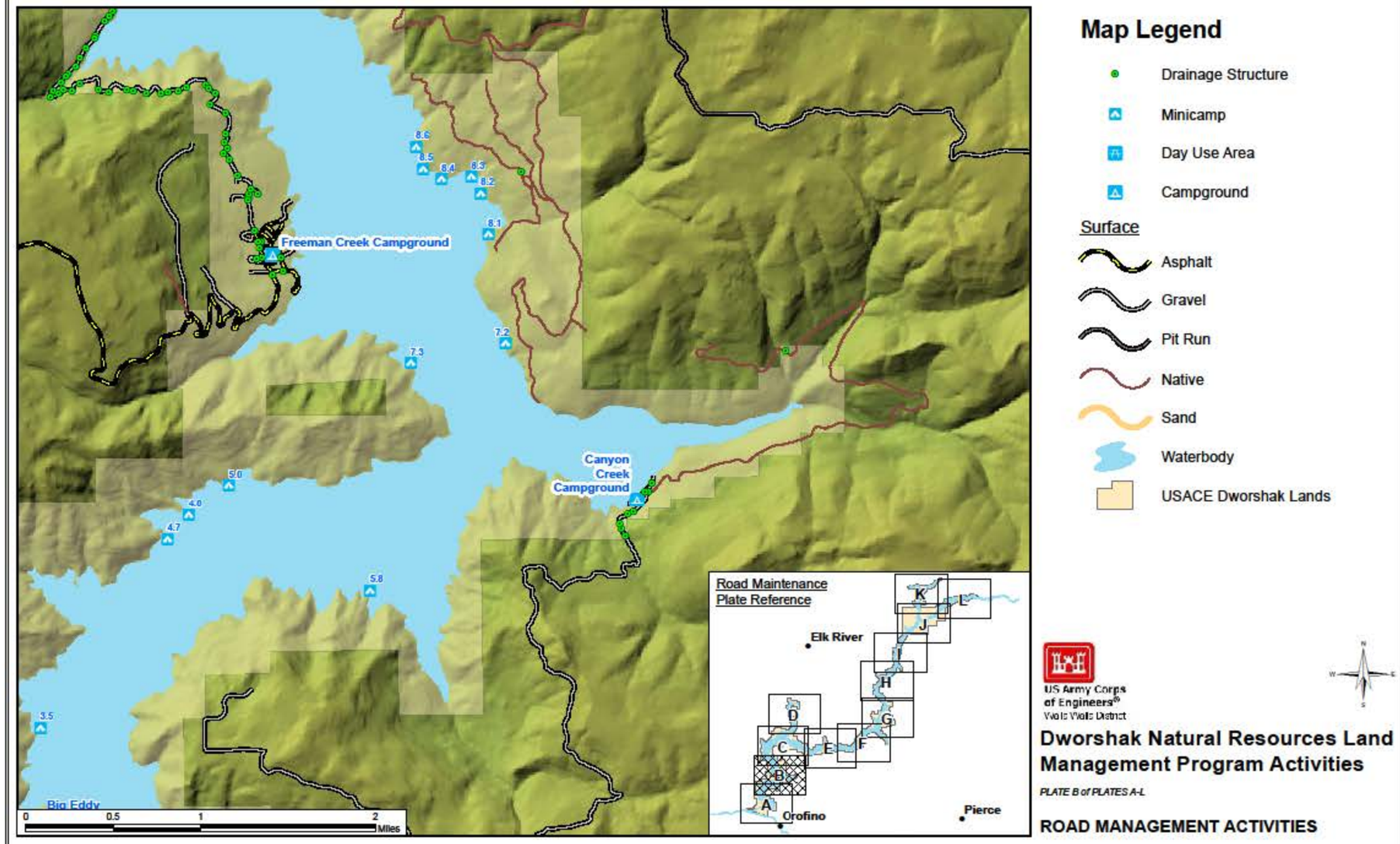
USFWS and NMFS. 1998. Endangered species act consultation handbook, procedures for conducting section 7 consultations and conferences. U.S. Government Printing Office. Washington, D.C. Available at: http://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf

Wildlife Trust, 2000. Gray Wolf *(Canis lupus).* "Wild Ones" webpage. http://www.thewildones.org .

Wydoski, R. and R. Whitney. 2003. Inland Fishes of Washington. Second Edition. American Fisheries Society, Bethesda, MD in association with University of Washington Press, Seattle. 322 pp.

10. Appendix A: Road Management Maps





Map Legend

- Drainage Structure
- Minicamp
- Day Use Area
- Campground

Surface

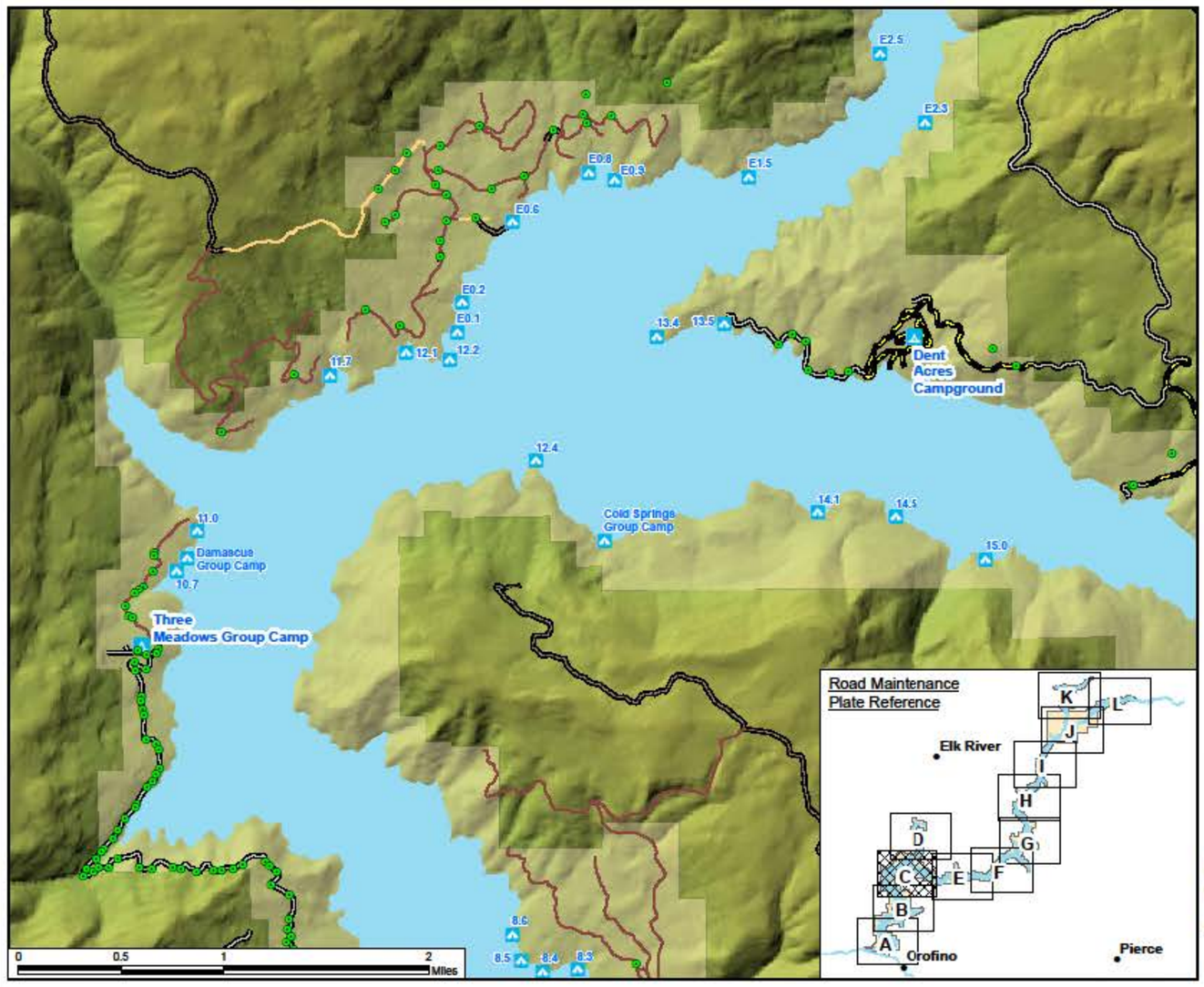
- Asphalt
- Gravel
- Pit Run
- Native
- Sand
- Waterbody
- USACE Dworshak Lands

US Army Corps of Engineers®
Walla Walla District

Dworshak Natural Resources Land Management Program Activities

PLATE B of PLATES A-L

ROAD MANAGEMENT ACTIVITIES



Map Legend

- Drainage Structure
- Minicamp
- Day Use Area
- Campground

Surface

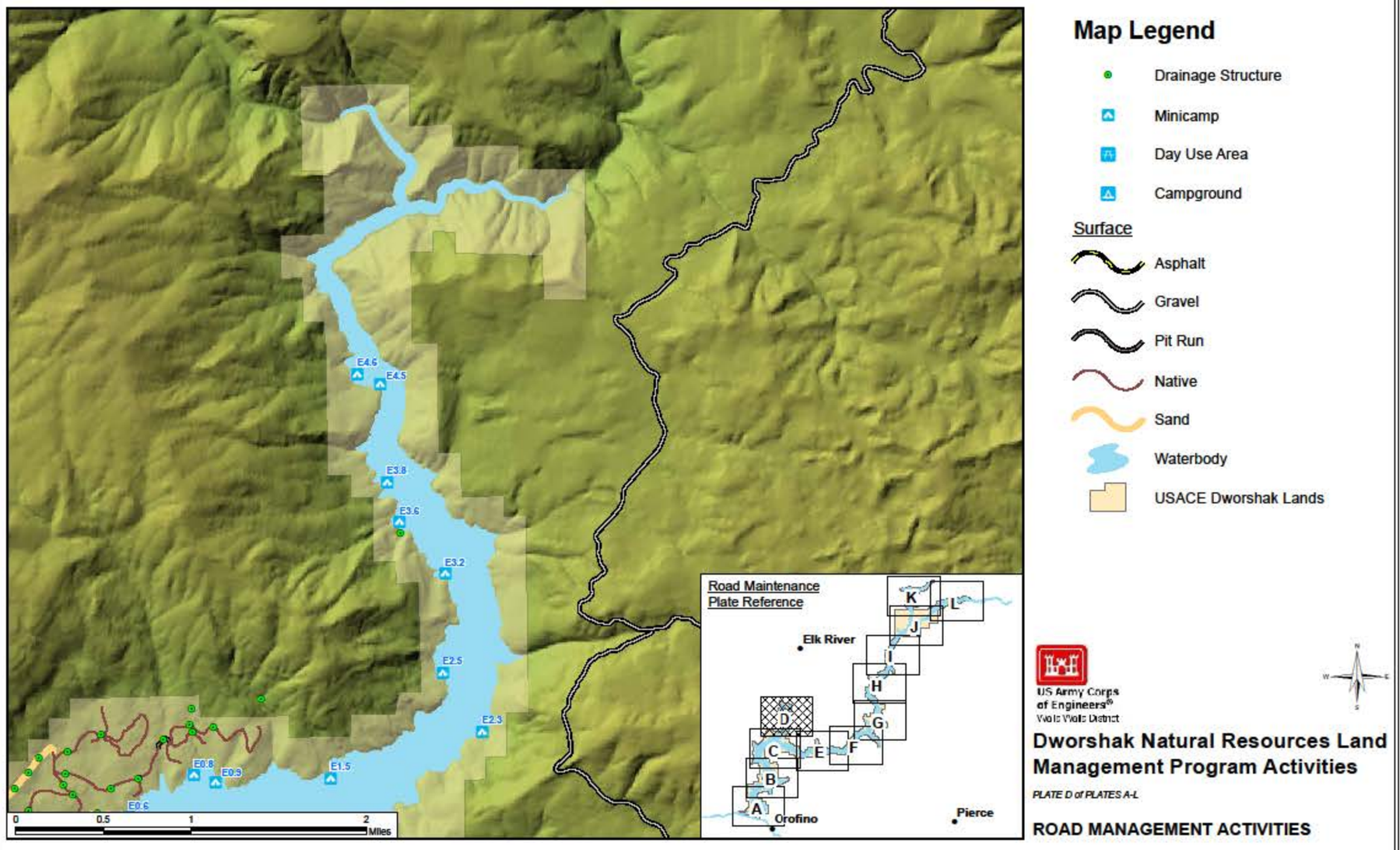
- Asphalt
- Gravel
- Pit Run
- Native
- Sand
- Waterbody
- USACE Dworshak Lands

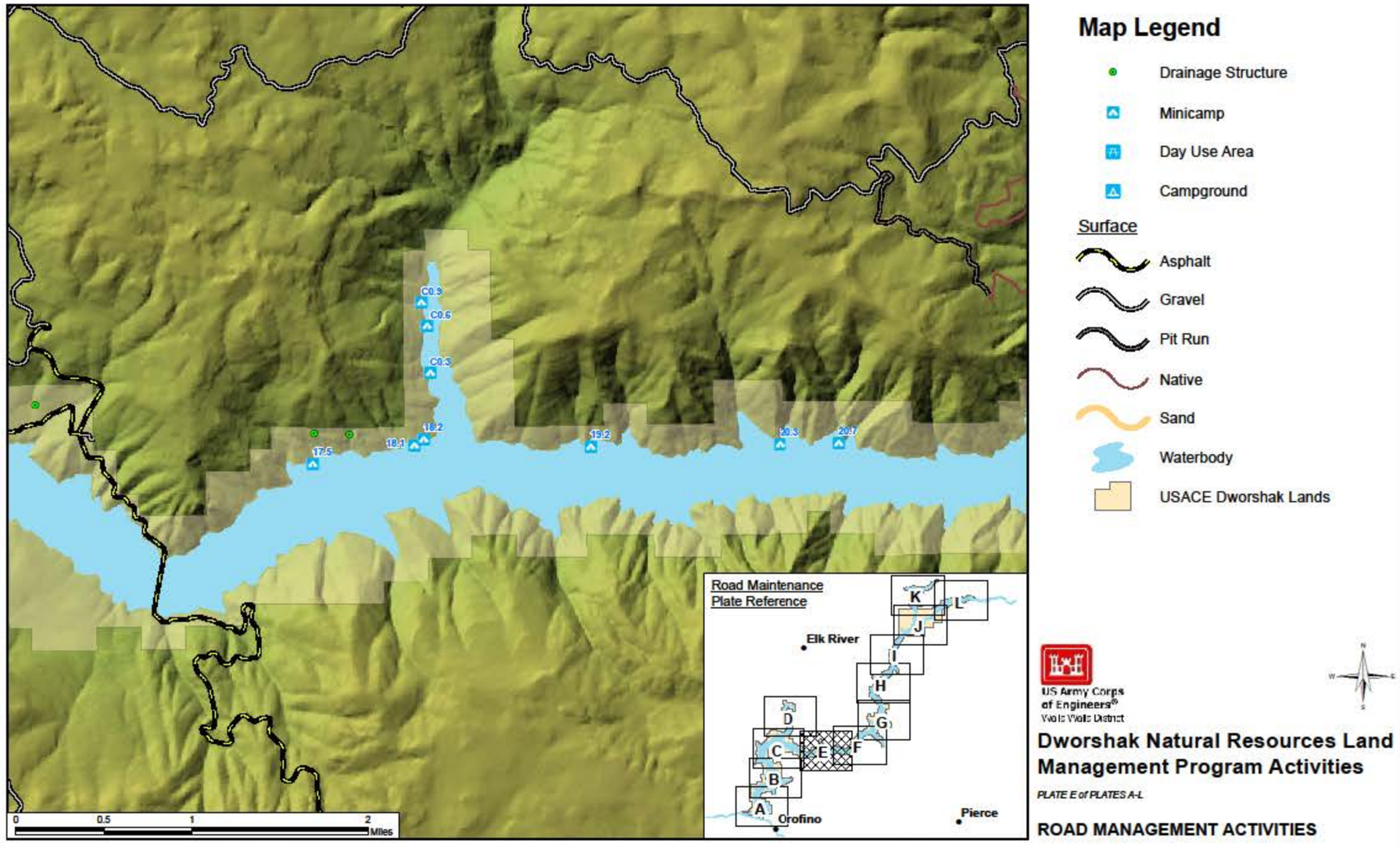
US Army Corps of Engineers®
Walla Walla District

Dworshak Natural Resources Land Management Program Activities

PLATE C of PLATES A-L

ROAD MANAGEMENT ACTIVITIES


E4.6
E4.5
E3.8
E3.6
E3.2
E2.5
E2.3
E1.5
E0.8
E0.9
E0.6
0
0.5
1
2
Miles
Road Maintenance
Plate Reference
K
L
J
I
H
G
D
C
E
F
B
A
Elk River
Orofino
Pierce
Map Legend
Drainage Structure
Minicamp
Day Use Area
Campground
Surface
Asphalt
Gravel
Pit Run
Native
Sand
Waterbody
USACE Dworshak Lands
US Army Corps
of Engineers®
Walla Walla District
Dworshak Natural Resources Land
Management Program Activities
PLATE D of PLATES A-L
ROAD MANAGEMENT ACTIVITIES



Map Legend

- Drainage Structure
- Minicamp
- Day Use Area
- Campground

Surface

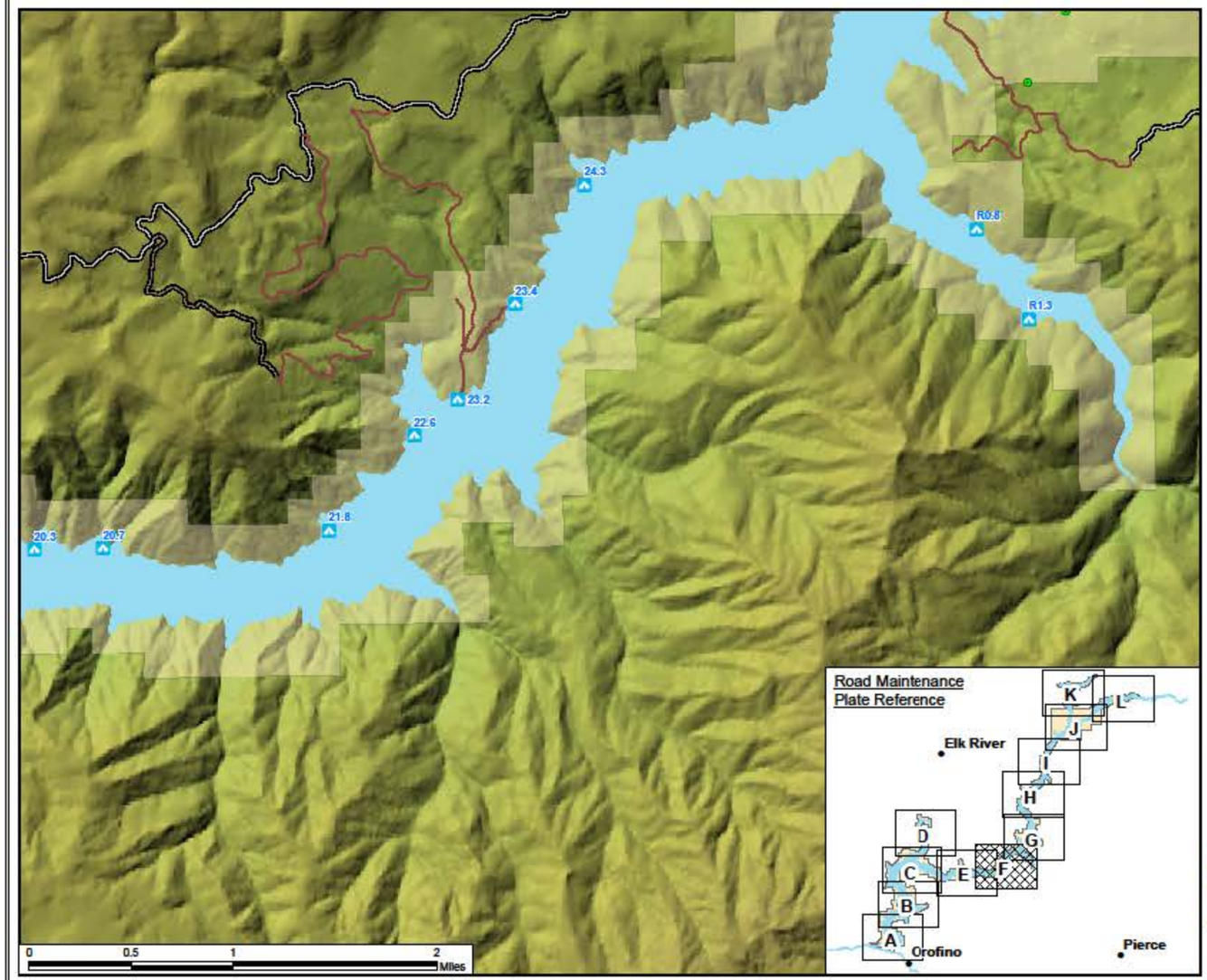
- Asphalt
- Gravel
- Pit Run
- Native
- Sand
- Waterbody
- USACE Dworshak Lands

US Army Corps of Engineers®
Walla Walla District

Dworshak Natural Resources Land Management Program Activities

PLATE E of PLATES A-L

ROAD MANAGEMENT ACTIVITIES



Map Legend

- Drainage Structure
- Minicamp
- Day Use Area
- Campground

Surface

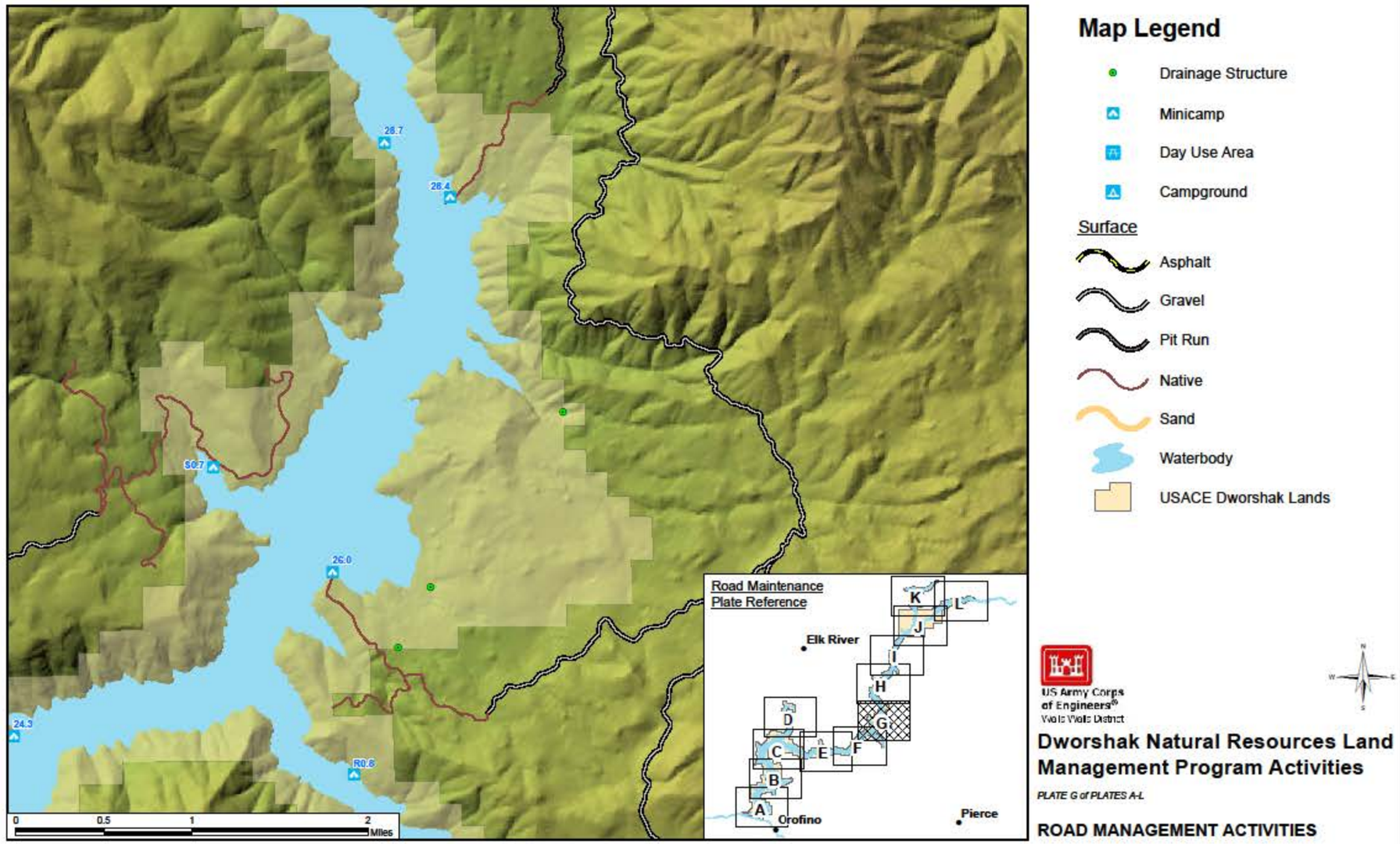
- Asphalt
- Gravel
- Pit Run
- Native
- Sand
- Waterbody
- USACE Dworshak Lands

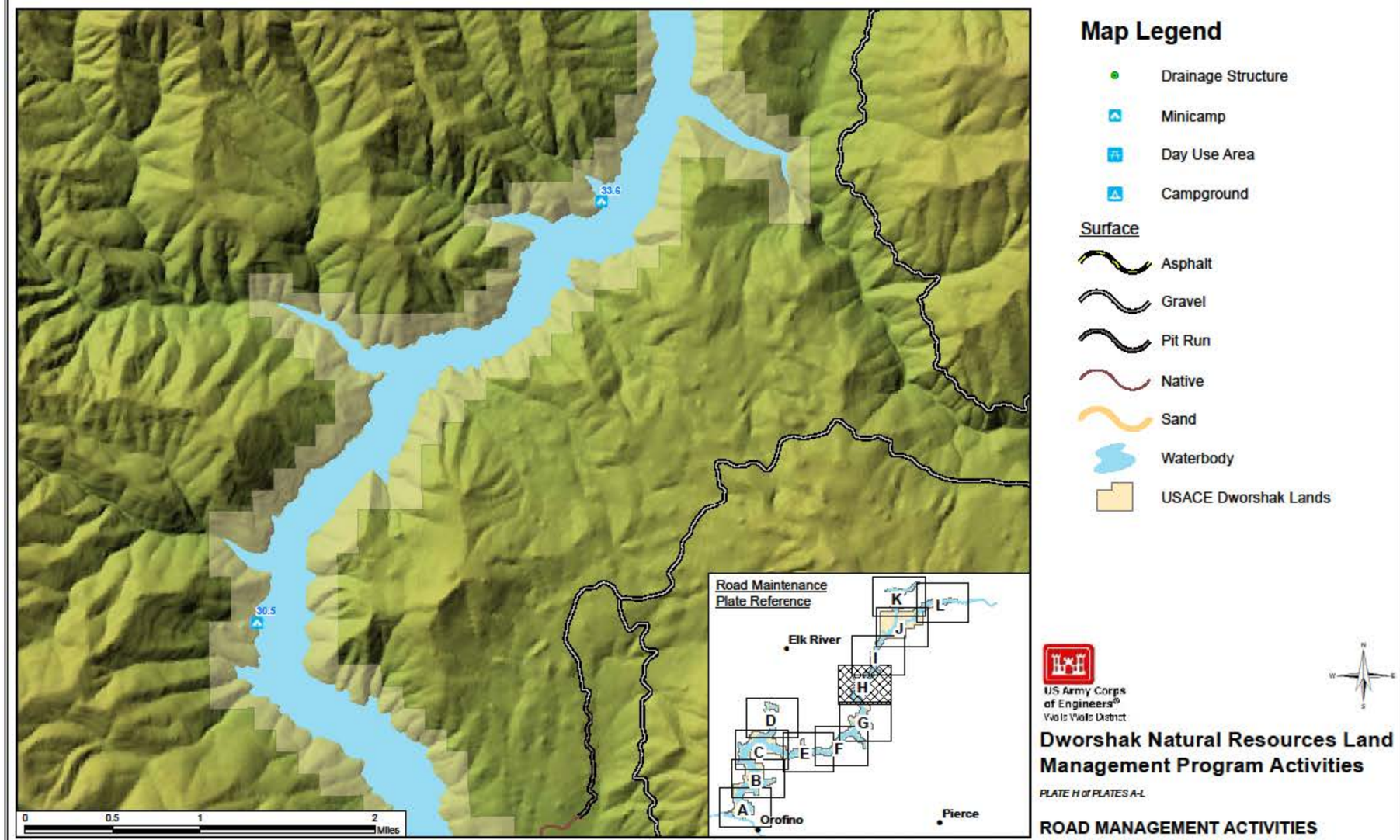
US Army Corps of Engineers®
Walla Walla District

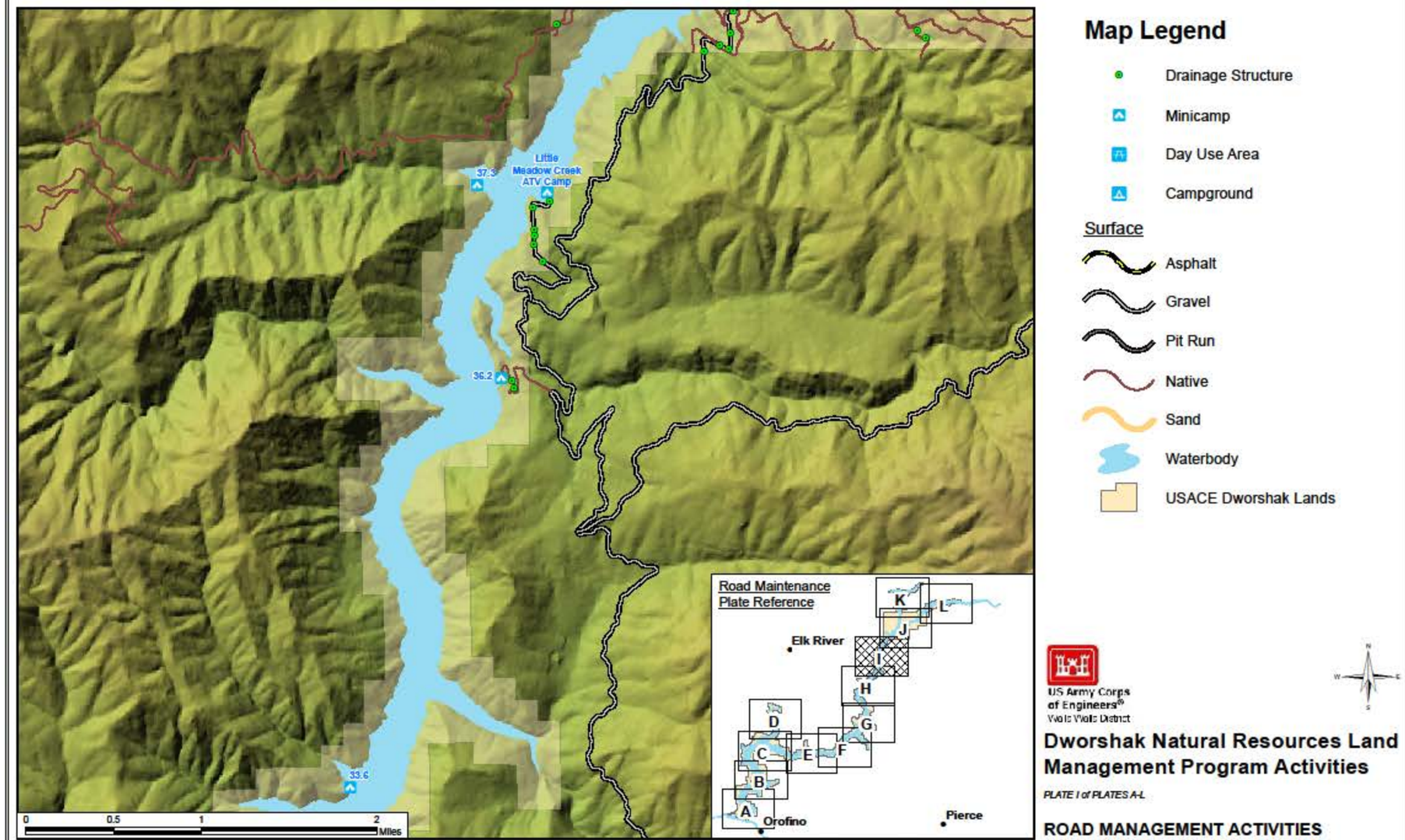
Dworshak Natural Resources Land Management Program Activities

PLATE F of PLATES A-L

ROAD MANAGEMENT ACTIVITIES


28.7
28.4
26.0
24.3
R0.8
0
0.5
1
2
Miles
Road Maintenance
Plate Reference
K
L
J
I
H
G
D
C
E
F
B
A
Elk River
Orofino
Pierce
Map Legend
Drainage Structure
Minicamp
Day Use Area
Campground
Surface
Asphalt
Gravel
Pit Run
Native
Sand
Waterbody
USACE Dworshak Lands
US Army Corps
of Engineers®
Walla Walla District
Dworshak Natural Resources Land
Management Program Activities
PLATE G of PLATES A-L
ROAD MANAGEMENT ACTIVITIES


33.6
30.5
0
0.5
1
2
Miles
Road Maintenance
Plate Reference
K
L
J
I
H
D
G
C
E
F
B
A
Elk River
Orofino
Pierce
Map Legend
Drainage Structure
Minicamp
Day Use Area
Campground
Surface
Asphalt
Gravel
Pit Run
Native
Sand
Waterbody
USACE Dworshak Lands
US Army Corps
of Engineers
Walla Walla District
Dworshak Natural Resources Land
Management Program Activities
PLATE H of PLATES A-L
ROAD MANAGEMENT ACTIVITIES



Map Legend

- Drainage Structure
- Minicamp
- Day Use Area
- Campground

Surface

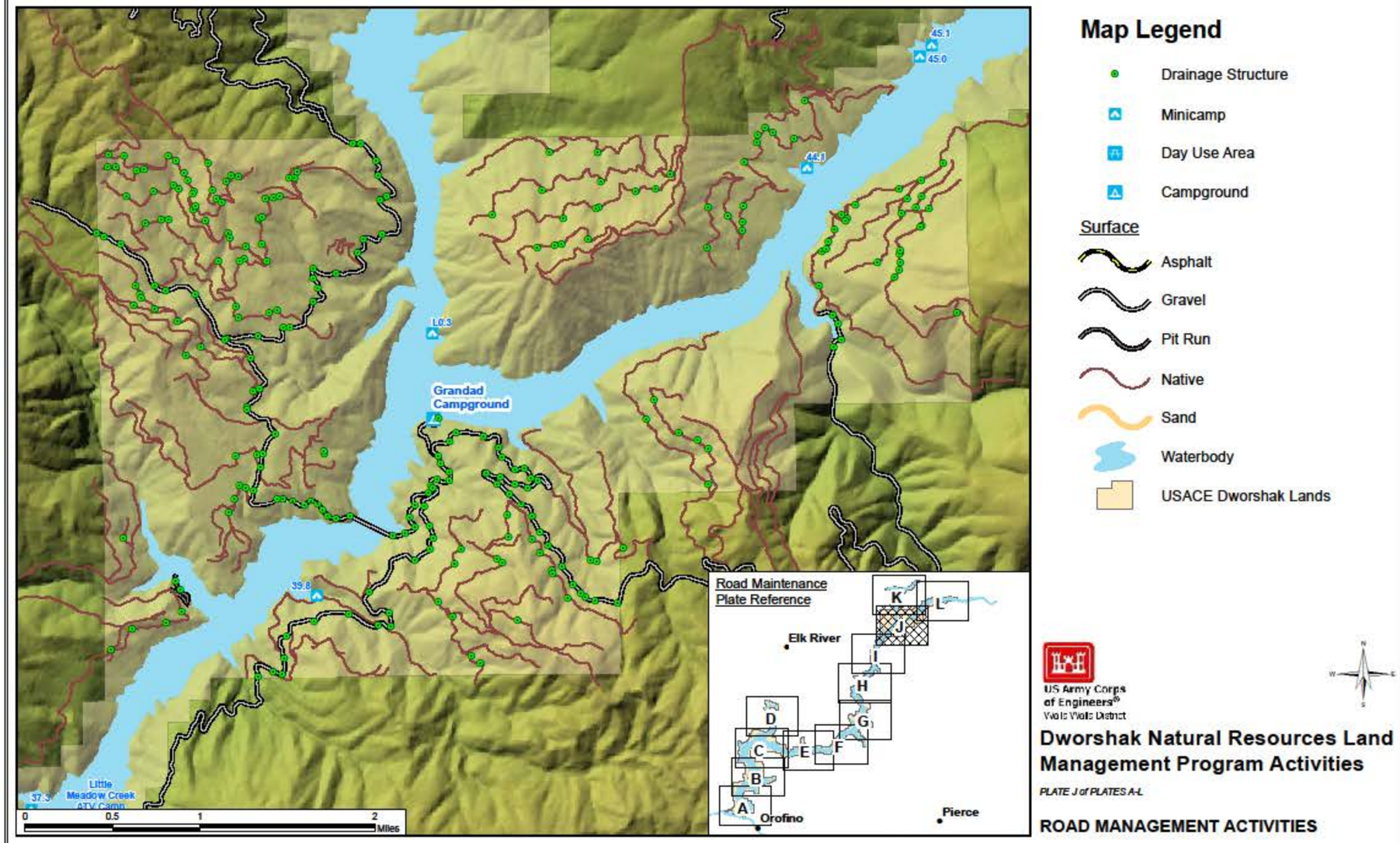
- Asphalt
- Gravel
- Pit Run
- Native
- Sand
- Waterbody
- USACE Dworshak Lands

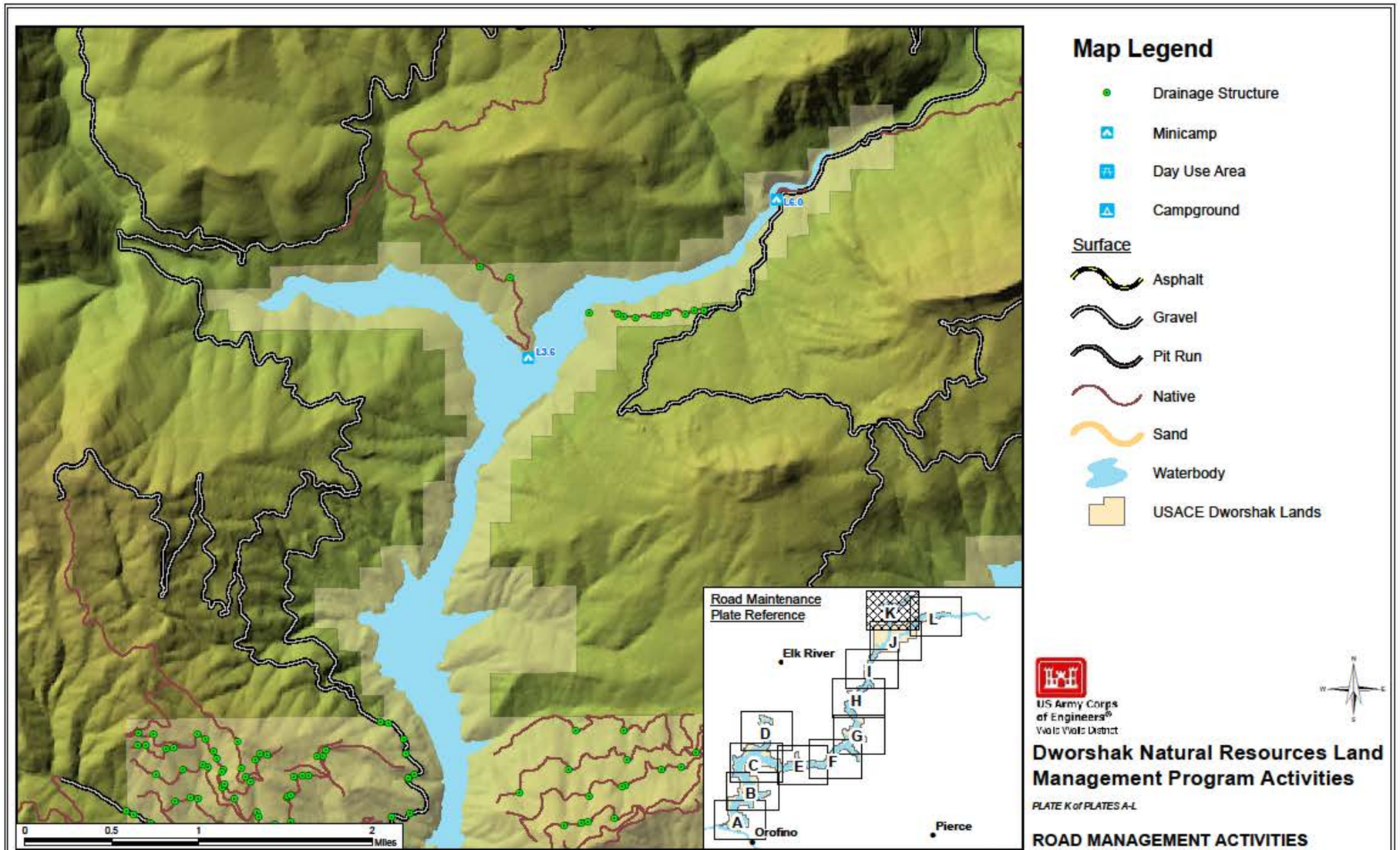
US Army Corps of Engineers®
Walla Walla District

Dworshak Natural Resources Land Management Program Activities

PLATE I of PLATES A-L

ROAD MANAGEMENT ACTIVITIES


45.1
45.0
44.1
L0.3
Grandad Campground
39.8
37.3
Little Meadow Creek ATV Camp
0
0.5
1
2
Miles
Road Maintenance Plate Reference
K
L
J
I
H
G
F
E
D
C
B
A
Elk River
Orofino
Pierce
Map Legend
Drainage Structure
Minicamp
Day Use Area
Campground
Surface
Asphalt
Gravel
Pit Run
Native
Sand
Waterbody
USACE Dworshak Lands
US Army Corps of Engineers®
Walla Walla District
Dworshak Natural Resources Land Management Program Activities
PLATE J of PLATES A-L
ROAD MANAGEMENT ACTIVITIES



Map Legend

- Drainage Structure
- Minicamp
- Day Use Area
- Campground

Surface

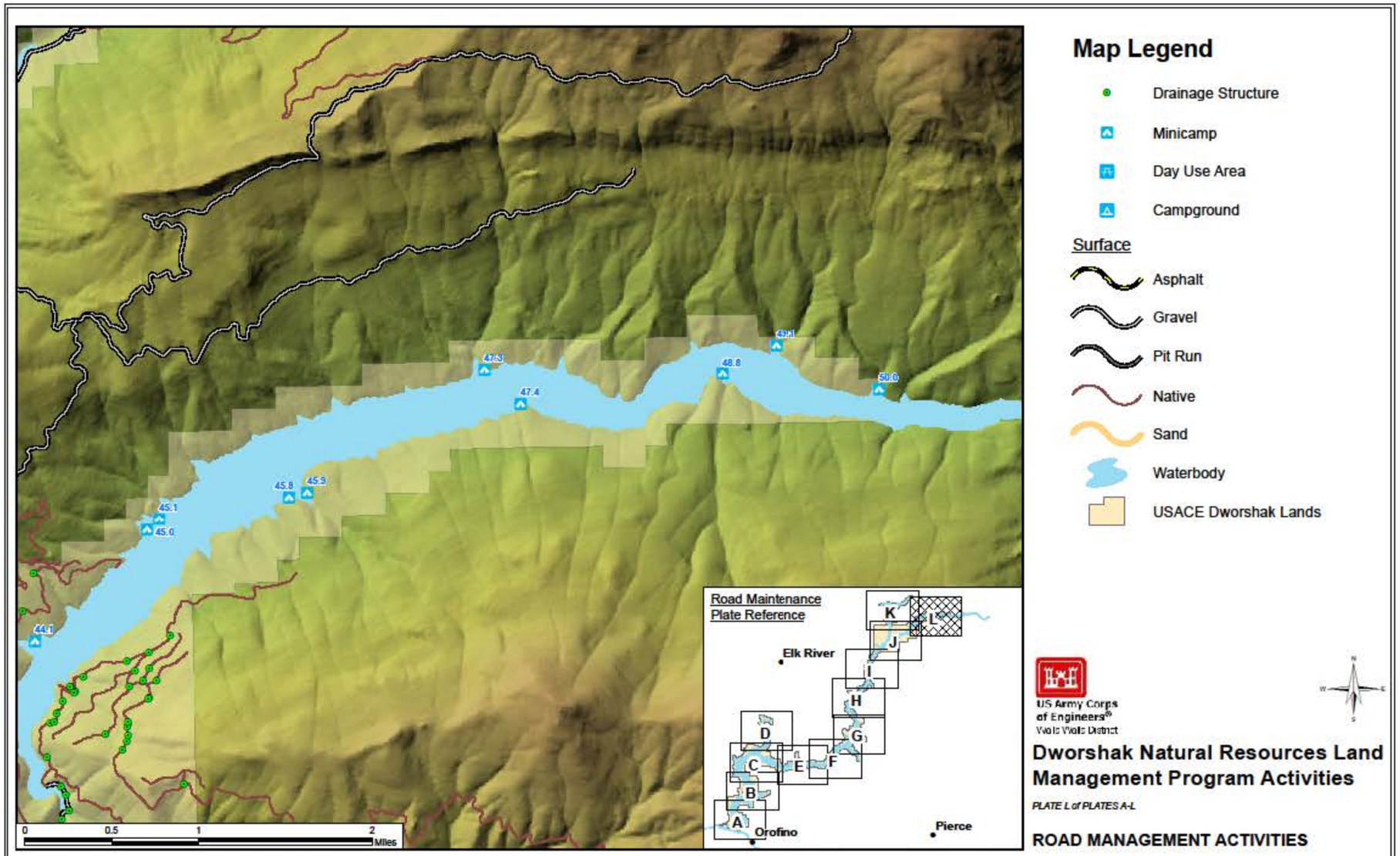
- Asphalt
- Gravel
- Pit Run
- Native
- Sand
- Waterbody
- USACE Dworshak Lands

US Army Corps of Engineers®
Walla Walla District

Dworshak Natural Resources Land Management Program Activities

PLATE K of PLATES A-L

ROAD MANAGEMENT ACTIVITIES



Map Legend

- Drainage Structure
- Minicamp
- Day Use Area
- Campground

Surface

- Asphalt
- Gravel
- Pit Run
- Native
- Sand
- Waterbody
- USACE Dworshak Lands

US Army Corps of Engineers®
Walla Walla District

Dworshak Natural Resources Land Management Program Activities

PLATE L of PLATES A-L

ROAD MANAGEMENT ACTIVITIES

11. Appendix B: Dworshak Blasting Activities

Dworshak Blasting

11.1. Purpose and Need

The Walla Walla District of the US Army Corps of Engineers proposes to use explosives to enhance the habitat suitability for amphibian reproduction at small isolated wetlands and to reduce unauthorized vehicle use.

11.1.1. Wetland Enhancement

Dworshak has a number of small isolated wetlands that warrant protection and/or enhancement.

11.1.2. Road Obliteration

There is a large volume of unauthorized motor vehicle use on Corps land surrounding Dworshak Reservoir resulting in negative impacts to soils, vegetation, wildlife, water quality and aesthetics as well as having the potential to affect resident fish and aquatic ecology, recreation, cultural resources and T&E species. The Dworshak access management program utilizes one or a combination of education, signage, and physical barriers (when necessary) to prevent unauthorized access. Many of these are gates and barricades, which require annual inspection and maintenance. Obliterating all or portions of roads and trails could be used to prevent unauthorized access at a lower maintenance cost. Road obliteration may be the only physical barrier option in areas where access is limited. In these cases explosives will be used to obliterate a portion of these roads.

11.1.3. Trail Construction / Maintenance

Hiking, horseback riding, and mountain biking are increasingly popular authorized activities on reservoir lands. Currently, there are no motorized trails on Dworshak lands with the exception of one pilot project for an ATV trail at Little Meadow Creek to analyze potential impacts to Dworshak lands. Significant demand by area OHV users, coupled with the need to update DM-10, culminated in the creation of the Dworshak Public Use Plan authorizing motorized recreation. Given the nature of the terrain around Dworshak, and the myriad of trail types on Dworshak, the necessity may arise to use explosives to remove rocks and other hard surfaces that cannot be altered by conventional methods.

11.1.4. Road Construction/Maintenance

Roads to be constructed or maintained for natural resource management activities, such as harvest operations, may require blasting of rocks and other hard surfaces that cannot be altered by conventional methods. The potential for this work is extremely low as generally rocky outcroppings and the like are nearly always avoided during road layout. However, the possibility that a particular rocky outcropping cannot be avoided and must be blasted exists, but is remote.

11.2. Proposed Action

Once a wetland, trail or a road is identified for blasting the work would include the following:

Exact locations of each hole will be marked on the ground based on potential to improve the wetland habitat or obliterate the road surface.

- Holes will be dug into the soil using either a rock bar or a post-hole digger.
- Explosives will be placed in the holes; charges may be tied together, and set off.
- Explosives will be discharged in such a manner as to adhere to the best management practices mentioned below for fish protection.
- Guards and warning signs will be posted during the entire blasting procedure.

11.3. Best Management Practices

11.3.1. Protection of Fish

The Alaska Department of Fish and Game (ADFG) developed blasting standards for the protection of fish. These guidelines were established to prevent adverse impacts to adults, larvae and eggs. The Corps proposes to use those guidelines as a practice to avoid impacts to fish. The standards are summarized as follows;

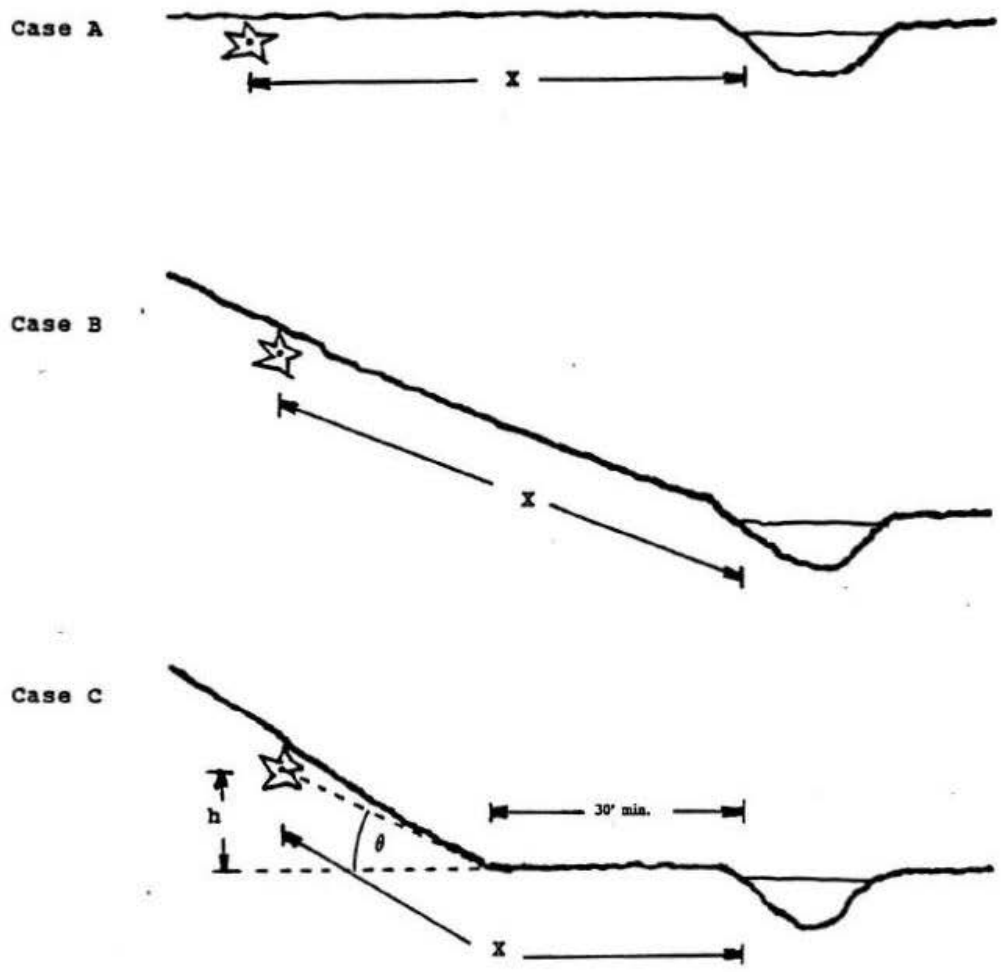
> "no person may discharge an explosive that produces or is likely to produce an instantaneous pressure change greater than 2.7 pounds per square inch (psi) in the swim bladder of a fish or produces or is likely to produce a peak particle velocity greater than 0.5 inches per second (ips) in a spawning bed during the early stage of egg incubation."

The report, "Blasting Standards for the Protection of Fish" put out by the ADFG states that these standards are the result of a thorough review of the available literature.

The guidelines present several figures and tables that guide personnel to calculate the size of charge allowable given a variety of environmental conditions (distance, angle and height from water, substrate material). Three of the most pertinent figures and tables are presented below.

Figure 14 Topographic cases considered in ADFG's proposed blasting standards.

FIGURE 4. THREE TOPOGRAPHIC CASES CONSIDERED IN ADF&G'S PROPOSED BLASTING STANDARDS



X = Total setback in feet from blast point to high value fish habitat. X is less than 30 feet only when reviewed on a case by case basis.

θ = Angle in degrees between valley floor and blast point.

h = Height in feet of center of charge above valley floor.

DRAFT -13- FEBRUARY 15, 1991

Figure 15 Table 3 from ADFG's proposed blasting standards.

DRAFT

TABLE 3: CASE A AND B SETBACKS FROM ANADROMOUS FISH WATERS (2.7 psi Standard) (in feet)[1/]

	Explosive Charge Weight (in pounds)[2/]							
Material	1	2	5	10	25	100	500	1000
Rock	34	49	77	109	172	344	769	1088
Frozen Soil	32	45	72	102	161	322	719	1017
Ice	30	41	64	91	144	288	644	910
Saturated Soil	30	41	65	91	145	289	647	915
Unsaturated Soil	30	30	45	63	100	200	448	633

-20-

FEBRUARY 15, 1991

1/ The straight line distance through the material from the center of the charge to the waterbody, assuming that the blast energy is confined within the material. Uncontained blasts or explosive charges with a detonation velocity of less than 5,000 feet per second will be reviewed on a case-by-case basis.

2/ The scaled distance relationships apply to single shots of a given weight of explosive or single shots in a multiple charge if each charge is separated by an eight millisecond or longer delay. For example, a 500 pound shot on level ground in rock requires a setback distance from a waterbody of 769 feet; a 500 pound shot in rock in charges of 100 pounds each separated by eight millisecond or longer delays requires a setback distance of 344 feet.

Figure 16 Table 5e from ADFG's proposed blasting standards.

DRAFT

TABLE 5e: CASE C SETBACKS FROM ANADROMOUS FISH WATERS (2.7 psi Standard) (in feet)[1/]

Material: Unsaturated Soil

Explosive Charge Weight (in pounds)[2/]

		1	2	5	10	25	100	500	1000
Slope	10°	30(0)	30(0)	44(0)	62(1)	99(1)	197(2)	441(4)	624(5)
	20°	30(0)	30(0)	42(1)	60(1)	94(2)	188(3)	421(8)	595(11)
	30°	30(0)	31(1)	39(1)	55(2)	87(2)	173(5)	388(11)	548(16)
	40°	31(1)	31(1)	34(1)	49(2)	77(3)	153(6)	343(14)	485(20)
	50°	31(1)	31(1)	32(2)	41(2)	64(4)	129(8)	288(17)	407(24)
	60°	31(1)	31(1)	32(2)	33(3)	50(4)	100(9)	224(19)	317(27)
	70°	31(1)	31(1)	32(2)	33(3)	35(5)	68(9)	153(21)	217(30)
	80°	31(1)	31(1)	32(2)	33(3)	35(5)	40(10)	78(22)	110(31)
	90°	31(1)	31(1)	32(2)	33(3)	35(5)	40(10)	52(22)	62(32)

(N) = Minimum height in feet of center of charge above valley floor (see text and Figure 4).

1/ The straight line distance through the material from the center of the charge to the waterbody, assuming that the blast energy is confined within the material. Uncontained blasts or explosive charges with a detonation velocity of less than 5,000 feet per second will be reviewed on a case-by-case basis.

2/ The scaled distance relationships apply to single shots of a given weight of explosive or single shots in a multiple charge if each charge is separated by an eight millisecond or longer delay. For example, a 500 pound shot on a 10° slope in unsaturated soil requires a setback distance from a waterbody of 441 feet; a 500 pound shot in unsaturated soil in charges of 100 pounds each separated by eight millisecond or longer delays requires a setback distance of 197 feet.

-26-

FEBRUARY 15, 1991

11.3.2. Protection of Migratory Birds

Recommendations established by the United States Fish and Wildlife Service (USFWS) will be used to protect nesting bald eagles. These recommendations state; "To avoid disturbing nesting eagles and their young, we recommend that you avoid blasting and other activities that produce extremely loud noises within 1/2 mile of active nests (or within 1 mile in open areas), unless greater tolerance to the activity (or similar activity) has been demonstrated by the eagles in the nesting area."

These will be applied to all breeding migratory birds. In nearly all instances blasting will occur outside of the general avian breeding season (February 1 through August 15th). If blasting will occur within this season the above USFWS recommendations will be followed.

11.4. References

ADFG (Alaska Department of Fish and Game). 1991. Blasting standards for the protection of fish. Available at: http://www.adfg.alaska.gov/static/license/uselicense/pdfs/adfg_blasting_standards.pdf

12. Appendix C: Example Monitoring Plan

Little Bay Stewardship Project
Monitoring Plan
10-7-08

Background

The Interior Columbia Basin Ecosystem Management Project (ICBEMP) determined that the North Fork of the Clearwater River subbasin is below the historical range of variability for the lower montane late seral forest and lower montane early seral forest, as a result of logging practices and fire suppression.
The elimination of the historical pattern of frequent low-intensity fires in both ponderosa pine and pine-mixed conifer forests has resulted in major ecological disruptions (Arno 1996). Without frequent fire, timber stands become overstocked and stressed as individual trees compete for limited moisture and nutrients. As a result, stands are more susceptible to beetle infestation, disease, and stand-replacing wildfires. As a result of the present condition, ICBEMP has also documented a scarcity in associated wildlife

Location

The project area is located along Dworshak Reservoir north of Canyon Creek, between river miles 7 and 11 comprising approximately 1,300 acres with actual effects to approximately 800 acres.

Legal Location: T38N R1E; Sections 25 & 36
T38N R2E Section 31
T37N R2E Sections 6, 7 & 8

Project Objectives

- Restore fire as a process that restores and maintains the ecosystem
- Restore habitats for wildlife and plant species,
- Reduce forest fuels
- Create seedbeds for Ponderosa pine and Western larch

Monitoring Plan Objectives

- **Inventory Plots:** Establish 19 (1/10 acre) pre-treatment inventory plots to assess current conditions.
    - Monitoring shall consist of photos and gathering of the following information:
        - Overstory species & size class
        - Canopy cover
        - Number and percent cover of browse species
        - Percent cover of noxious weed species
        - Fuel loading (photo interpretation) and duff depth
        - Number, size and species of snags

- **Monitoring Plots:** Of the 19 plots, 9 will be selected for post-treatment monitoring to measure change vegetation, fuel loading and big game use. Plot selection will allow for evaluation among varying habitat types, aspects and slopes. Photos will also be taken at each post-treatment plot.
    - Fuel loading and duff/litter depth will be measured within a 100^{th} acre plot centered within the original 1/10 acre plot. The number of 10, 100 and 1000 hour fuels will be recorded and average length will be estimated for each. Duff/litter depth will be measured in 5 locations within the 100^{th} acre plot. Fuel loading and duff/litter depth will be recorded pre-harvest (original survey), post-harvest/pre-burn, and post-burn. Fuel loading and duff/litter depth for plots that fall within the machine/pile and burn unit will be surveyed during first post-treatment vegetation survey.
    - Vegetation information will be collected 2.5-3 years post-treatment and every 5 years following. Prescribed burns within the Little Bay project will be accomplished over a two+ year period. To keep monitoring results consistent and comparable the permanent monitoring points will be sampled in two groups consistent with the year burned SEE TREATMENT SCHEUDLE.

- **Wildlife Monitoring:** Conduct pre-treatment and post-treatment surveys to monitor change in select species use including flammulated owl, goshawks, pigmy nuthatch and white-headed woodpecker. Surveys will include resident owl surveys, landbird surveys, woodpecker surveys, late season owls (flammulated) and raptor nest surveys. Post-treatment surveys are to be accomplished the first, third and fifth years after all treatments are completed and every 5 years after that.

- **Sensitive Plant Monitoring:** Locate and document sensitive plant species use within the project boundary. Once found populations of these species should be monitored following treatment to determine effect from treatment.

Implementation

- **Inventory Plots:** Nineteen (19) Inventory Plots were established in 2003, representing all but one of the planned timber sale units. Pre-harvest vegetation and fuel loading information was collected. From these nine representative sites were selected for post-treatment monitored. These are; 3, 5b, 6a, 6b, 8b, 9a, 11.

- **Monitoring Plots:**
    - FUEL MONITORING: Of the nine established permanent monitoring plots, 5 fell within burn units and fuel loadings will be taken pre-harvest (inventory effort), post-harvest/pre-burn, and post burn.
        - In August 2005, post-harvest/pre-burn fuel loading was measured within plots 3, 5b, 8b and 9a.
        - In November 2005 post-burn fuel loadings were taken at these plots.
        - Unit 12 was prescribed burned in October of 2007. The final burn unit did not include plot 12A. In the spring of 2008 plot 12b was visited. The area surrounding plot 12b did not burn and no data was collected. In general the burn was excellent on the south facing slopes, best burn to date. However, on the north facing slopes it was very spotty.

    - VEGETATION MONITORING:
        - We decided to do some additional slashing and burning in the middle and south units of the Little Bay project. As a result we have chosen to wait on the monitoring. We have not yet (10/7/08) been able to burn those new units. The burn is again planned for fall 2009.
        - No window for burning in 2009 was available. Decided to not burn any more units in Little Bay as the ground fuels are no longer available.
        - NEXT: <u>Conduct monitoring at 3, 5b, 6a, 6b, 8b,9a and 11 in 2011</u>.

Little Bay Vegetation Monitoring Schedule		
Year	Harvest Units 1-11, burn units south and middle (monitoring plots 3, 5b, 6a, 6b, 8b, 9a & 11)	~~Harvest Unit 12, burn unit north (monitoring plots 12a & 12b)~~
2007		~~Burned~~
2008	Additional Slashing and Burning	
2009		
2010		~~Survey~~
2011	Survey	
2012		
2013		
2014		
2015		~~Survey~~
2016	Survey	
2017		
2018		
2019		
2020		~~Survey~~
2021	Survey	
2022		
2023		
2024		
2025		~~Survey~~
2026	Survey	
2027		
2028		
2029		
2030		~~Survey~~

-
- **Wildlife Monitoring:**
    - Resident Owls: An owl survey transect with 7 point locations was established in 2003. Two surveys were conducted in 2004. Two surveys were conducted in 2010. RUN TWICE IN 2012.
    - Woodpeckers: The survey transect previously established by Idaho Fish and Game for landbird monitoring will be used to monitor woodpecker use. One survey was conducted in 2010. RUN TWICE IN 2012.
    - Landbirds: The survey transect previously established by Idaho Fish and Game was used to monitor landbird use. This transect was ran once in 2006. This transect was ran twice in 2010. RUN TWICE IN 2012.
    - Raptors: Surveyed for goshawks in 2006 using playback calls of goshawks within characteristic goshawk habitat. Monitored know osprey nests in 2004, 2005 and 2006. CONTINUE TO LOCATE AND MONITOR RAPTOR NESTS.
    - Late Season Owls: Two surveys were conducted in 2010. RUN TWICE IN 2012.

- **Sensitive Plants:** Monitoring the population of Jessica's aster was conducted by the Idaho CDC in 2003 and 2004.
    - 2008: Hired CDC to monitor Jessica's Aster populations.

- SUPPORT IDAHO CDC WHEN DESIRING TO MONITOR SENSITIVE PLANT POPULATIONS IN THE AREA.

United States Department of the Interior
Fish and Wildlife Service
Idaho Fish And Wildlife Office
1387 S. Vinnell Way, Room 368
Boise, Idaho 83709
Telephone (208) 378-5243
http://www.fws.gov/idaho

DEC 07 2011

Michael S. Francis
Chief, Environmental Compliance Section
Department of the Army
Corps of Engineers
Walla Walla District
201 North Third Avenue
Walla Walla, Washington 99362-1876

Subject: Dworshak Natural Resources Land Management Program—Clearwater County, Idaho—Concurrence
In Reply Refer To: 01EIFW00-2012-I-0039 Internal Use: CONS-100a

Dear Mr. Francis:

This letter transmits the Fish and Wildlife Service's (Service) concurrence on the effects to species listed under the Endangered Species Act (Act) of 1973, as amended, from the Dworshak Natural Resources Land Management Program (Program). In a letter dated November 15, 2011, and received by the Service on November 17, the Army Corps of Engineers (Corps) requested concurrence with the determination, as documented in your Biological Assessment (Assessment), that the Program is not likely to adversely affect the bull trout (*Salvelinus confluentus*) and its critical habitat. You also determined that the Program will have no effect on the threatened Canada lynx (*Lynx canadensis*) and the North American wolverine (*Gulo gulo luscus*), a candidate species. We acknowledge these no effect determinations.

The Corps proposes to implement the Program to enhance ecosystem integrity, forest health, wildlife habitat, and recreational opportunities on Corps administered lands surrounding 29,318 acre Dworshak Reservoir. Safety and aesthetics are the primary focus for treatments within recreation areas, including high density recreation areas and primitive campsites (i.e., mini camps). In order to meet these goals, the Program has been divided into the following management categories, or activities:

- Access and Trails Management
- Boundary Management
- Fire Management
- Forest Management
- Road Management
- Wildlife Habitat Management
- Recreation

More details on these activities are found in the Table below.

Table 1. Program management Activities, Elements, and maximum number of Activity Elements implemented per year between 2012 and 2022 (adapted from Table 2 of the Assessment).

Dworshak Programmatic Activity Elements	Maximum Quantity per Year
Access and Trails Management	
Gate and/or Barricade Installations	5 per year
Gate and/or Barricade Modifications	5 per year
Gate and/or Barricade Refurbishing	10 per year
Sign Installation/Maintenance	20 per year
Fence Repair and Maintenance	5 miles per year
Fence Removal	5 miles per year
Trail Corridor Brushing and Tread Maintenance	50 miles per year
Bridge Installation/Maintenance	5 per year (non-fish bearing)
Surface Water Control Structure Installation/Maintenance	50 per year
Boundary Management	
Boundary Monument Installation	5 miles per year
Fire Management	
Broadcast Burning	1,000 acres a year
Pile Burning	100 piles per year
Slashing and/or Pruning	200 acres per year
Fire Lines	25 recreational mini camps (approx. 1.25 mi), designated burn units
Forest Management	
Selective Harvest	750 acres a year
Road Management	
New Construction	5 miles per year
Road Reconstruction	15 miles per year
Road Maintenance	50 miles per year
Road Obliteration	2 miles per year
Road Demolition	1/4 mile per year
Culverts	50 per year (on intermittent streams, no bull trout streams involved)
Wildlife Habitat Management	
Wetland Enhancement	2 per year
Planting	1,500 plants per year
Recreation Management	
Recreation Foot Trails	10 miles per year

The Program contains Impact Minimization Measures (IMMs) and Best Management Practices (BMPs) to reduce resource impacts. These measures include the following:

- Buffering streams using PACFISH/INFISH guidelines for establishing riparian habitat conservation areas (RHCAs)
- Storing fuel and lubricants outside of RHCAs
- Inspecting equipment for leaks (and repairing leaks) before entry into RHCAs
- Igniting prescribed fires outside of RHCAs (but fire will be allowed to burn into RHCAs)

- Prohibiting timber harvest in RHCAs
- Minimizing development of new roads
- Waterbarring firelines
- Using handlines on overly steep slopes
- Revegetating road surfaces with native grasses upon project completion
- Using management guidelines for the protection of bald eagles
- Using accepted standards during any blasting activities for protecting fish and migratory birds
- Conducting road obliteration and instream work under dry conditions (with few exceptions all streams in the action area are ephemeral).

The Corps will conduct implementation and effectiveness monitoring and track projects completed under the Program. The monitoring and tracking reports will be provided to the Service.

The Corps will implement the Program between 2012 and 2022. Refer to the Assessment for a complete description of the Program including all IMMs and BMPs.

Of the activities shown in Table 1 above, the Corps has identified Fire, Forest, Road, and Recreation management as the most likely to affect bull trout and its critical habitat. The stressors potentially produced from these management activities include suspended sediment and turbidity, petro-chemical toxins, and shock waves associated with blasting. Our concurrence that the Program is not likely to adversely affect the bull trout and its critical habitat is based on the following rationales:

- The risk of any direct effects to spawning bull trout resulting from Program implementation is discountable because no bull trout spawning has been documented in the action area.

- In the action area, adult bull trout overwinter and subadults reside year-round in Dworshak Reservoir. The action area also includes free flowing sections of the Little North Fork Clearwater River (2,200 feet) and Breakfast Creek (1,500 feet) which bull trout use for feeding, migrating, and overwintering (FMO) habitat. Effects to bull trout in Dworshak Reservoir, the Little North Fork Clearwater River and Breakfast Creek from Program implementation are expected to be insignificant due to the implementation of project IMMs and BMPs.

  Specifically, sediment inputs into the Reservoir and affected streams will be minimized through limiting harvest treatments and burn prescriptions to areas outside of RHCAs; reseeding roads and landings after project completion; using helicopter logging on slopes greater than 40 percent; using erosion control measures such as silt fences and sediment traps; and closing work sites during periods of heavy rain or snowfall. Any sediment effects to bull trout habitat in Dworshak Reservoir from the project will be insignificant in comparison to baseline conditions associated with reservoir drawdowns for flow augmentation. By using selective harvest and by not allowing any harvest in RHCAs, effects to water temperature and large woody debris recruitment in the action area will be minimized.

Equipment staging and fuel storage will occur outside of RHCAs. Equipment will be cleaned and inspected for leaks (and any leaks repaired) prior to entry into RHCAs.

For minimizing the potential effects of blasting on bull trout, the Corps will only conduct blasting in areas that are near occupied bull trout habitat (including the Reservoir, the Little North Fork Clearwater River, and Breakfast Creek) during that period when the majority of adult bull trout are migrating out of the Reservoir or are in upstream spawning reaches (i.e., mid-June through mid-October). In addition, the Corps will strictly adhere to standards developed by the state of Alaska for protecting fish during blasting (Alaska Department of Fish and Game 1991, available at: http://www.adfg.alaska.gov/static/license/uselicense/pdfs/adfg_blasting_standards.pdf (last accessed December 6, 2011).

- Dworshak Reservoir and those portions of the Little North Clearwater River and Breakfast Creek within the action area are designated as bull trout critical habitat and provide FMO habitat. Program implementation will result in insignificant or no effects to the Primary Constituent Elements (PCEs) of critical habitat because of the IMMs and BMPs incorporated into the Program. The functionality of the critical habitat in providing FMO habitat for bull trout will be maintained.

This concludes informal consultation on the proposed action under section 7 of the Act. If the proposal addressed in this letter is modified, environmental conditions change, or additional information becomes available regarding potential effects on listed species, you should verify that your conclusions are still valid.

Thank you for your continued interest in the conservation of threatened and endangered species. Please contact Clay Fletcher at (208) 378-5256 if you have questions concerning this letter.

Sincerely,

Russell K. Holder

– for –

Brian T. Kelly
State Supervisor

cc: NMFS, Grangeville (Brege)
IDFG, Region II, Lewiston (Hennekey)

DWORSHAK NATURAL RESOURCES LAND MANAGEMENT PROGRAM ACTIVITIES

DWORSHAK RESERVOIR

PM-EC-2010-0065

Amendment to the Biological Assessment

for

Threatened and Endangered Species,
Critical Habitat, and Essential Fish Habitat

Under the Jurisdiction of:

National Marine Fisheries Service
and
U.S. Fish and Wildlife Service

U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

Date
1 April 2014

If additional information regarding this document is required, please contact Jason Achziger, Fishery Biologist in the Environmental Compliance Section of the U.S. Army Corps of Engineers, Walla Walla District, at (509) 527-7262, or by email at jason.k.achziger@usace.army.mil. Other correspondence can be mailed to:

Jason Achziger
Fishery Biologist
Environmental Compliance Section
U.S. Army Corps of Engineers
Walla Walla District
201 North Third Ave.
Walla Walla, WA 99362

/s/ Jason Achziger

_____

Jason Achziger
Fishery Biologist/Preparer
U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

/s/ Charles Chamberlain

_____

Charles Chamberlain
For: Chief, Environmental Compliance Section
U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

TABLE OF CONTENTS

Glossary

Activity	Land Management Activity (Access, Boundary, Fire, Forest, Road, Wildlife Habitat, and Recreation Management)
BA	Dworshak Natural Resources Land Management Program Activities Biological Assessment
BMP	Best Management Practice
Corps	U.S. Army Corps of Engineers
DM-15	Design Memorandum No. 15, *Plan for Development of Rocky Mountain Elk Habitat*
Dworshak	Corps-managed Lands at Dworshak Dam and Reservoir
ESA	Endangered Species Act of 1973, as amended
mi^2	Square Miles
NMFS	National Marine Fisheries Service
USFWS	U.S. Fish and Wildlife Service

1. Introduction

The U.S. Army Corps of Engineers (Corps) proposes to amend the Dworshak Natural Resources Land Management Program Activities biological assessment (BA) (USACE 2011a) to include activities described in the draft Dworshak Trail Management Plan (Plan) (USACE 2013).

This amendment will allow the Corps to efficiently continue to programmatically manage forest and wildlife resources within Corps-managed lands at Dworshak Dam and Reservoir (Dworshak), Clearwater County, Idaho, as part of the Dworshak Natural Resources Land Management Program (Program), while allowing the Corps to efficiently and seamlessly include activities under the Plan. This will allow the Corps to comply with section 7 of the Endangered Species Act (ESA) and report to the U.S. Fish and Wildlife Service (USFWS) using the mechanisms already in place.

Additionally, the effects of road and trail management on ESA-listed species and critical habitat were analyzed in the BA. Addition of the Plan's activities to the BA will not result in any effects not already considered in the previous informal consultation (USACE 2011a; USFWS 2011a).

As with the BA, the addition of the Plan to the BA is proposed as programmatic management because it is distinguished by well-defined activity types with potential adverse effects that are minor, repetitive, and predictable. Individual consultation of these actions at the project scale would produce the same overall result and not provide any additional conservation benefit.

2. Background / History

The BA (USACE 2011a) described management activities under the Program and Program management activity "elements." The U.S. Fish and Wildlife Service (USFWS) concurred with the Corps' determinations in the BA on December 7, 2011 (USFWS 2011a), concluding informal consultation under section 7 of the Endangered Species Act (ESA).

As described in the BA, Dworshak's Program has traditionally been conducted under individual plans, and has been managed, in general, at the project scale. This approach resulted in several consultations that have involved similar activities, with similar effects, and added workload, both to the Services and the Corps. The Corps, in close coordination with USFWS, minimized consultation-related workload for the Corps and the Services, while producing the same overall result through a programmatic approach to management, and programmatic consultation with the BA (USACE 2011a).

The Dworshak Trail Management Plan (Plan) has been developed by the Dworshak Natural Resource Section to accommodate changes in public use at Dworshak Reservoir and to fulfill the intent of the Dworshak Reservoir Public Use Plan as approved on February 24, 2011 and in compliance with DM-15, the "Plan for Development of Rocky Mountain Elk Habitat."

2.1. Documentation of Relevant Correspondence

The design of this Program has been accomplished through great effort and coordination between the Dworshak Natural Resource Team, and the Corps' Environmental Compliance Section. Numerous emails, telephone calls, and exchange of information facilitated the development of this Program.

As with the development of the BA, numerous emails, telephone calls, and exchange of information between the Corps' Environmental Compliance Section and the U.S. Fish and Wildlife Service facilitated the successful and timely completion of informal consultation on the Dworshak Natural Resources Land Management Program Activities consultation.

Early coordination and email exchanges between the Corps' Environmental Compliance Section and the U.S. Fish and Wildlife Service has ensured integration of the Dworshak Trail Management Plan with the Dworshak Natural Resources Land Management Program Activities Program.

2.2. Supplemental Information

Supplemental information includes:

- Dworshak Natural Resources Land Management Program Activities Biological Assessment (USACE 2011a)
- Dworshak Trail Management Plan (USACE 2013)
- Dworshak Reservoir Public Use Plan (USACE 2011)[1]

2.3. Federal Action History

The Federal Action History can be found on page 7 of the BA, but also now includes the December 7, 2011 Dworshak Natural Resources Land Management Program-Clearwater County, Idaho-Concurrence (0IEIFWOO-2012-I-0039).

3. Project Description

3.1. Action Area

The action area has not changed from what was described on p. 13 of the BA.

3.2. Project Purpose and Objectives

The purpose of motorized and non-motorized trail systems development is to meet the intent of the Dworshak Public Use Plan; this action is needed to maintain and enhance opportunities for non-motorized recreation while minimizing user conflicts and impacts on natural resources.

[1] http://www.nww.usace.army.mil/Portals/28/docs/dworshak/pub-use-plan.pdf

3.3. Project Activities

Program management activities were broken down into Program management activity "elements" in the BA. Program activities and their associated activity elements are listed in Table 2 in the BA on p. 18, along with maximum annual quantities (e.g. miles, acres, etc.) for each activity element.

In addition to the BA and previous consultation, and in alignment with the Dworshak Public Use Plan, the Corps proposes the following actions:

- Continued management and improvement of the existing non-motorized trail system to expand opportunities for the hiking, mountain biking, and equestrian communities.
- Continued management of the Little Meadow Creek ORMV trail and camp.
- Creation of up to seven *off-highway vehicle* (OHV) trail systems along Dworshak reservoir[2].
- Creation of a non-motorized multiple use trail system.
- Opening two existing roads to permit full size vehicle access to two isolated primitive campgrounds.

The Corps has modified Table 2 from p. 18 in the BA to include Trail Management (Table 1). Trail Management activities under the Plan are subject to the availability of funding, and will be done as funding permits. As such, implementation of Trail Management activities under the Plan will be recorded and reported annually, as there are known quantities of trails under the Plan, but unknown annual quantities that could be implemented. However, it is reasonably certain that all of the work under the Plan will not be implemented at once. Implementation is likely to take several years, as the Plan calls for a phased approach.

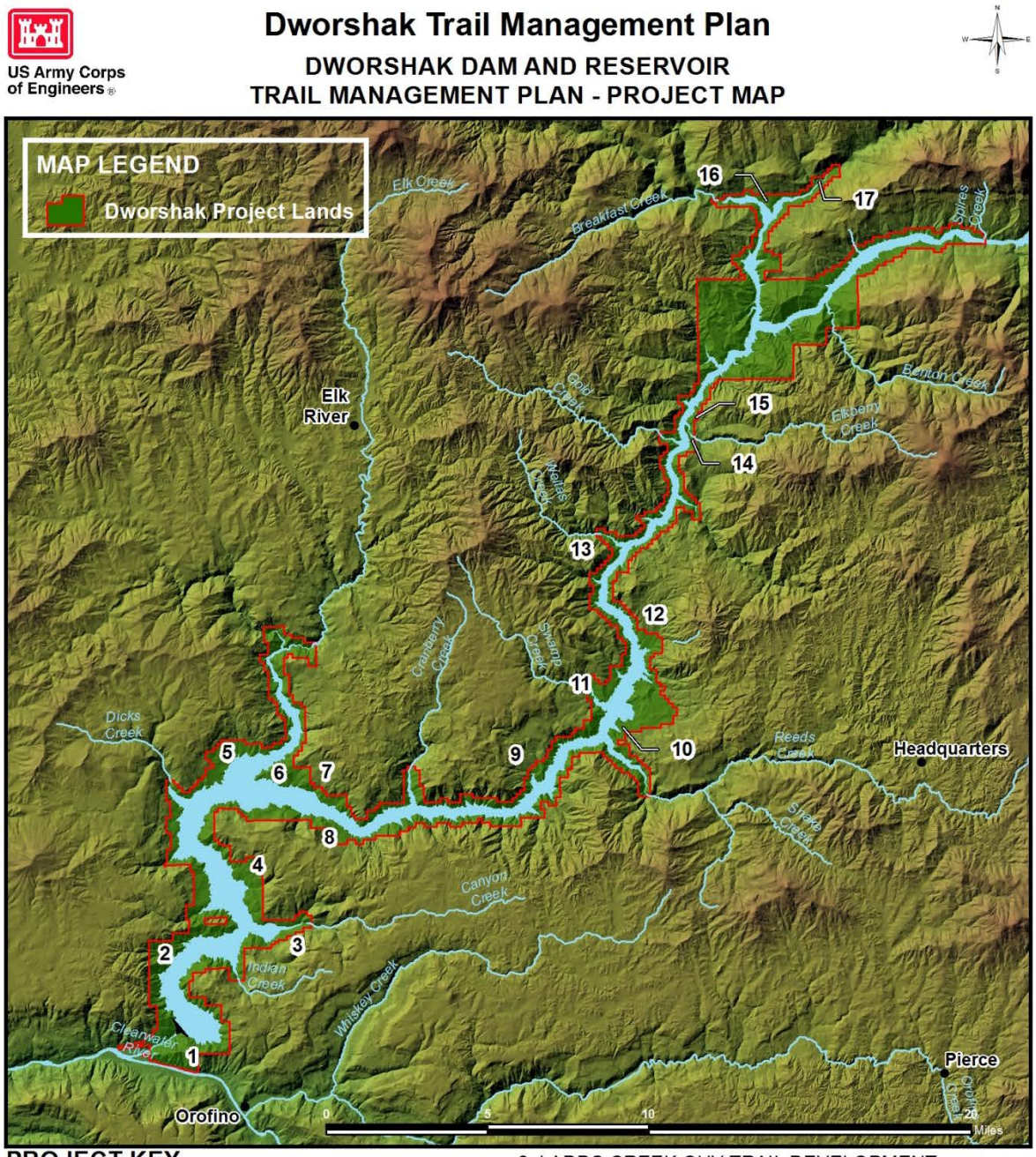
Amended Program activities and their associated activity elements are listed in Table 1, along with the quantities for each element. Locations for Trail Management Activities that are in addition to what was described in the BA are shown in Figure 1.

[2] Please note, presently there is an effort by the Idaho Department of Lands to acquire an easement for construction of an OHV trail to Camp 47.3 for which the Dworshak Project fully supports.

Table 1 Dworshak programmatic activity elements.

Dworshak Programmatic Activity Elements	Maximum Quantity per Year
Access and Trails Management	
Gate and/or Barricade Installations	5 per year
Gate and/or Barricade Modifications	5 per year
Gate and/or Barricade Refurbishing	10 per year
Sign Installation/Maintenance	20 per year
Fence Repair and Maintenance	5 miles per year
Fence Removal	5 miles per year
Trail Corridor Brushing and Tread Maintenance	50 miles per year
Bridge Installation/Maintenance	5 per year
Surface Water Control Structure Installation/Maintenance	50 per year
Boundary Management	
Boundary Monument Installation	5 miles per year
Fire Management	
Broadcast Burning	1,000 acres a year
Pile Burning	100 piles per year
Slashing and/or Pruning	200 acres per year
Fire Lines	25 mini camps (approx. 1.25 mi)
	designated burn units
Forest Management	
Selective Harvest	750 acres a year
Road Management	
New Construction	5 miles per year
Road Reconstruction	15 miles per year
Road Maintenance	50 miles per year
Road Obliteration	2 miles per year
Road Demolition	1/4 mile per year
Culverts	50 per year
Wildlife Habitat Management	
Wetland Enhancement	2 per year
Planting	1,500 plants per year
Recreation Management	
Recreation Foot Trails	10 miles per year
Trail Management (total Plan miles)	
OHV Trail Development	19.8
Non-Motorized Trail Development	12.8
4x4 Recreation Access Trail Development	0.7
Existing Trail Management and Improvement	20.4

Figure 1 **Trail development map.**



PROJECT KEY

1. AHSAHKA RIDGE TRAIL SYSTEM DEVELOPMENT
2. BIG EDDY TRAIL MANAGEMENT
3. CANYON CREEK TRAIL MANAGEMENT
4. LITTLE BAY TRAIL SYSTEM DEVELOPMENT
5. ELK CREEK MEADOWS OHV TRAIL DEVELOPMENT
6. DENT PENINSULA OHV TRAIL DEVELOPMENT
7. DENT TRAIL MANAGEMENT
8. COLD SPRINGS TRAIL MANAGEMENT
9. LADDS CREEK OHV TRAIL DEVELOPMENT
10. MAGNUS BAY 4X4 TRAIL DEVELOPMENT
11. SWAMP CREEK OHV TRAIL DEVELOPMENT
12. EVANS CREEK OHV TRAIL DEVELOPMENT
13. WEITAS CREEK OHV TRAIL DEVELOPMENT
14. ELKBERRY CREEK OHV TRAIL DEVELOPMENT
15. LITTLE MEADOW OHV TRAIL MANAGEMENT
16. L3.6 OHV TRAIL DEVELOPMENT
17. L6.0 4X4 TRAIL DEVELOPMENT

The following is a description of each Trail Management activity element.

3.3.1. OHV Trails

In general, designated OHV trails will follow existing primitive roads and some user-defined trails, although some segments of these existing user-defined OHV trails will be realigned to decrease erosion potential and to enhance user safety. Potential OHV trails are permitted in the following areas as classified in the 2011 Public Use Plan:

- Recreation
- Multiple Resource Management, including
    - Recreation Future Management
    - Recreation – Low Density
    - Wildlife Management

OHV trails will not be allowed in areas classified as Project Operations, Environmentally Sensitive or Mitigation, unless trail segments use existing public roads through those areas.

Recreational OHV use will only be allowed on designated trails with no cross-country travel permitted. OHV use will be permitted on exposed banks below the ordinary high water mark at designated locations to enable motorized transport from boat to camp from all normal pool elevations.

Trails will be built to the characteristics of Class 3 and Class 4 motorized trails as outlined in the Dworshak Public Use Plan and summarized below:

- Class 3 Motorized Trail
    - Trail wide and suitable for one lane and occasional two-lane passage for managed use types.
    - Occasional moderate tread protrusions and short awkward sections, which require speed and maneuvering adjustments.
    - Tread infrequently graded. Obstacles cleared if they substantially hinder the managed use and difficulty level.
    - Tread surface generally native materials, with occasional on-site fill or imported materials, if more stable surface is desired.
    - Crossings may be wet fords; likely with hardening and armoring or simple bridges for resource protection and to ensure appropriate access.
    - Trails have frequent markers and are readily followed.
    - Signing size and type appropriate for managed speeds and potential nighttime use (signs likely reflectorized).

- Class 4 Motorized Trails
    - Trail wide and suitable for the managed use type, and may consistently accommodate two-way passage.
    - Tread surface generally smooth with only small protrusions, which moderately affect speed and ease of travel.

- Tread graded as needed.
- Tread surface may include imported aggregate or intermittent paved sections if more stable surface is desired.
- Crossings are typically either hardened or armored or a substantial bridge.
- Recommended speeds or speed limits may be posted.
- Trails have frequent markers and are easily followed.
- Signing size and type appropriate for managed speeds and potential nighttime use (signs reflectorized).

3.3.2. Non-Motorized Trail System

The primary rationale for establishing a multiple use non-motorized trail system on Dworshak is to meet demand from the area horse riding and mountain biking communities. Based on meetings with groups and individuals involved in the collaboration process for development of the Dworshak Public Use Plan, the issue of a lack of adequate recreational opportunities for horseback riding and mountain biking arose. While Dworshak trails currently allow all forms of non-motorized use, the trails have been managed with an emphasis on day-use hiking.

The purpose of non-motorized trail system development is to meet the intent of the Dworshak Public Use Plan to maintain and enhance opportunities for non-motorized recreation while minimizing user conflicts and impacts on natural resources.

TRAIL CONSTRUCTION STANDARDS

Trails will be constructed and maintained to the characteristics of Class 2 and Class 3 non-motorized trails as adapted from the U.S. Forest Service Trail Class Matrix (2005) and summarized below:

- Class 2 Non-Motorized Trails
  - Trail discernible, continuous, and rough with few or no allowances for passing.
  - Tread is constructed from native materials.
  - Vegetation may encroach into trail corridor.
  - Blockages cleared to define route and protect resources.
  - Drainage functional.
  - Primitive foot crossings and fords.
  - Few destination signs present.
  - Minimum number of signs required for basic direction.

- Class 3 Non-Motorized Trails
  - Tread obvious and continuous with occasional allowances for passing.
  - Tread is generally constructed from native materials, but may have segments containing aggregate.
  - Tread surface is generally smooth with only small protrusions.
  - Vegetation is fully cleared within the trail corridor.
  - Trail structures may be common and substantial, such as:

        - Bridges
        - Retaining walls
        - Steps
        - Causeways
    - Crossings are typically either hardened or armored or a substantial bridge.
    - Trails have frequent markers and are easily followed.
    - Directional signs are typically present.
    - Informational and interpretive signs may be present.

3.3.3. Existing Trail System

Presently, there are approximately 20.37 miles of trails spread amongst six defined trails on Dworshak. Historically, these trails have been managed for pedestrian activities consisting of day hikes and short duration backpacking trips as maintenance for these types of activities generally require fewer resources than those for other types of non-motorized use. However, by managing for pedestrian use, there has historically been a lack of quality recreation for other non-motorized user groups, specifically the equestrian and mountain biking communities.

ALLOWED USE AND PROHIBITED USES

With the exception of the Little Meadow Creek ORMV trail, all existing Dworshak trails have no prohibited uses other than the prohibition of motorized vehicle use; this status is not expected to change unless resource damage occurs or un-resolvable user conflicts develop.

SEASON OF USE

Presently, all trails are open yearlong to any non-motorized activity and this use is not expected to change unless resource damage occurs or un-resolvable user conflicts develop.

3.3.4. 4x4 Trail Recreation

The primary rationale for formalizing the use of and re-commissioning two existing roads for 4x4 vehicle use is due to demand from members of the recreating public. Based on meetings with groups and individuals involved in the collaboration process for development of the Dworshak Public Use Plan, the issue of a lack of adequate recreational access for full size vehicles to the reservoir arose many times. Currently, full size vehicles are not allowed access to any primitive camping sites on Dworshak. However, there are suitable sites and roads in existence that can provide that opportunity. Maintenance on these roads would require few resources due to the layout, drainage, and material composition of the roads, as well as intended use of the roads for 4x4 use.

ROAD CHARACTERISTICS

Roads re-commissioned for use as a full size vehicle trail are only those roads accessing the following recreation sites:

- Camp 26.0: located in the vicinity of the Magnus Bay area (middle reservoir).

- Camp L6.0: located near the northern-most point of the reservoir.

Roads re-commissioned are located in the following land use classifications that support this type of development:

- Multiple Resource Management – Recreation Future Management
- Multiple Resource Management – Low Density Recreation
- Multiple Resource Management – Wildlife Management

Roads will be brushed, graded, ditched, and any drainage structures will be cleaned. If necessary, any ruts and gullies will be filled with native material and some overstory vegetation will be removed to enhance moisture evaporation from the road surface. Please see the Dworshak Road Management Plan for a detailed description of the activities associated with road re-commissioning.

COMPLIANCE MONITORING

Road users will be monitored by Dworshak Natural Resource staff for compliance with Corps rules and regulations and written warnings or citations may be served to non-compliant users. The Dworshak Natural Resource Management office reserves the right to close or reduce motorized access to any road on Dworshak lands.

The 4x4 trails will be assessed and monitored on an individual basis. A trail may be closed at any time based on, but not limited to, environmental degradation, impacts to wildlife, the presence of threatened or endangered species, or the lack of funding to adequately maintain the road.

SEASONS OF USE

Dworshak has chosen to not impose season of use restrictions on these access roads for the following reasons:

- Road Configuration
    - Roads to each primitive campsite allow for direct access only with little to no chance of motorized off-roading activities that may result in the creation of user-defined roads.
- Adjacent Road Access
    - Arterial roads leading to the proposed re-commission roads are subject to road restrictions imposed by their managing entities.
    - Arterial roads leading to the proposed re-commission roads are subject to the maintenance activities, or lack thereof, by their managing entities. In this case, the arterial roads are generally not maintained during the winter season due to the remoteness of the area and lack of winter activities in the area.

3.3.5. Trail Inventory Procedures

The proper documentation of existing trail conditions is critical to properly maintaining the infrastructure supporting any trail within the Dworshak trail system.

To support the Dworshak trail maintenance program, two levels of inventory are used in assessing the condition of Dworshak trails; annual review and five-year inventory. Annual reviews are designed to assess the trail for issues requiring immediate attention within the following recreation season. Five-year inventories are conducted to provide the data necessary for planning within the 5-year cycle associated with the Operational Management Plan.

ANNUAL REVIEW

Annual reviews of Dworshak trails will be conducted prior to Memorial Day weekend. Usually, these reviews can be accomplished at the same time as annual maintenance activities.

FIVE YEAR INVENTORY

As 5-year inventories are used for planning purposes, the amount of data collected is more detailed and in-depth to the information collected with annual reviews. The 5-year inventories require more tools and additional training to properly use these tools.

3.4. Project Timeline

The proposed action will occur annually between 2013 and 2021, with quantities of each activity limited to those described above for a given year.

3.5. Proposed Conservation Measures

The following Best Management Practices (BMPs) are extracted from p. 48-49 in the BA, and are specific to Trail Management.

1) Ensure diversion of surface runoff around road construction.
2) Place berms to prevent runoff to local creeks around road construction.
3) Use erosion bars and sediment traps for road construction.
4) Care will be taken to minimize the visual intrusiveness of the operation on the reservoir user.
5) Road obliteration work will be conducted during dry conditions when the potential for erosion is minimal.
6) All disturbed surfaced roads and trails shall be grass seeded with native grass species upon completion.
7) Ensure diversion of surface runoff around road obliteration work.
8) Place sediment traps and/or silt fences to prevent runoff to local creeks around road obliteration work.
9) Any instream work will be done under dry conditions either through dewatering or done when intermittent streams are dry.

3.6. Project Tracking

Project tracking in the form of a spreadsheet, sent to USFWS annually in conjunction with any monitoring reports, will continue to allow for tracking of which projects are implemented each year and the location of those projects.

4. Status of Species and Critical Habitat

On June 24, 2013 the Corps verified the current species list of threatened, endangered, and candidate species that pertain to the area affected by this action under jurisdiction of the National Marine Fisheries Service (NMFS)[3], as well as the list for species under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) for Clearwater County, Idaho[4].

Whitebark pine (*Pinus albicaulis*) has been added as a candidate species to the USFWS list since the BA was written in 2011.

5. Environmental Baseline

The geographical area for which the environmental baseline is being established is discussed in the Action Area section of this document, and includes both Timber Management and Recreation and Reservoir Operation activities.

[3] http://www.nwr.noaa.gov/publications/protected_species/salmon_steelhead/status_of_esa_salmon_listings_and_ch_designations_map.pdf

[4] http://www.fws.gov/idaho/species/IdahoSpeciesList.pdf

5.1. Matrix of Pathways and Indicators (MPI)

Table 2 Checklist for Documenting Environmental Baseline and Effects of Proposed Action on Relevant Anadromous Salmonid Habitat Indicators

PATHWAYS	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION		
Indicators	Properly Functioning	At Risk	Not Properly Functioning	Restore	Maintain	Degrade
Water Quality:						
Temperature			X		X	
Sediment			X		X	
Chem. Contam./Nut.			X		X	
Habitat Access:						
Physical Barriers			X		X	
Habitat Elements:						
Substrate			X		X	
Large Woody Debris	X				X	
Pool Frequency			X		X	
Pool Quality			X		X	
Off-Channel Habitat			X		X	
Refugia			X		X	
Channel Cond. & Dyn.:						
Width/Depth Ratio			X		X	
Streambank Cond.			X		X	
Floodplain Connectivity			X		X	
Flow/Hydrology:						
Peak/Base Flows			X		X	
Drainage Network Increase			X		X	
Watershed Conditions:						
Road Dens. & Loc.		X			X	
Disturbance History			X		X	
Riparian Reserves			X		X	
Watershed Name: Lower North Fork Clearwater subbasin (HUC 17060308)			Location: Dworshak Reservoir, Clearwater County, Idaho			

5.2. Baseline Conditions Justification

All habitat indicators are not properly functioning in Dworshak Reservoir, except for the large woody debris and road density indicators. Baseline conditions improve in streams once out of the influence of the reservoir and its elevation fluctuations, but the overall condition at a watershed scale is as shown in Table 7 (above).

Large woody debris. There are adequate sources of woody debris in riparian areas throughout the reservoir. Density and diameter of woody pieces in every area of the reservoir is more than enough to justify properly functioning.

Road density. Dworshak encompasses approximately 45,697 acres, or 71.4 square miles. There are 139.2 miles of roads, so the road density at Dworshak is 1.95 miles per square mile, which is

less than the 2 miles per square mile that qualifies as properly functioning in the MPI (NMFS 1996). The addition of 53.7 miles of trails would bring the density up to 2.7 miles per square mile. However, many of the proposed roads already exist in one form or another, and, as described in the BA, some roads will be decommissioned or demolished. Therefore, although it is extremely difficult to quantify at this point, the Corps anticipates a negligible net increase in the actual road density, and the density should remain at or around 2 miles per square mile.

6. Effects of the Action

The proposed action will generate effects on listed species and critical habitat in the same manner, frequency, and magnitude (due to BMPs) as Road and Recreation Management activities described in the BA. An analysis of the effects of the proposed action was captured in section 6.1.5 on p. 76 (Road Management) in the BA, and in sections 6.2 (Effects on Listed Species) (p. 78-80) and 6.3 (Effects on Critical Habitat) (p. 80-81).

The Corps does not anticipate any project-related effects from the proposed action that have not been previously considered (USACE 2011a; USFWS 2011a).

6.1. Effects Determination

The Corps determined that the effects of the proposed action have already been considered in previous consultation with USFWS, and that the proposed action **may affect, but is not likely to adversely affect** bull trout and bull trout designated critical habitat, as described in the BA (USACE 2011a).

The proposed action will have **no effect** on Canada lynx, and there is no designated or proposed Canada lynx critical habitat in the area.

7. Conclusions

This document was prepared as an amendment to the BA developed for the Dworshak Natural Resources Land Management Program Activities. The proposed project is designed to programmatically manage forest and wildlife resources within Corps-managed lands at Dworshak Dam and Reservoir, with the addition of the new (draft) Dworshak Trail Management Plan.

8. References

NMFS (National Marine Fisheries Service). 1996. Making Endangered Species Act determinations of effect for individual and grouped actions at the watershed scale. The National Marine Fisheries Service Environmental and Technical Services Division, Habitat Conservation Branch, Seattle, WA. Available at: http://www.nwr.noaa.gov/Publications/Reference-Documents/upload/matrix_1996.pdf

USACE (U.S. Army Corps of Engineers). 2011. Dworshak Reservoir Public Use Plan: Ahsahka, Idaho. Supplement to Design Memorandum No. 10. Public Use Plan for the development and management of public access at Dworshak Reservoir. February. Available at: http://www.nww.usace.army.mil/planning/er/dworshak/pub-use-plan.pdf

USACE (U.S. Army Corps of Engineers). 2011a. Dworshak Natural Resources Land Management Program Activities Biological Assessment. November.

USACE (U.S. Army Corps of Engineers). 2013. Draft Dworshak Trail Management Plan. Draft date February 11, 2013.

USFWS (U.S. Fish and Wildlife Service). 2011a. Dworshak Natural Resources Land Management Program-Clearwater County, Idaho—Concurrence (0IEIFWOO-2012-I-0039). December.

United States Department of the Interior
U.S. Fish and Wildlife Service
Idaho Fish And Wildlife Office
1387 S. Vinnell Way, Room 368
Boise, Idaho 83709
Telephone (208) 378-5243
http://www.fws.gov/idaho

Michael S. Francis
Chief, Environmental Compliance Section
Department of the Army
Corps of Engineers
Walla Walla District
201 North Third Avenue
Walla Walla, Washington 99362-1876

AUG 2 7 2013

Subject: Trail Management Amendment to the Dworshak Natural Resources Land Management Program—Clearwater County, Idaho—Technical Assistance
In Reply Refer To: 01EIFW00-2013-TA-0338

Dear Mr. Francis:

This letter transmits the U.S. Fish and Wildlife Service's (Service) assessment of the Amendment (Trail Management) to the Dworshak Natural Resources Land Management Program (Program). In a letter dated July 22, 2013, and received by the Service on July 31[1], the Army Corps of Engineers (Corps) requested our review of the Amendment and our agreement with your conclusion that the effects to species listed under the Endangered Species Act (Act) of 1973 (amended) have already been addressed in the 2011 Program Biological Assessment (Assessment) and our December 7, 2011 letter of concurrence (01EIFW00-2012-I-0039). Specifically, the Service concurred with the determination that the Program is not likely to adversely affect the bull trout (*Salvelinus confluentus*) and its critical habitat. The Service also acknowledged that the Program will have no effect on the threatened Canada lynx (*Lynx canadensis*) and the North American wolverine (*Gulo gulo luscus*), a candidate species at the time but now a species proposed for listing.

The Corps proposes to amend the Program with the Trail Management Activity and associated elements as shown in Table 1 (along with the total quantities proposed for each element); the Trail Management Activity was not included in the original proposal. The Trail Management elements consist of:

- Creating up to seven off-highway vehicle (OHV) trail systems along Dworshak Reservoir.

  In general, designated OHV trails will follow existing primitive roads and some user-defined trails, although some segments of these existing user-defined OHV trails will be realigned to decrease erosion potential and to enhance user safety.

  Recreational OHV use will only be allowed on designated trails; cross-country travel is prohibited.

[1] The Corps sent a revised/corrected Amendment to the Service on August 15, 2013 via email.

- Creating a non-motorized multiple use trail system to expand opportunities for the hiking, mountain biking, and equestrian recreational users.
- Opening two existing roads to permit full size vehicle (4 x 4) access to two isolated primitive campgrounds.
- Continuing the management and improvement of the existing non-motorized trail system.

Implementing the Trail Management elements will occur to the extent available funding permits, but, as with the broader Program, implementation progress will be recorded and reported annually to the Service. Full implementation of the Trail Management Activity is likely to take several years between 2013 and 2022.

Table 1. Trail Management Activity and associated elements to be included as an Activity under the Dworshak Reservoir Natural Resources Land Management Program (see Table 1 of the Addendum showing all activities and elements included under the Program).

Trail Management	
Elements	**Total Miles to be Implemented**
OHV Trail Development	19.8
Non-Motorized Trail Development	12.8
4x4 Recreation Access Trail Development	0.7
Existing Trail Management and Improvement	20.4

The Program contains Impact Minimization Measures (IMMs) and Best Management Practices (BMPs) to reduce resource impacts and will be applied to the Trail Management Activity (as they are applied to all Program Activities). Refer to the Program Assessment and the Addendum for a complete description of the Program, including all IMMs and BMPs.

After reviewing the Trail Management Amendment, the Service agrees with the Corps' conclusion that all anticipated effects from implementing the Trail Management elements have been addressed in the Program Assessment and our letter of concurrence; no new effects to bull trout and bull trout critical habitat are expected.

This letter, our December 7, 2011 letter of concurrence, and all associated documentation, serve as the complete section 7 compliance decision record for the Dworshak Natural Resources Land Management Program. We also note that this letter only addresses the addition of the Trail Management Activity to the Program (as detailed in the Amendment), and confirms that all other Program Activities remain unchanged. If the future modifications to the Program are proposed, environmental conditions change, or additional information becomes available regarding potential effects on listed species, you should verify that your conclusions are still valid.

Thank you for your continued interest in the conservation of threatened and endangered species. Please contact Clay Fletcher at (208) 378-5256 if you have questions concerning this letter.

Sincerely,

for Brian T. Kelly
State Supervisor

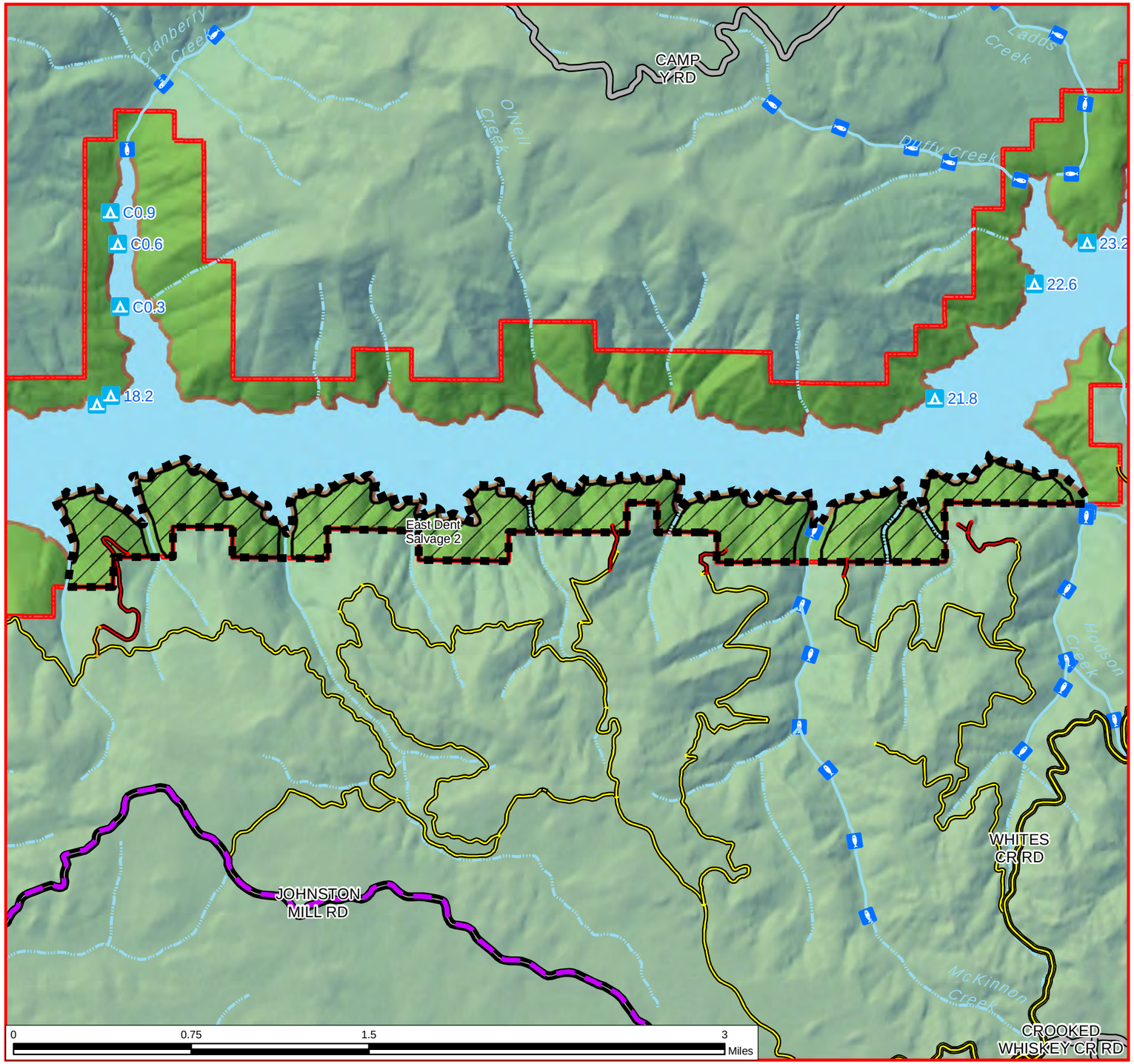
cc: NMFS, Moscow (Ries)
IDFG, Region II, Lewiston (Hennekey)
NPT, Lapwai (Lopez)
FWS, Spokane (Holt)

APPENDIX C

PROJECT MAPS

APPENDIX C-1

PROJECT LAND CLASSIFICATION MAPS



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

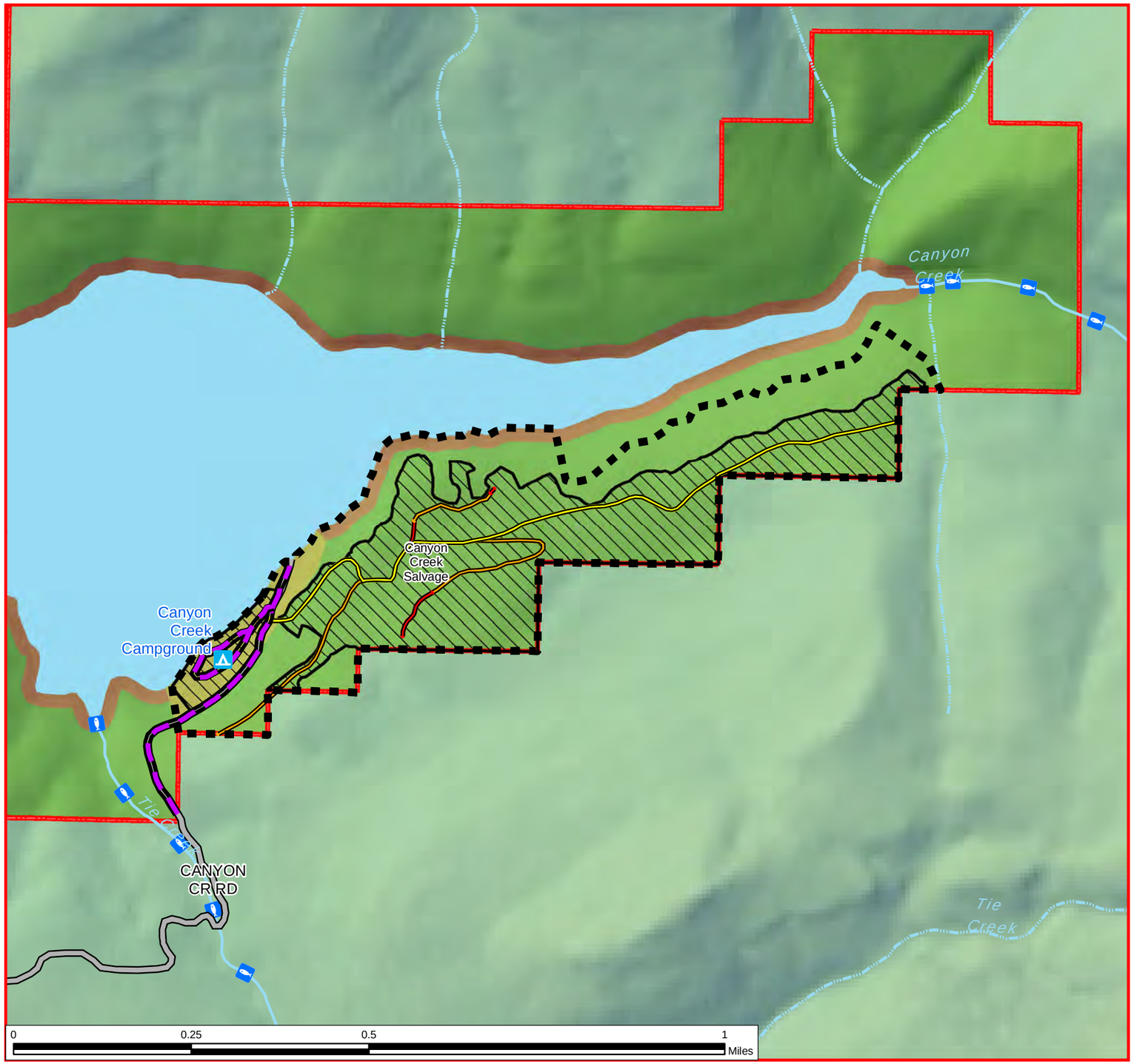
N
W E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

EAST DENT SALVAGE 2

FY 2016

MAP PAGE: A01



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

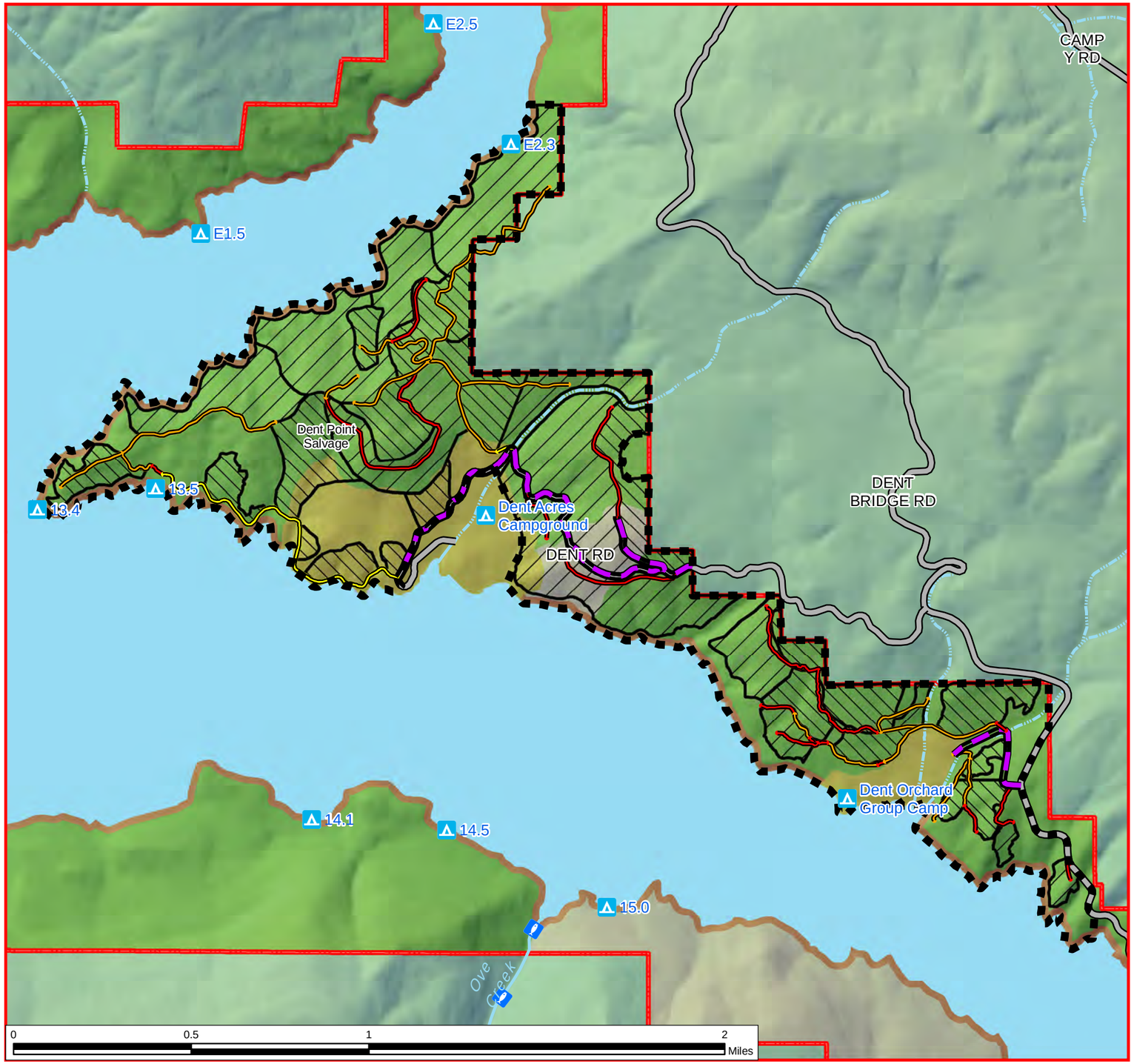
N
W E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

CANYON CREEK SALVAGE

FY 2015

MAP PAGE: A02



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers
Walla Walla District

Building Strong ®

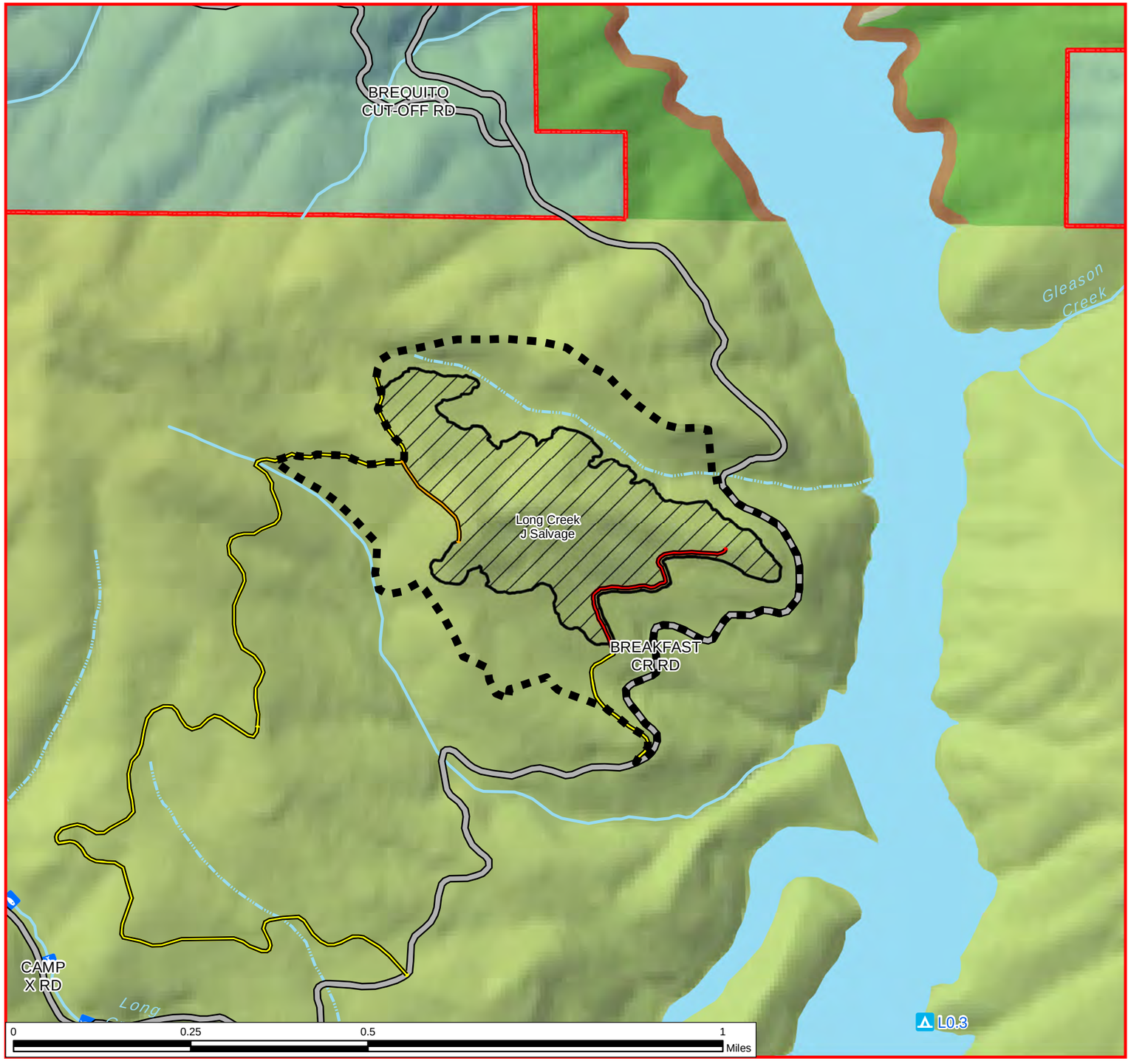
N
W E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

DENT POINT SALVAGE

FY 2016

MAP PAGE: A03



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

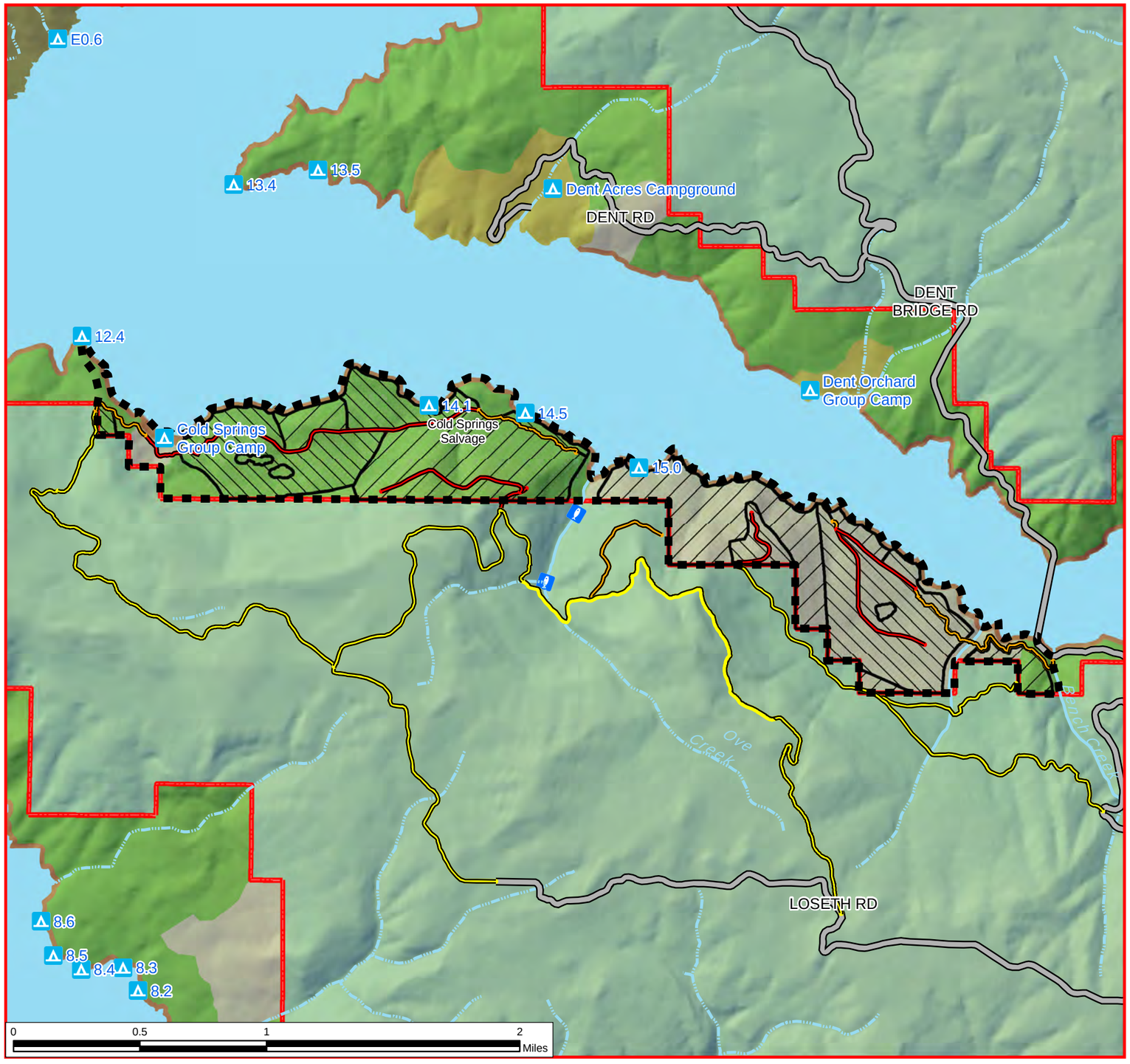
N
W E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

LONG CREEK J SALVAGE

FY 2016

MAP PAGE: A04



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

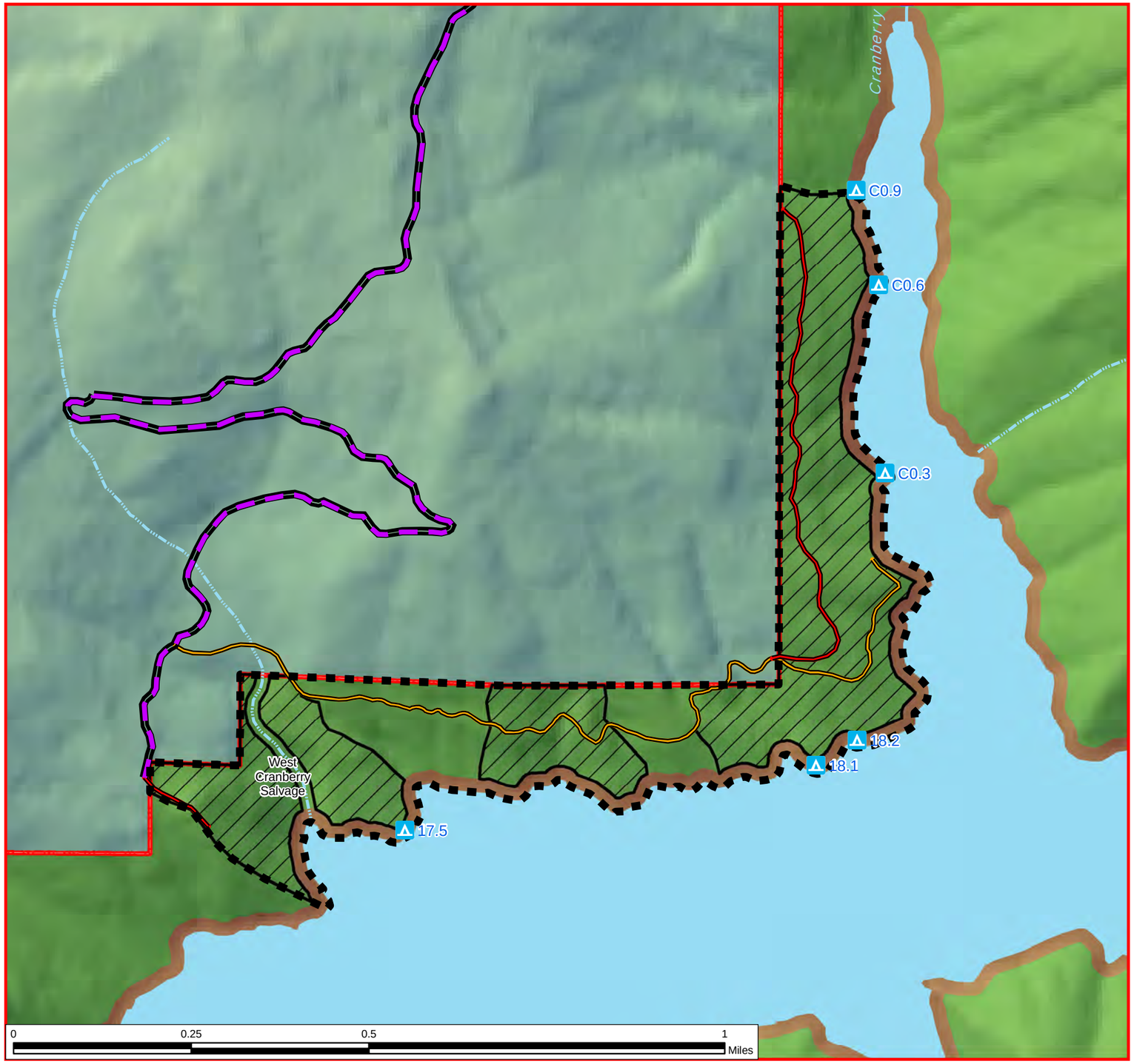
US Army Corps of Engineers
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
LAND USE
COLD SPRINGS SALVAGE
FY 2017

MAP PAGE: A05



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers
Walla Walla District

Building Strong ®

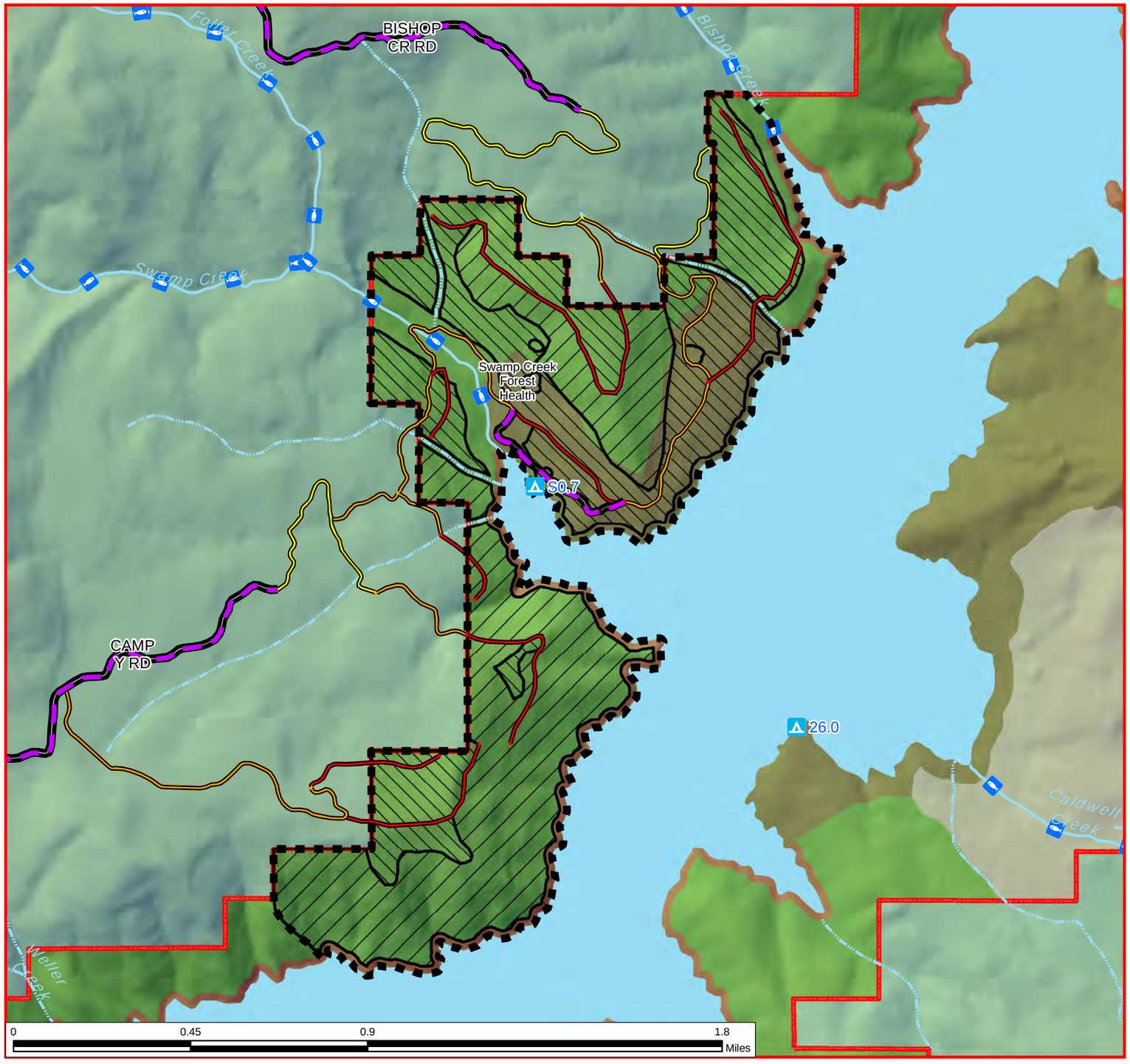
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

WEST CRANBERRY SALVAGE

FY 2017

MAP PAGE: A06



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

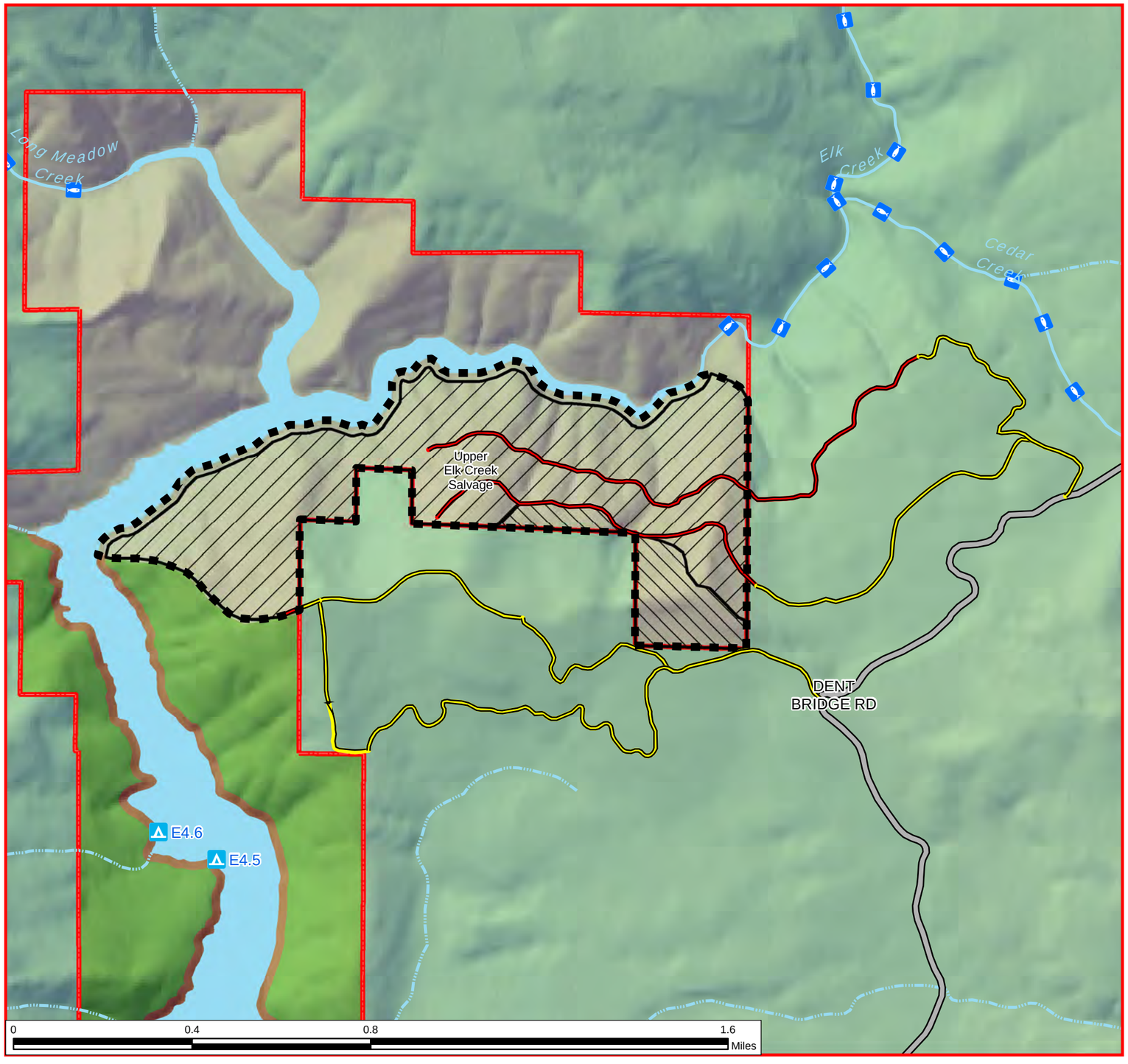
N
W E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

SWAMP CREEK FOREST HEALTH

FY 2018

MAP PAGE: A07



Map Legend

Dworshak Boundary

Forest Mgt Project

Elk Exclosure Fence

Stream Type, Fish Presence

Perennial Stream, Yes

Perennial Stream, No

Intermittent Stream

Timber Harvest Unit

Cable

Tractor

Browse Planting Area

Baskets Only

Planting / Baskets

Seeding / Baskets

Planned Road Action

Rural - Minor Mtc

Service - Minor Mtc

Service - Reconstruction

Service - New Construction

Public

Land Use Classification

Environmentally Sensitive Area

Project Operations

Recreation

Mitigation

Easement

Multiple Resource Management Lands

Recreation - Future Dev.

Recreation - Low Density

Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

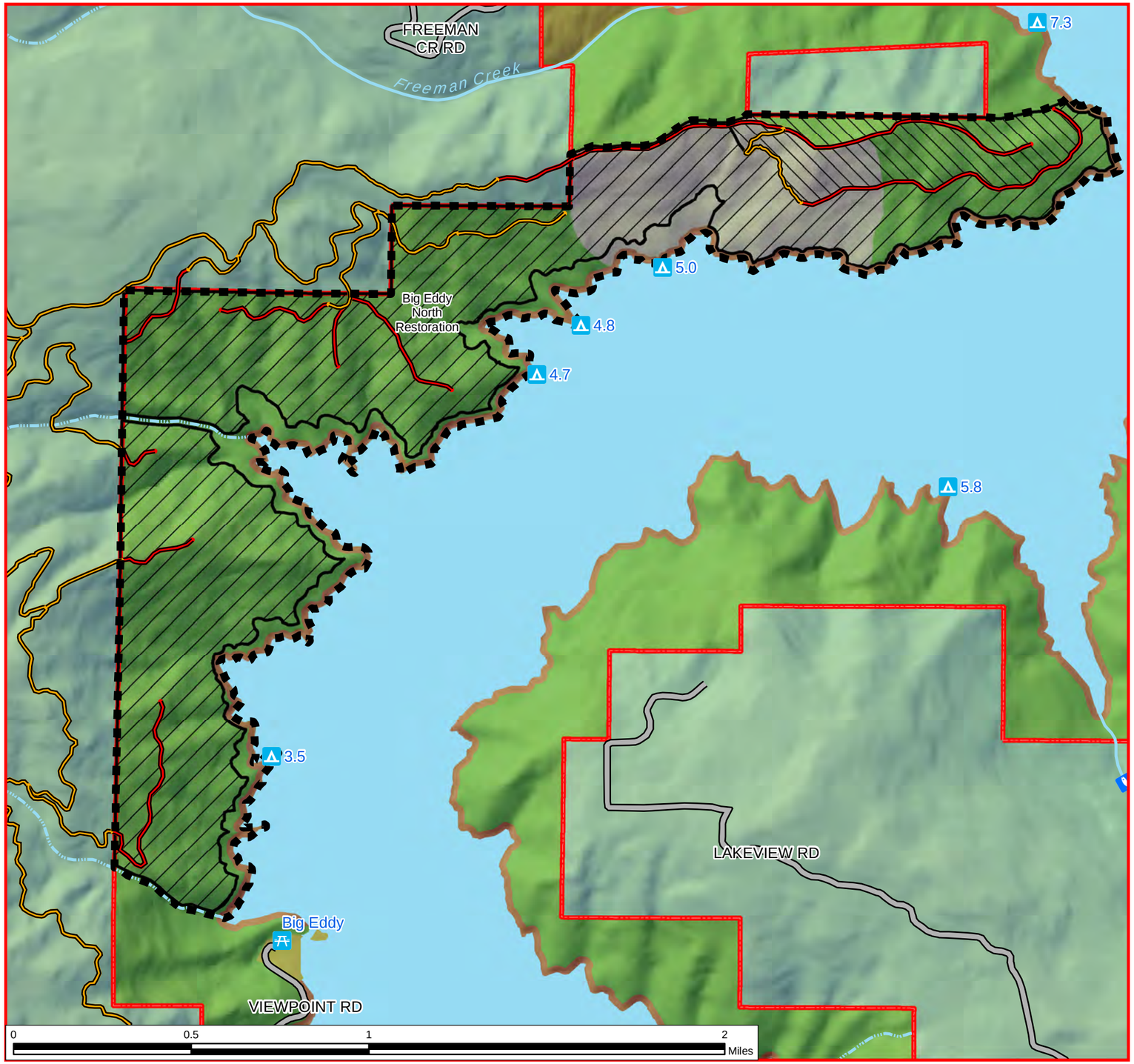
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

UPPER ELK CREEK SALVAGE

FY 2018

MAP PAGE: A08



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers
Walla Walla District

Building Strong ®

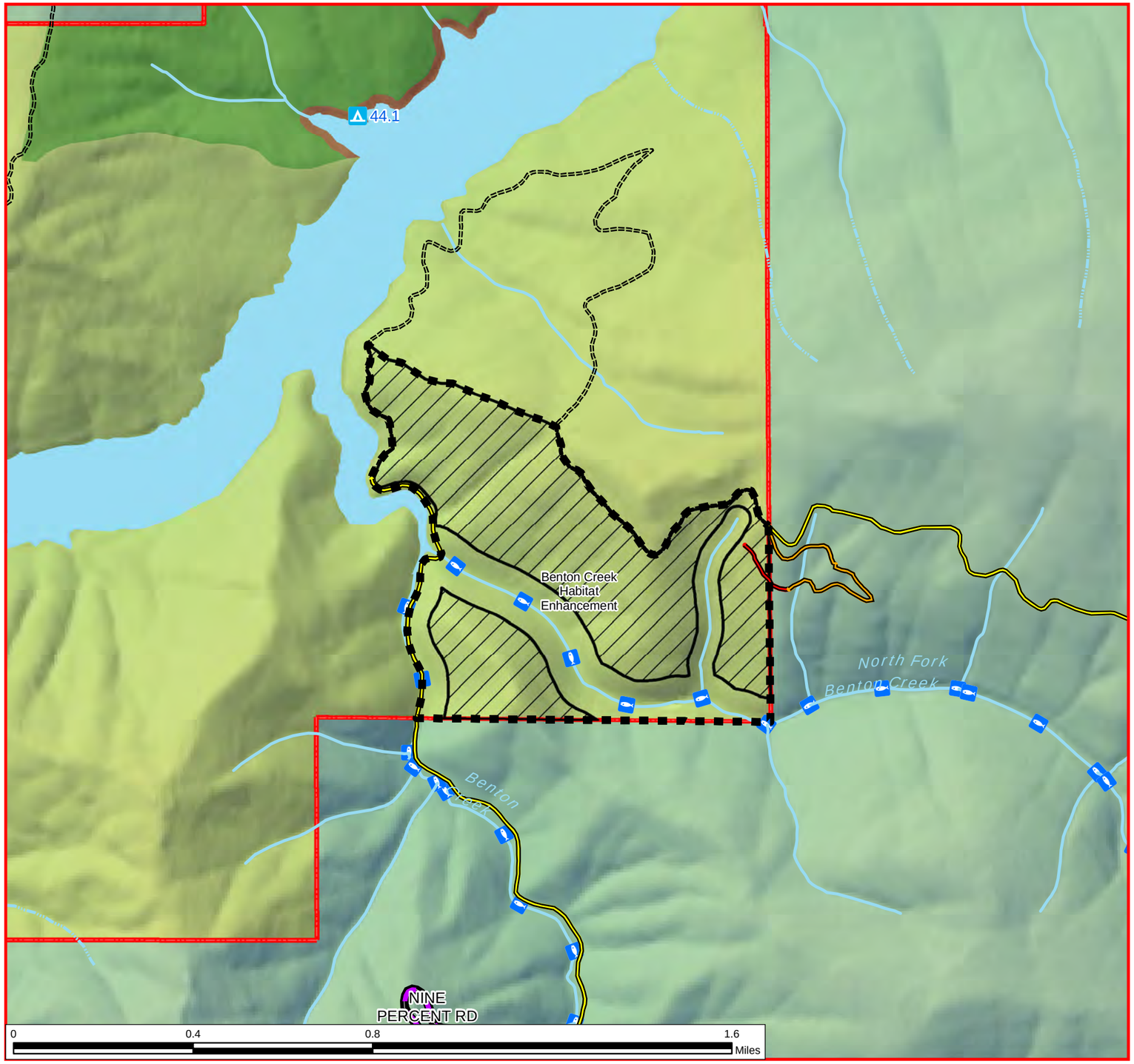
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

BIG EDDY NORTH RESTORATION

FY 2018

MAP PAGE: B01



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

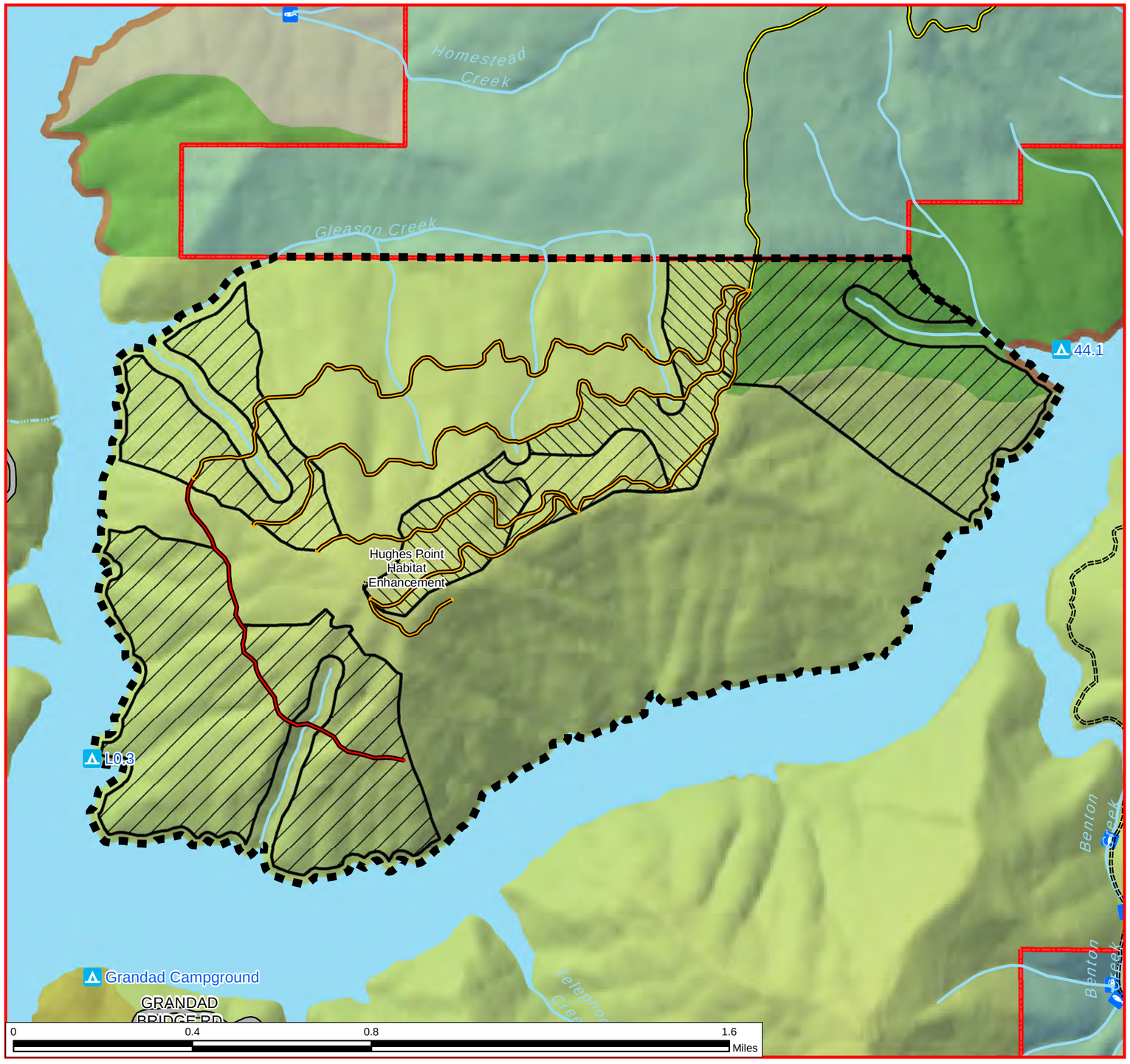
N
W E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

BENTON CREEK HABITAT ENHANCEMENT

FY 2019

MAP PAGE: C01



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

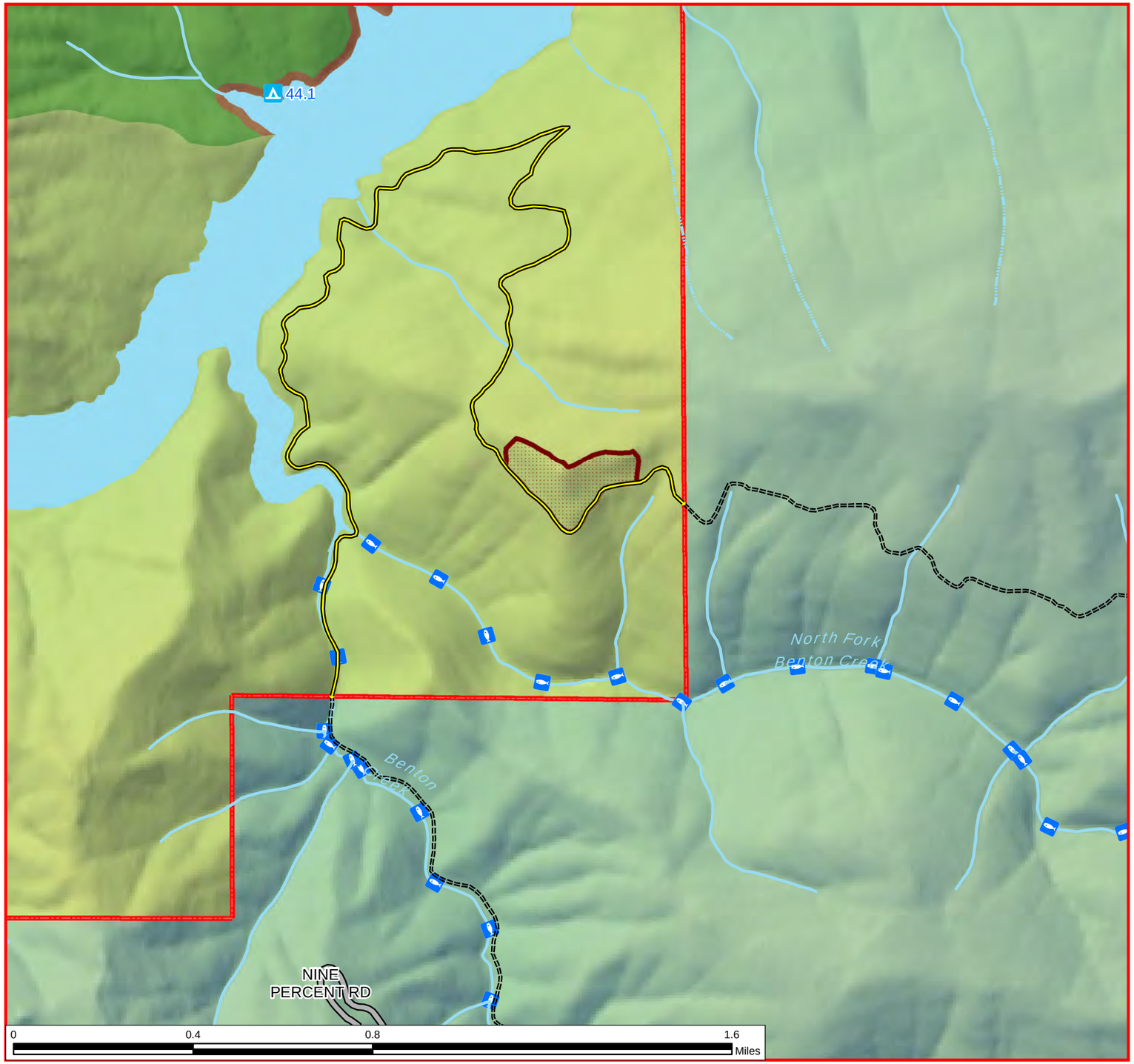
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

HUGHES POINT HABITAT ENHANCEMENT

FY 2020

MAP PAGE: C02



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

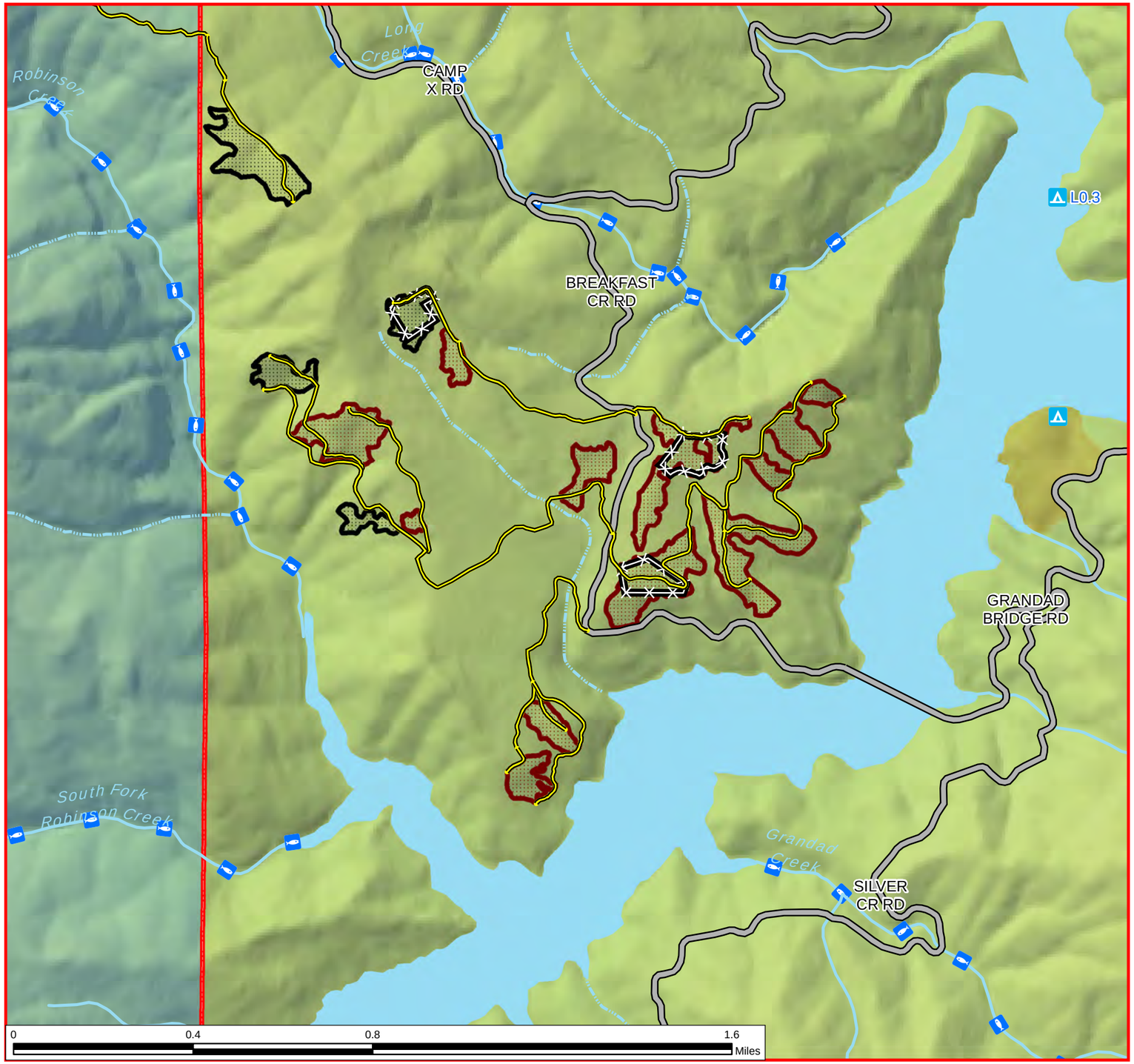
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

BENTON CR FORAGE ENHANCEMENT

FY 2015

MAP PAGE: D01



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

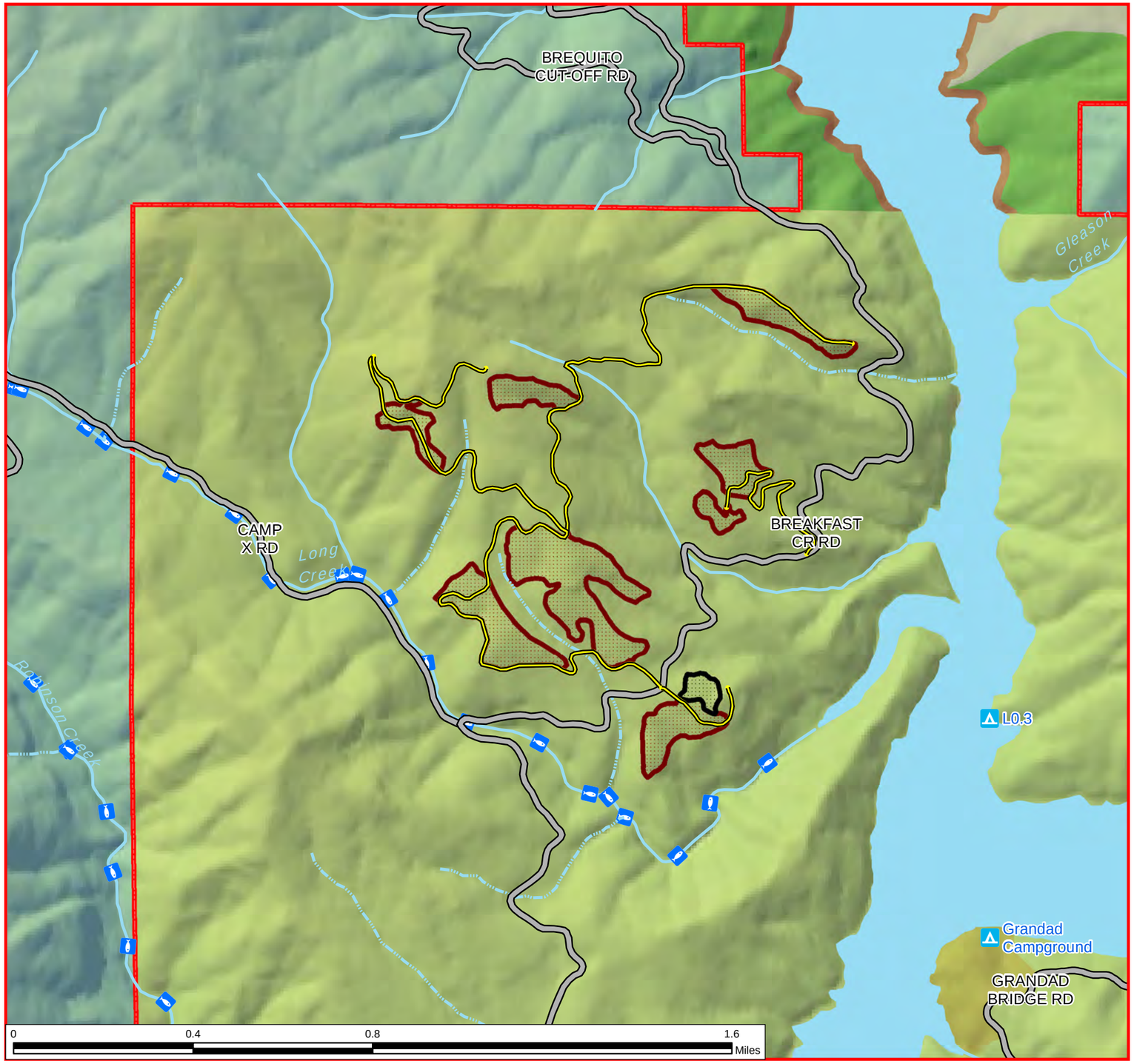
N W E S

DWORSHAK VEGETATION MANAGEMENT LAND USE

ROBINSON CR FORAGE ENHANCEMENT

FY 2016

MAP PAGE: D02



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

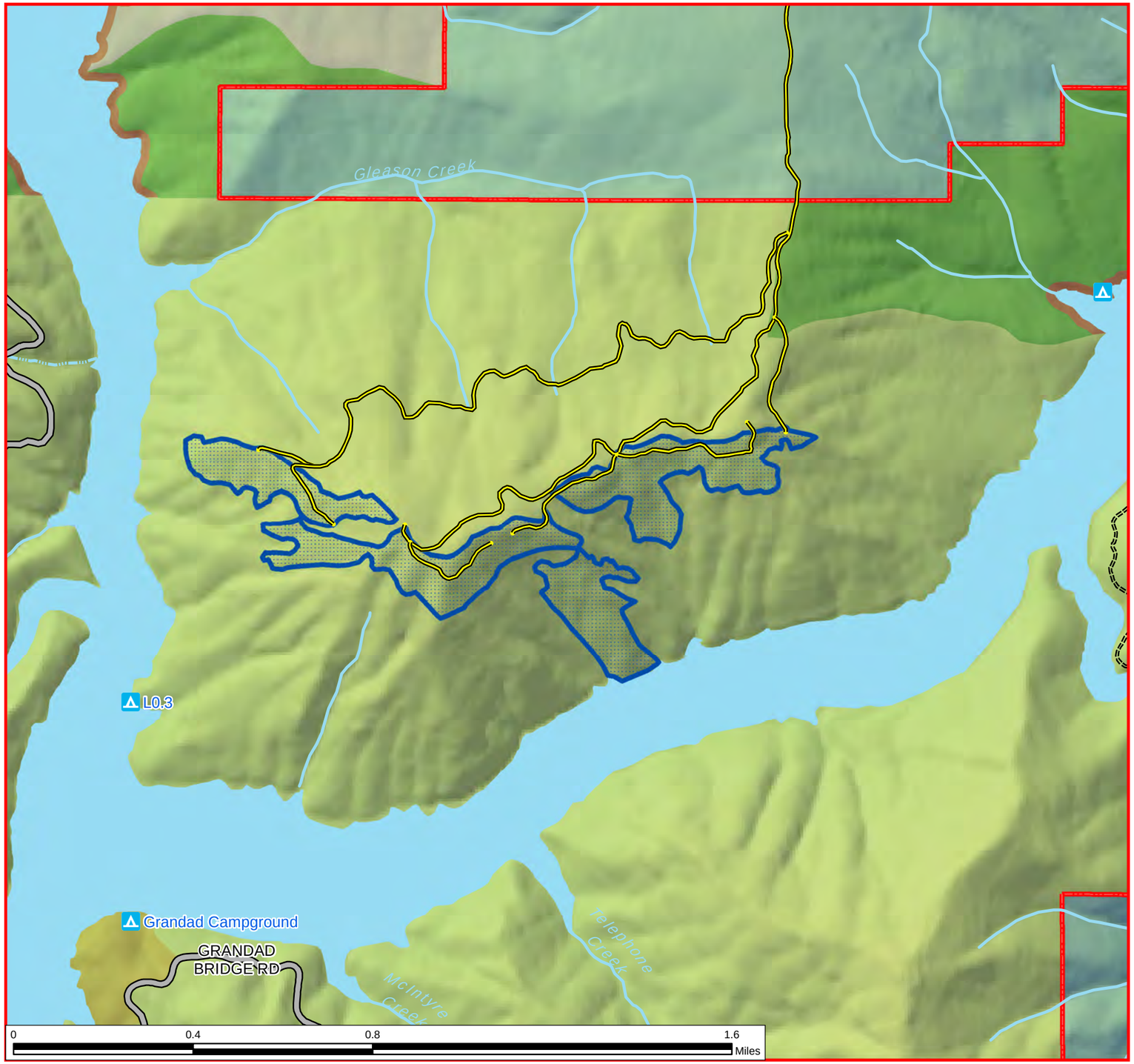
N
W E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

LONG CR FORAGE ENHANCEMENT

FY 2017

MAP PAGE: D03



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

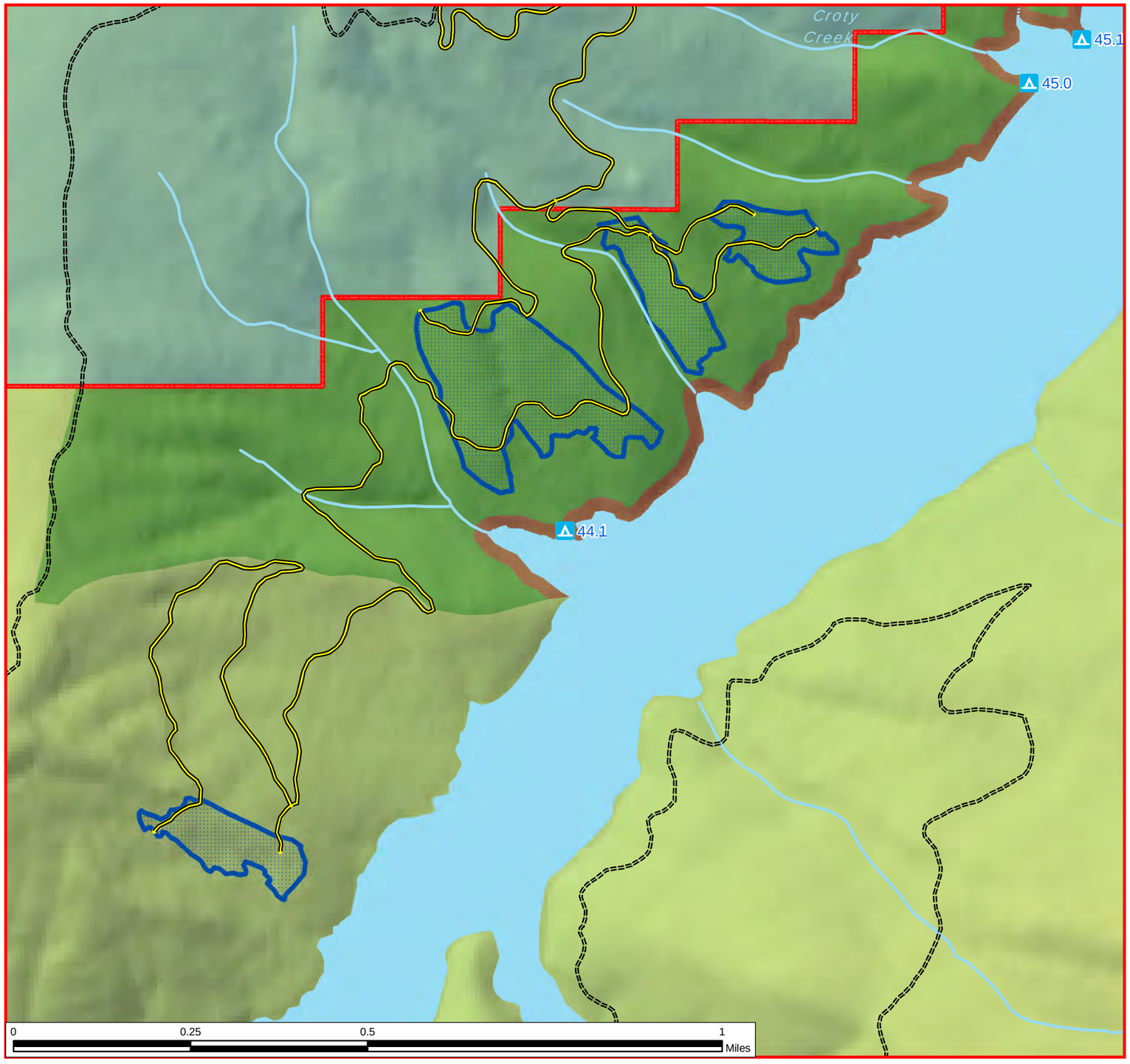
N
W E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

HUGHES POINT FORAGE ENHANCEMENT

FY 2018

MAP PAGE: D04



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Land Use Classification

- Environmentally Sensitive Area
- Project Operations
- Recreation
- Mitigation
- Easement

Multiple Resource Management Lands

- Recreation - Future Dev.
- Recreation - Low Density
- Wildlife Management

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT LAND USE

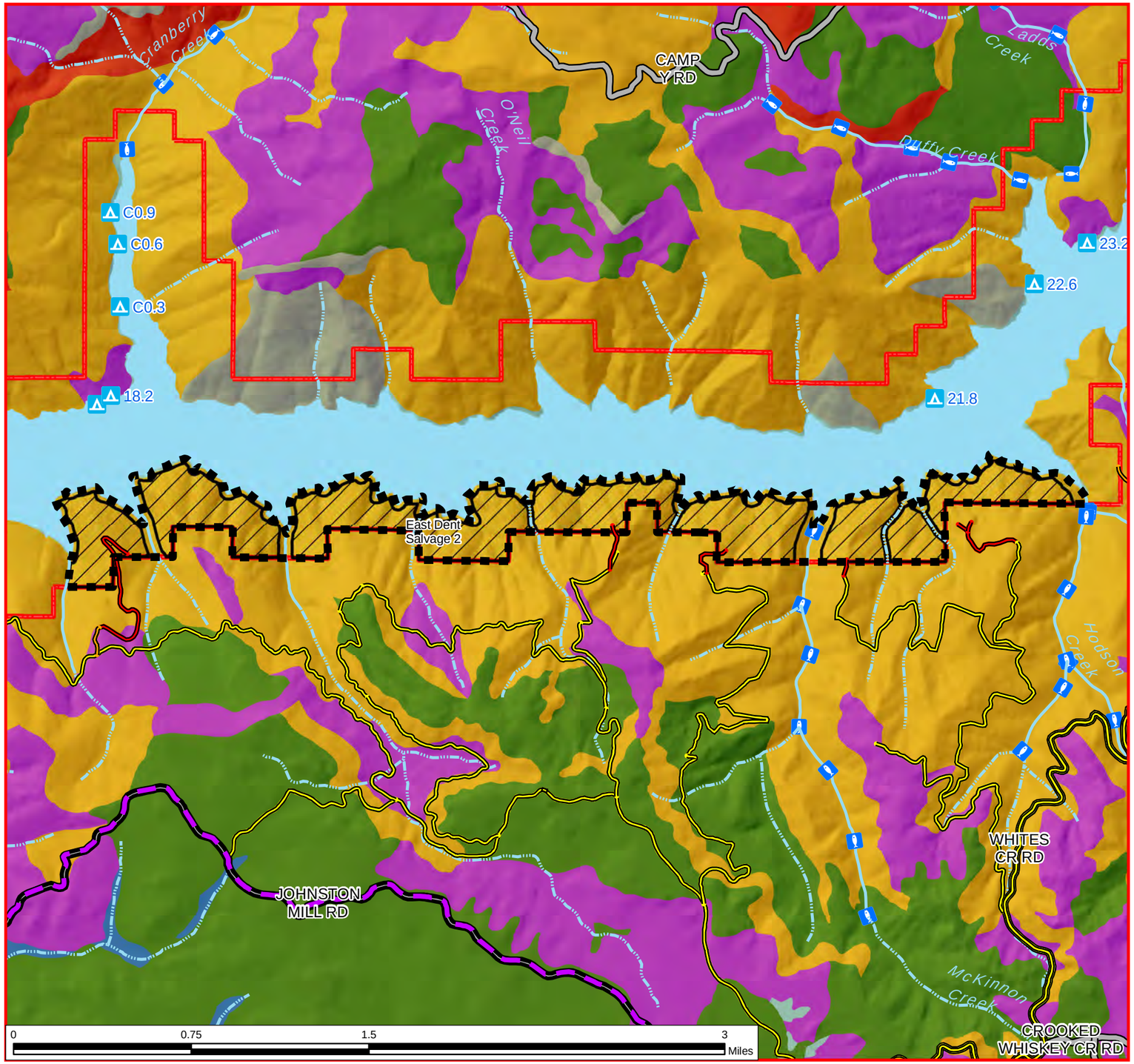
BOEHLS FORAGE ENHANCEMENT

FY 2018

MAP PAGE: D05

APPENDIX C-2

PROJECT SOIL CAPABILITY CLASS MAPS



Map Legend

- Dworshak Boundary
- Forest Management Project

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Soil Capability Class

- Rock outcrop
- 3
- 4
- 6
- 7
- 8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

US Army Corps of Engineers ®
Walla Walla District

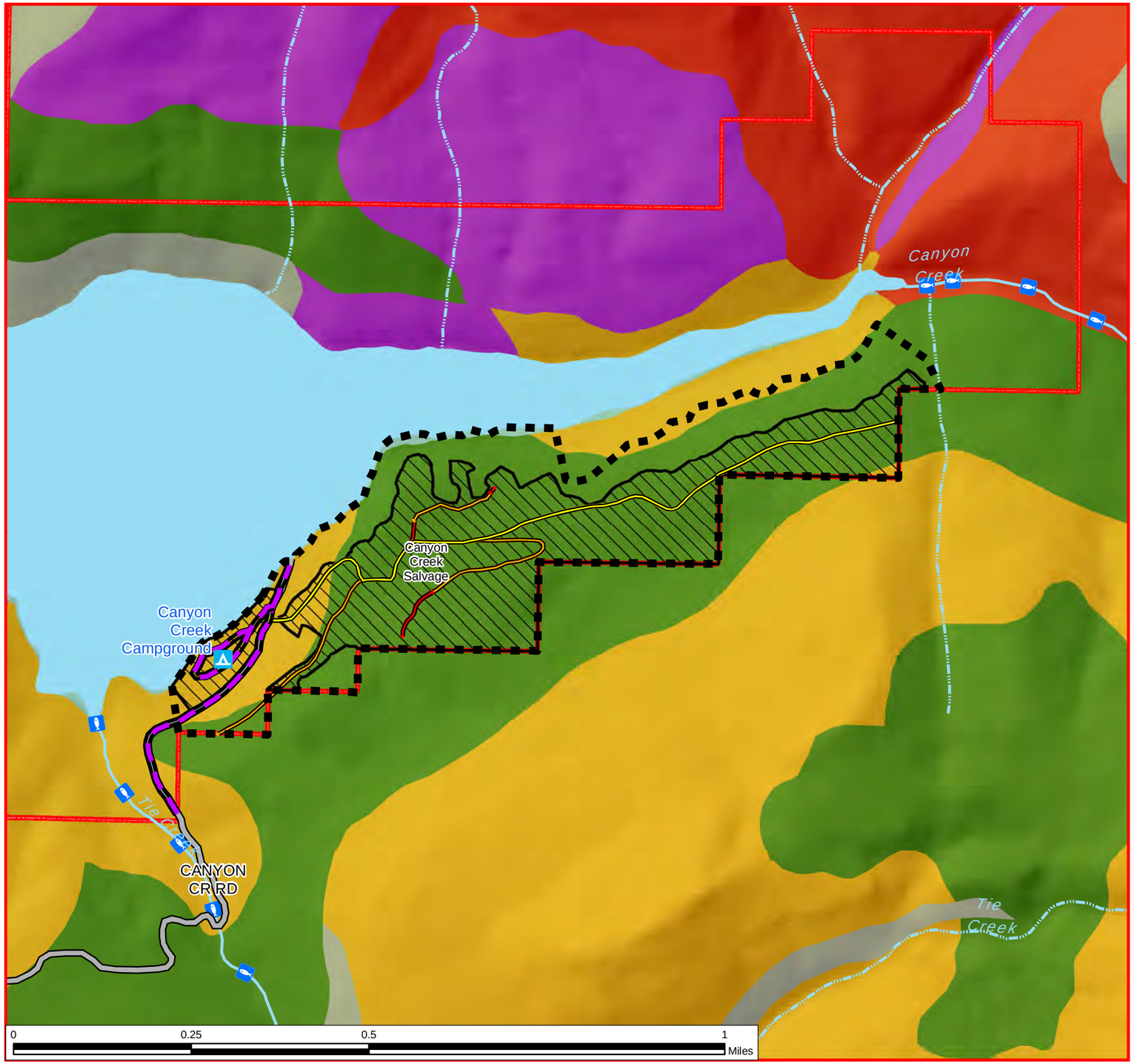
Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
EAST DENT SALVAGE 2

FY 2016

MAP PAGE: A01



Map Legend

Dworshak Boundary

Forest Management Project

Stream Type, Fish Presence

Perennial Stream, Yes

Perennial Stream, No

Intermittent Stream

Timber Harvest Unit

Cable

Tractor

Browse Planting Area

Baskets Only

Planting / Baskets

Seeding / Baskets

Planned Road Action

Rural - Minor Mtc

Service - Minor Mtc

Service - Reconstruction

Service - New Construction

Public

NRCS Soil Capability Class

Rock outcrop

3

4

6

7

8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

US Army Corps of Engineers ®
Walla Walla District

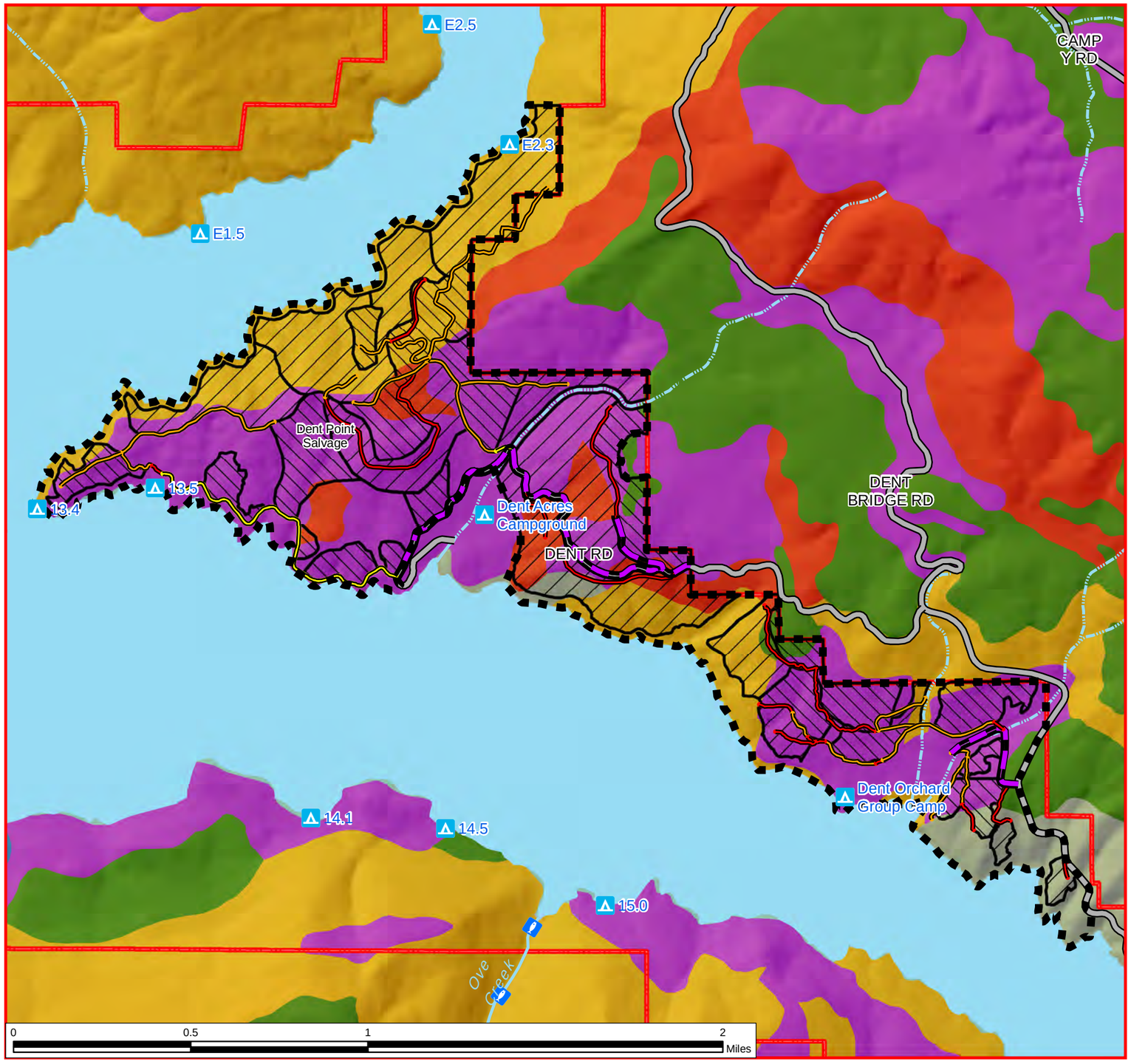
Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
CANYON CREEK SALVAGE

FY 2015

MAP PAGE: A02



Map Legend

- Dworshak Boundary
- Forest Management Project

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Soil Capability Class

- Rock outcrop
- 3
- 4
- 6
- 7
- 8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

US Army Corps of Engineers
Walla Walla District

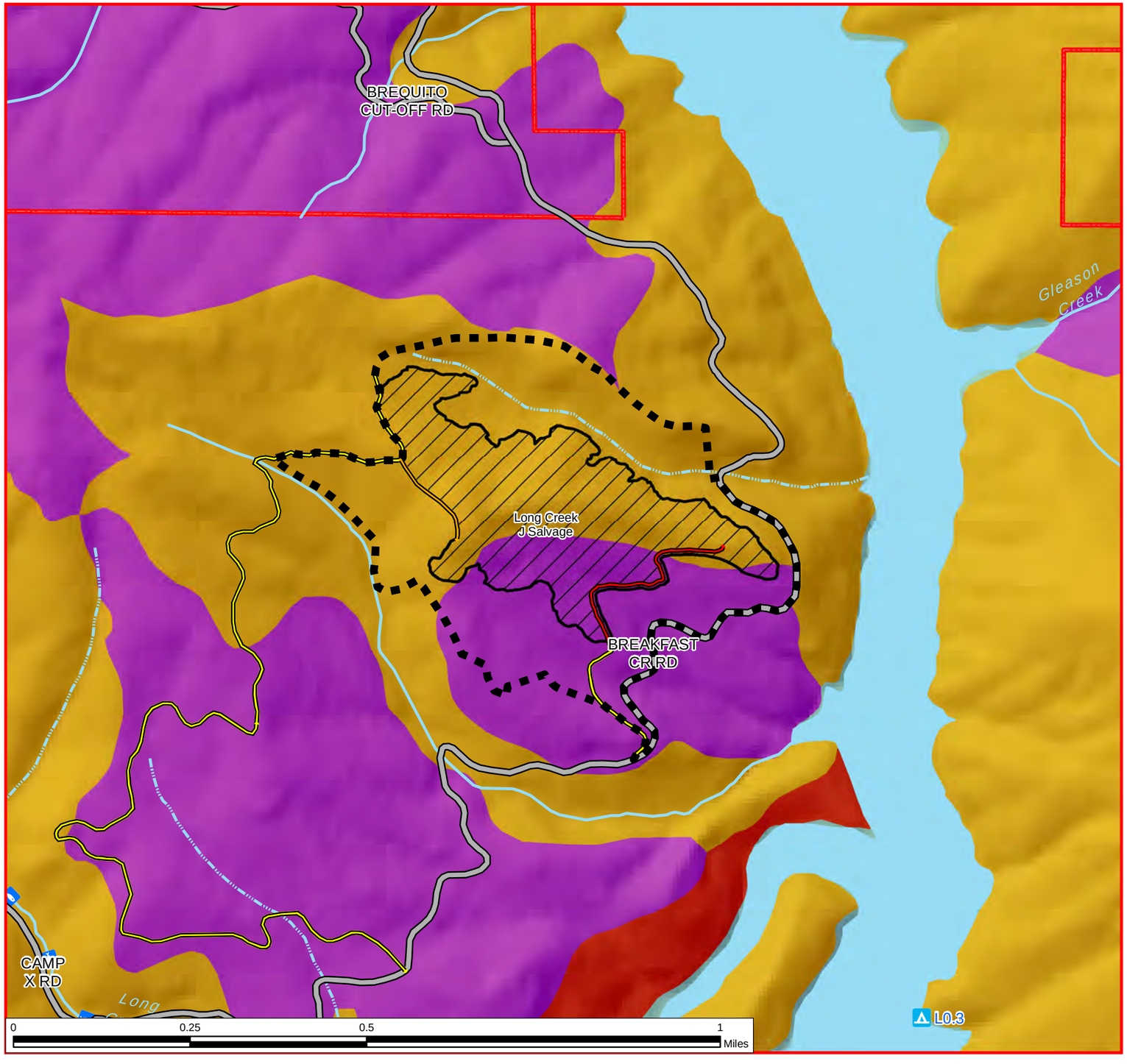
Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
DENT POINT SALVAGE

FY 2016

MAP PAGE: A03



Map Legend

Dworshak Boundary

Forest Management Project

Stream Type, Fish Presence

Perennial Stream, Yes

Perennial Stream, No

Intermittent Stream

Timber Harvest Unit

Cable

Tractor

Browse Planting Area

Baskets Only

Planting / Baskets

Seeding / Baskets

Planned Road Action

Rural - Minor Mtc

Service - Minor Mtc

Service - Reconstruction

Service - New Construction

Public

NRCS Soil Capability Class

Rock outcrop

3

4

6

7

8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

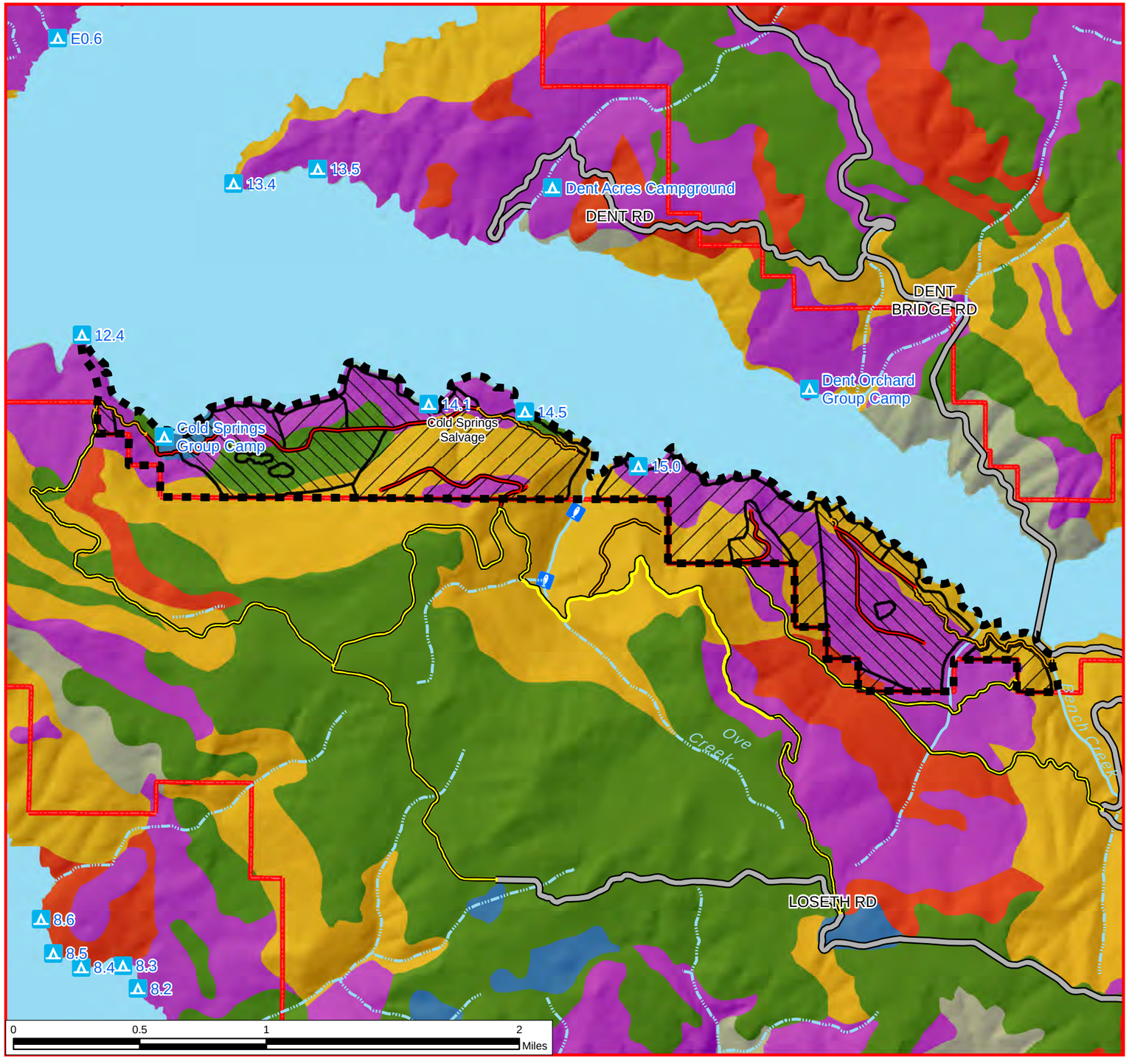
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
LONG CREEK J SALVAGE
FY 2016

MAP PAGE: A04



Map Legend

- Dworshak Boundary
- Forest Management Project

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Soil Capability Class

- Rock outcrop
- 3
- 4
- 6
- 7
- 8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

US Army Corps of Engineers ®
Walla Walla District

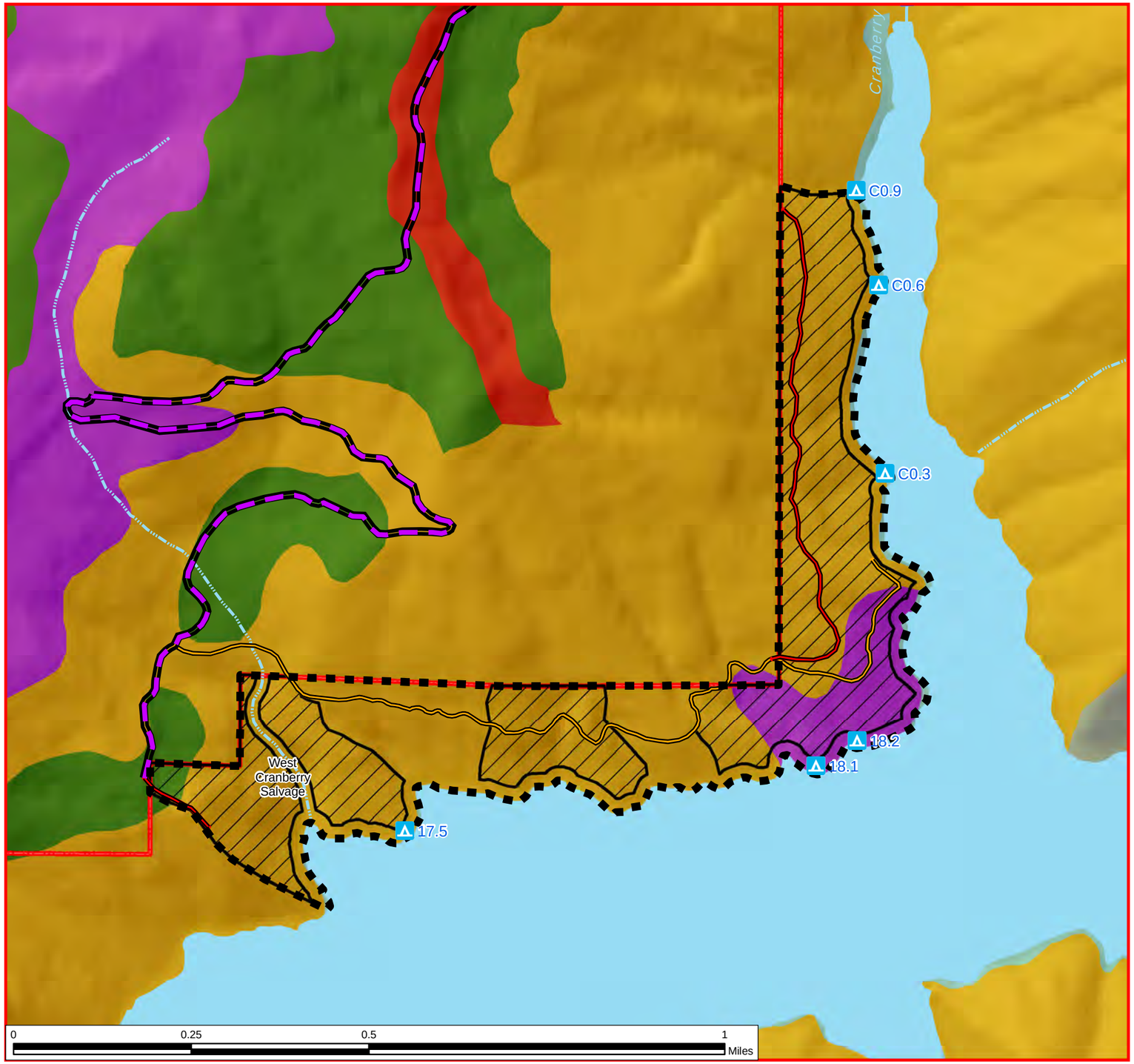
Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
COLD SPRINGS SALVAGE

FY 2017

MAP PAGE: A05



Map Legend

Dworshak Boundary

Forest Management Project

Stream Type, Fish Presence

Perennial Stream, Yes

Perennial Stream, No

Intermittent Stream

Timber Harvest Unit

Cable

Tractor

Browse Planting Area

Baskets Only

Planting / Baskets

Seeding / Baskets

Planned Road Action

Rural - Minor Mtc

Service - Minor Mtc

Service - Reconstruction

Service - New Construction

Public

NRCS Soil Capability Class

Rock outcrop

3

4

6

7

8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

US Army Corps of Engineers ®
Walla Walla District

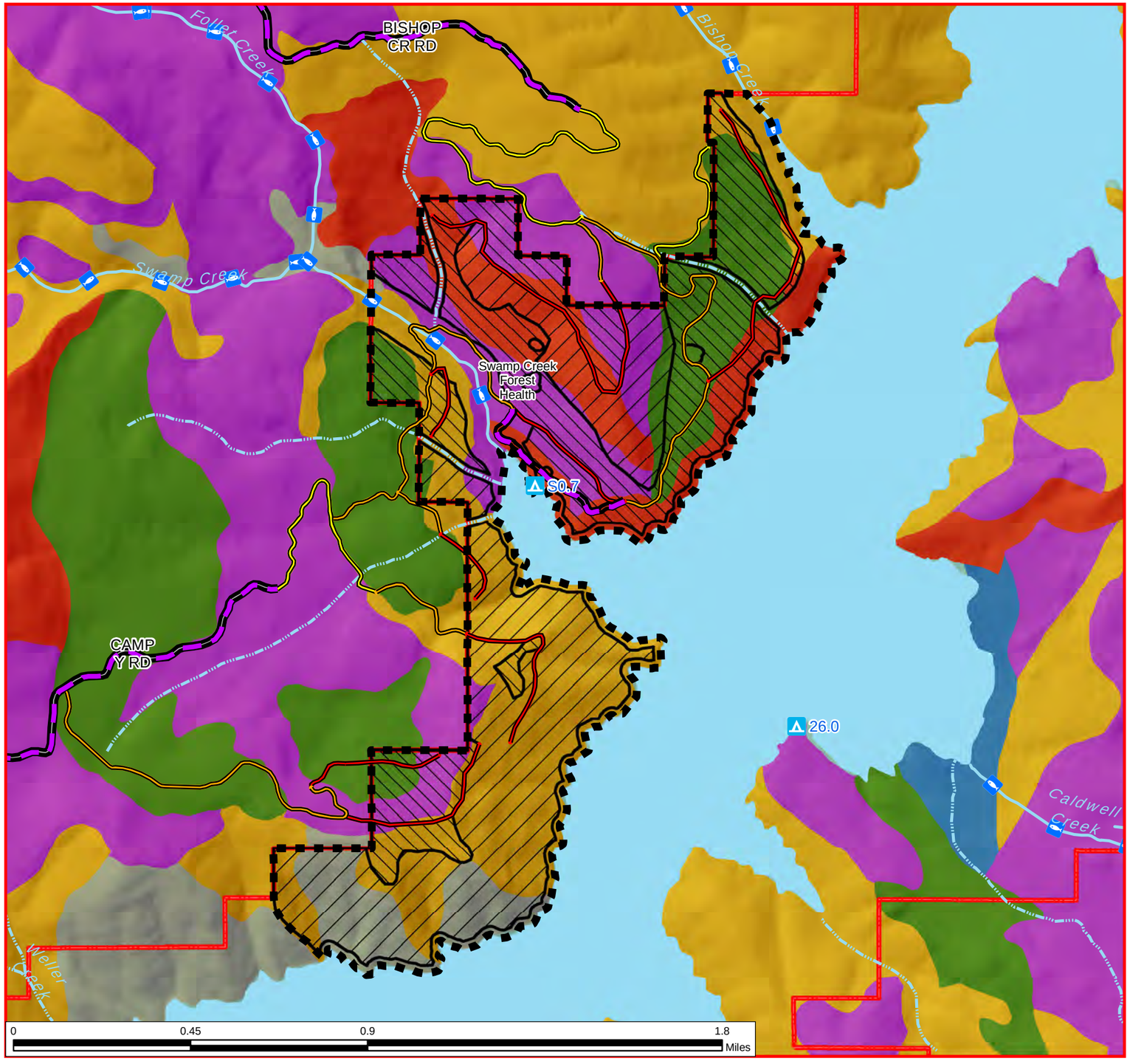
Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
WEST CRANBERRY SALVAGE

FY 2017

MAP PAGE: A06



Map Legend

Dworshak Boundary

Forest Management Project

Stream Type, Fish Presence

Perennial Stream, Yes

Perennial Stream, No

Intermittent Stream

Timber Harvest Unit

Cable

Tractor

Browse Planting Area

Baskets Only

Planting / Baskets

Seeding / Baskets

Planned Road Action

Rural - Minor Mtc

Service - Minor Mtc

Service - Reconstruction

Service - New Construction

Public

NRCS Soil Capability Class

Rock outcrop

3

4

6

7

8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

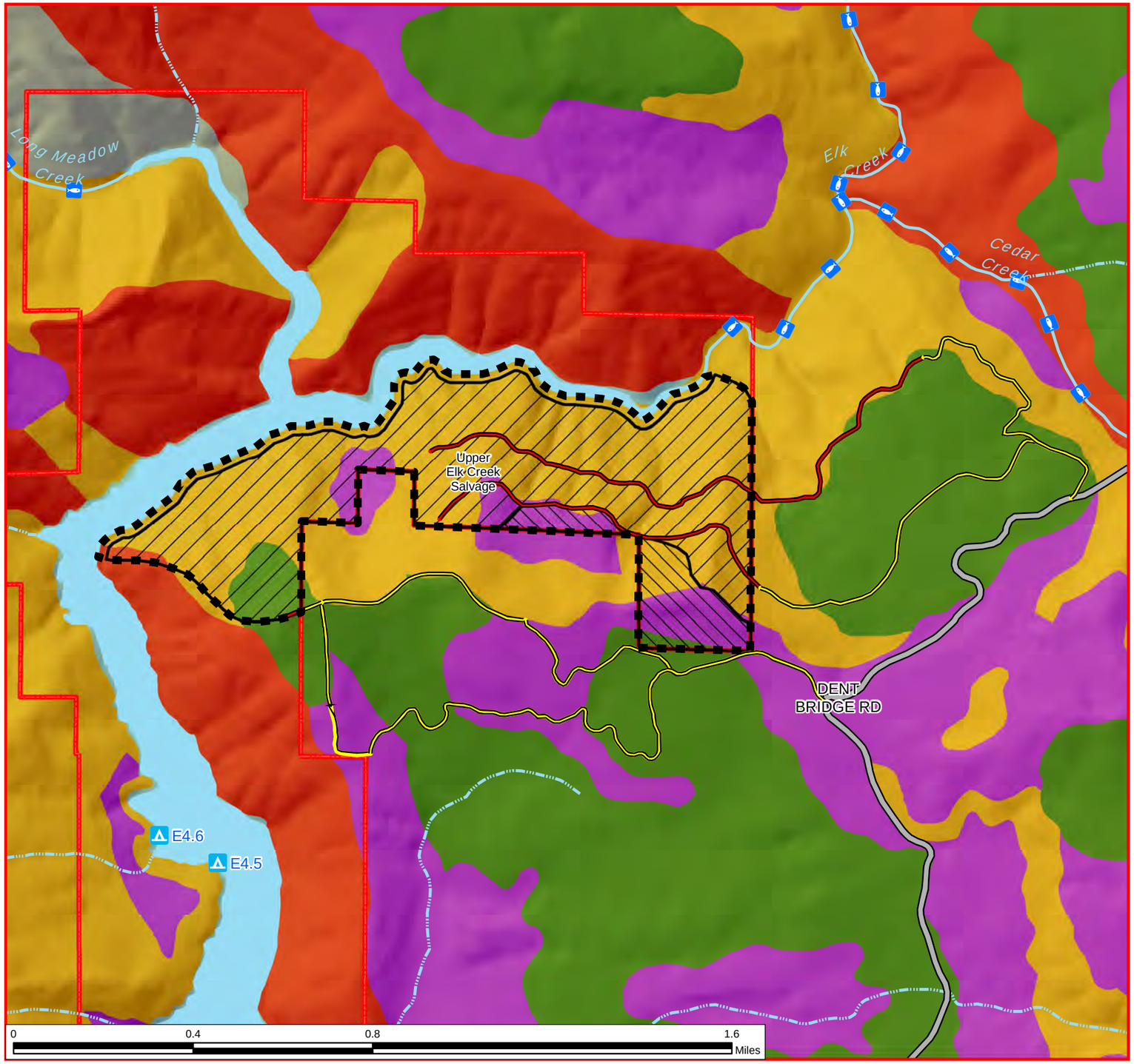
US Army Corps of Engineers
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
SWAMP CREEK FOREST HEALTH
FY 2018

MAP PAGE: A07



Map Legend

Dworshak Boundary

Forest Management Project

Stream Type, Fish Presence

Perennial Stream, Yes

Perennial Stream, No

Intermittent Stream

Timber Harvest Unit

Cable

Tractor

Browse Planting Area

Baskets Only

Planting / Baskets

Seeding / Baskets

Planned Road Action

Rural - Minor Mtc

Service - Minor Mtc

Service - Reconstruction

Service - New Construction

Public

NRCS Soil Capability Class

Rock outcrop

3

4

6

7

8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

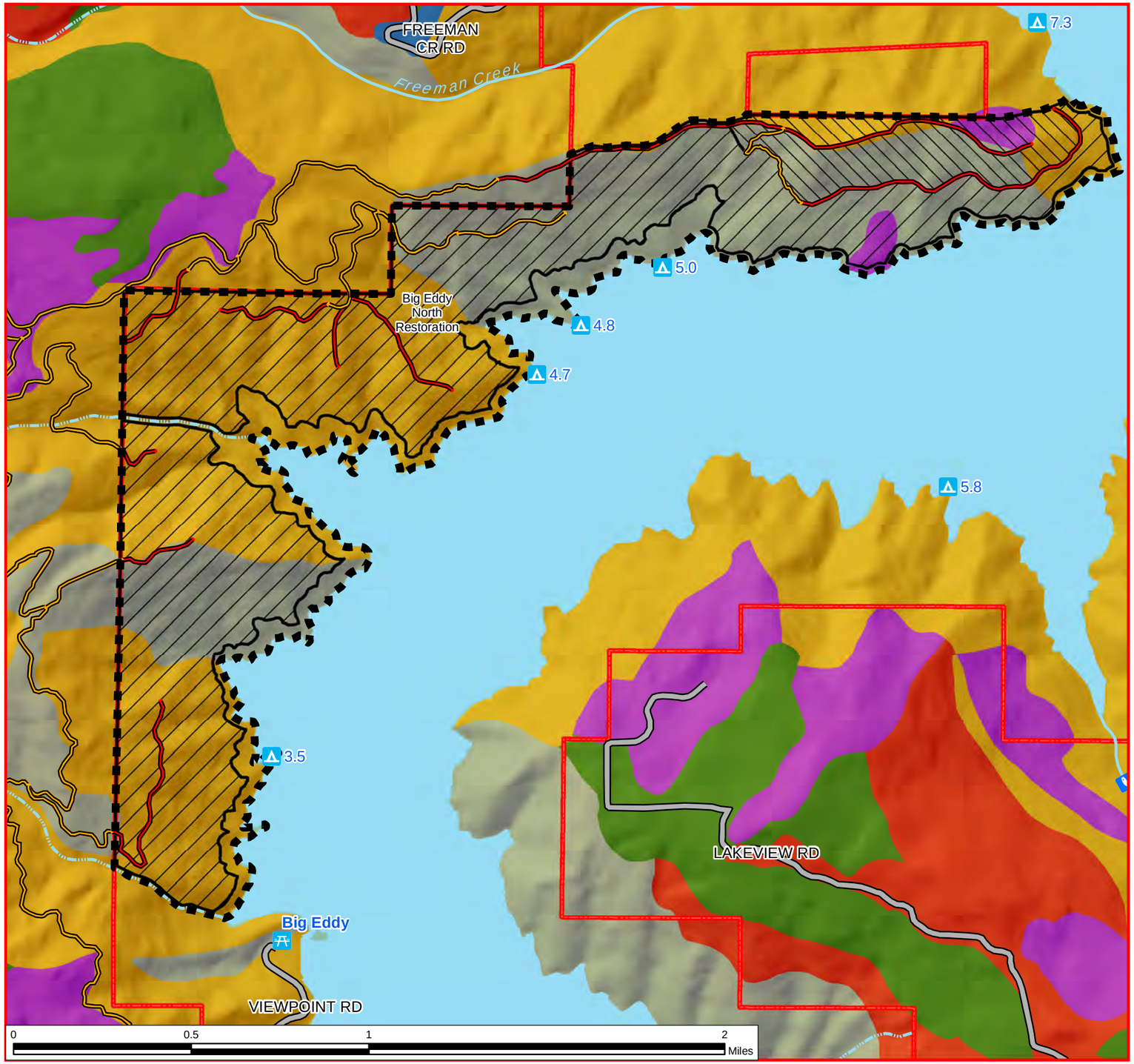
US Army Corps of Engineers
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
UPPER ELK CREEK SALVAGE
FY 2018

MAP PAGE: A08



Map Legend

- Dworshak Boundary
- Forest Management Project

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Soil Capability Class

- Rock outcrop
- 3
- 4
- 6
- 7
- 8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

US Army Corps of Engineers ®
Walla Walla District

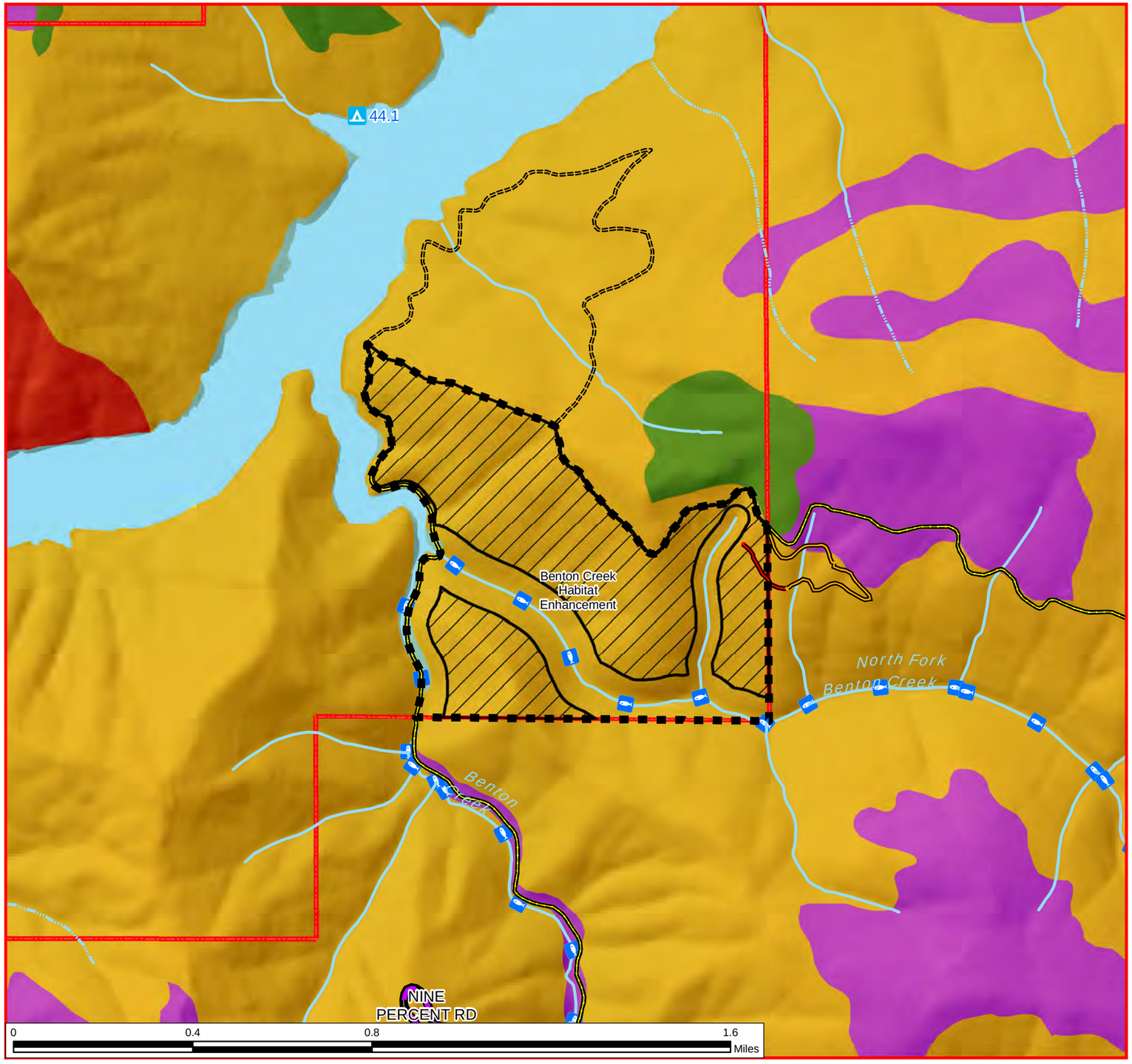
Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
BIG EDDY NORTH RESTORATION

FY 2018

MAP PAGE: B01



Map Legend

- Dworshak Boundary
- Forest Management Project

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Soil Capability Class

- Rock outcrop
- 3
- 4
- 6
- 7
- 8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

US Army Corps of Engineers ®
Walla Walla District

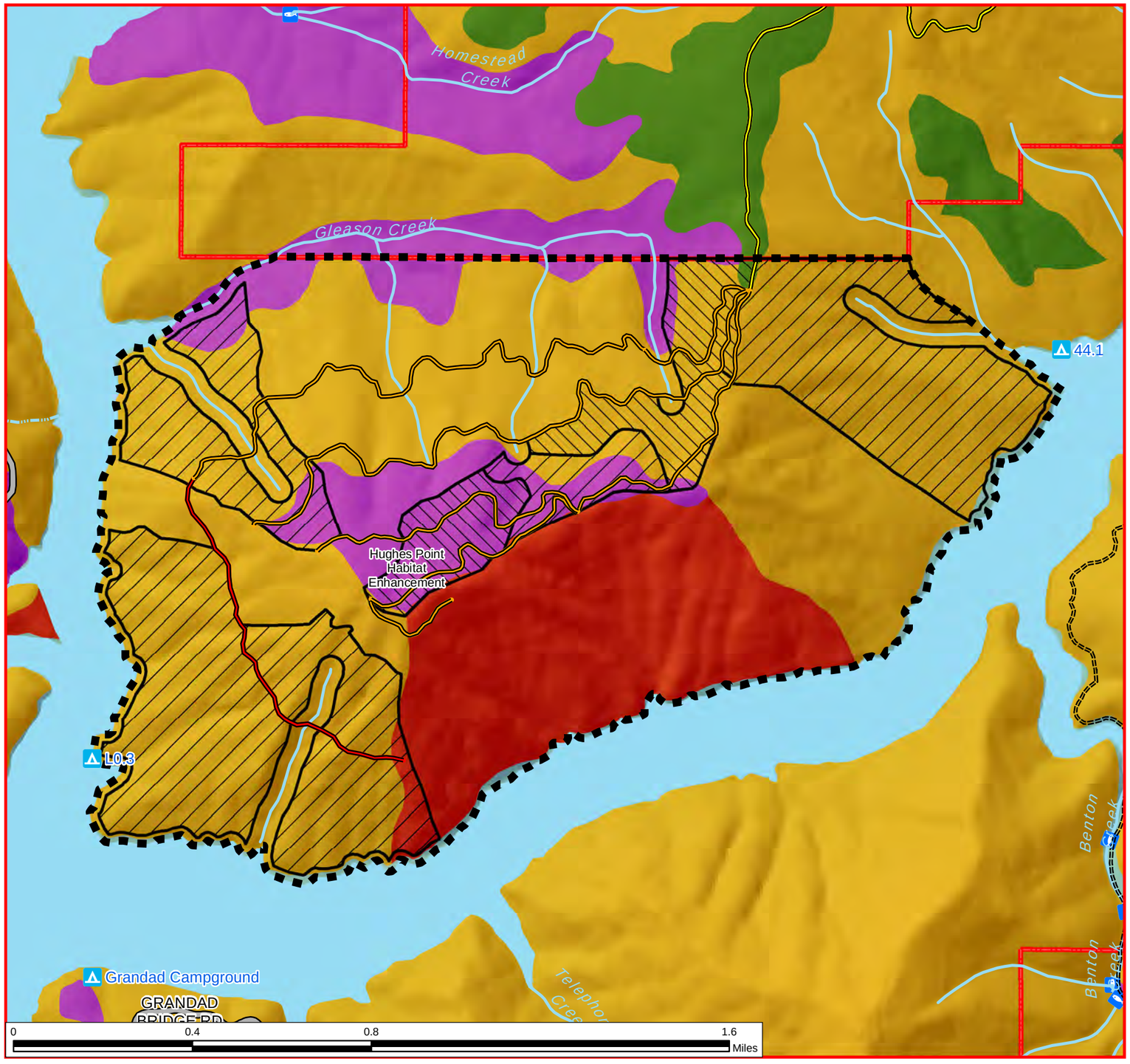
Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
BENTON CREEK HABITAT ENHANCEMENT

FY 2019

MAP PAGE: C01



Map Legend

- Dworshak Boundary
- Forest Management Project

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Soil Capability Class

- Rock outcrop
- 3
- 4
- 6
- 7
- 8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

US Army Corps of Engineers ®
Walla Walla District

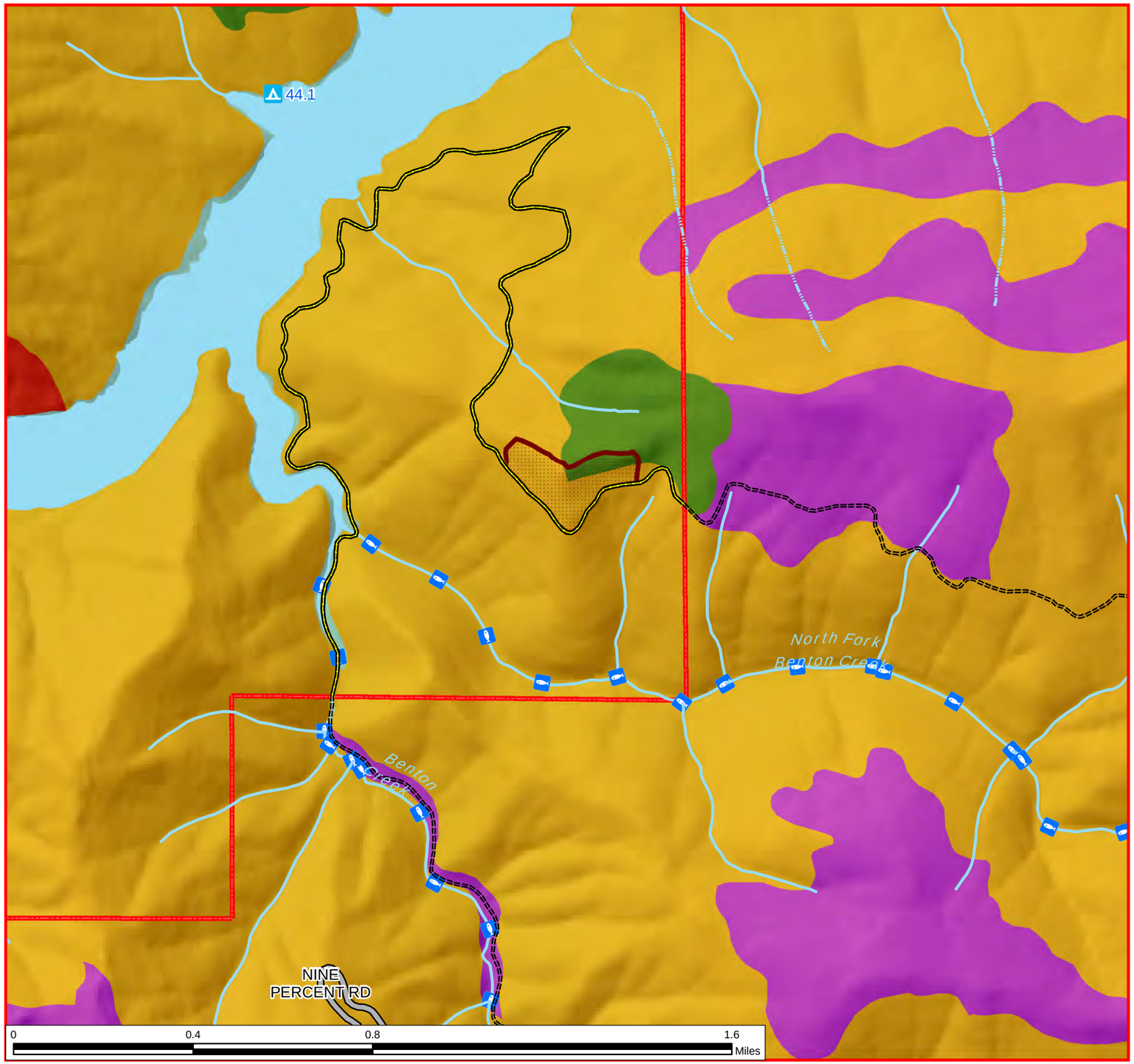
Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
HUGHES POINT HABITAT ENHANCEMENT

FY 2020

MAP PAGE: C02



Map Legend

- Dworshak Boundary
- Forest Management Project

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Soil Capability Class

- Rock outcrop
- 3
- 4
- 6
- 7
- 8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

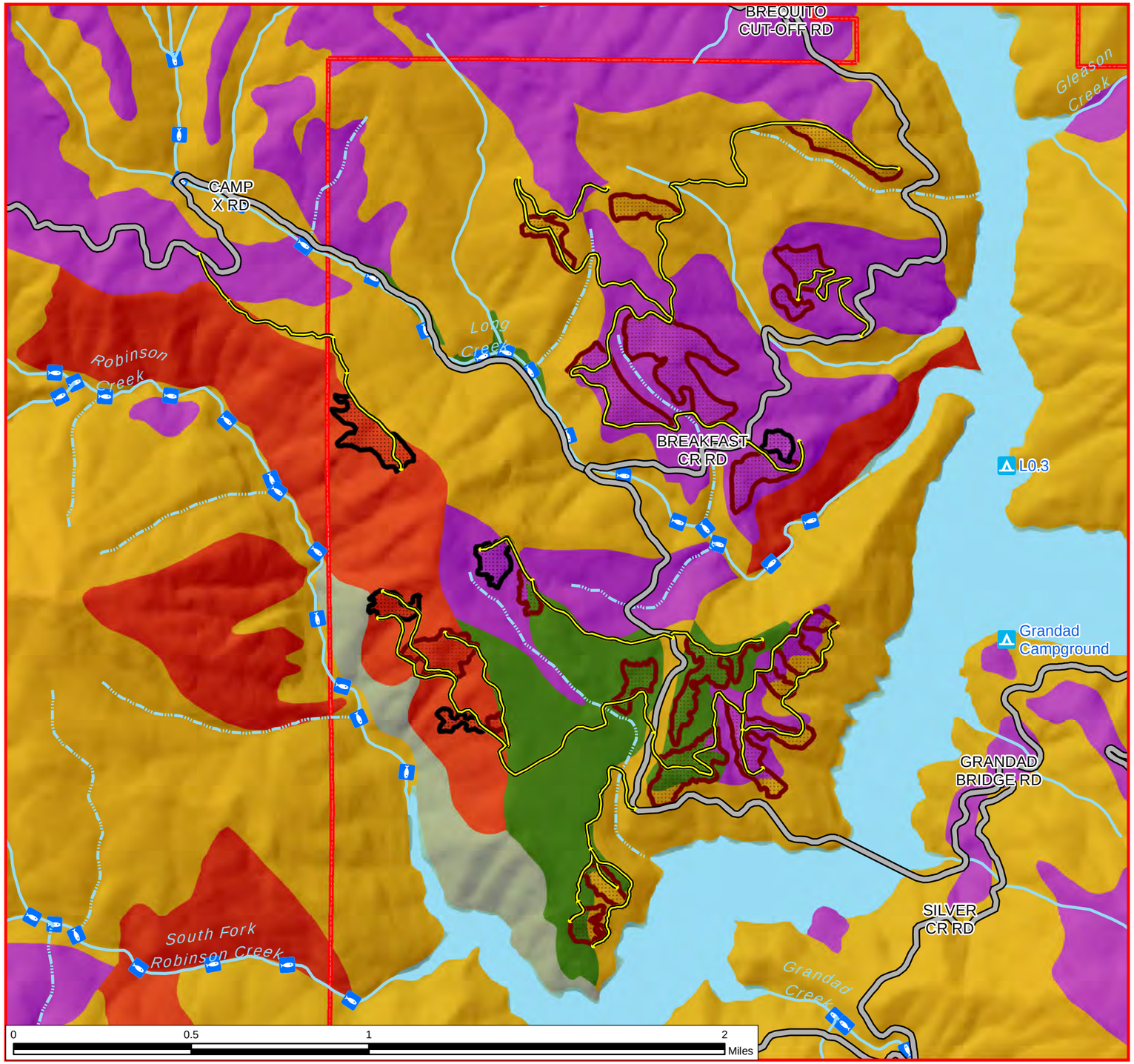
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
BENTON CR FORAGE ENHANCEMENT
FY 2015

MAP PAGE: D01



Map Legend

Dworshak Boundary

Forest Management Project

Stream Type, Fish Presence

Perennial Stream, Yes

Perennial Stream, No

Intermittent Stream

Timber Harvest Unit

Cable

Tractor

Browse Planting Area

Baskets Only

Planting / Baskets

Seeding / Baskets

Planned Road Action

Rural - Minor Mtc

Service - Minor Mtc

Service - Reconstruction

Service - New Construction

Public

NRCS Soil Capability Class

Rock outcrop

3

4

6

7

8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

US Army Corps of Engineers
Walla Walla District

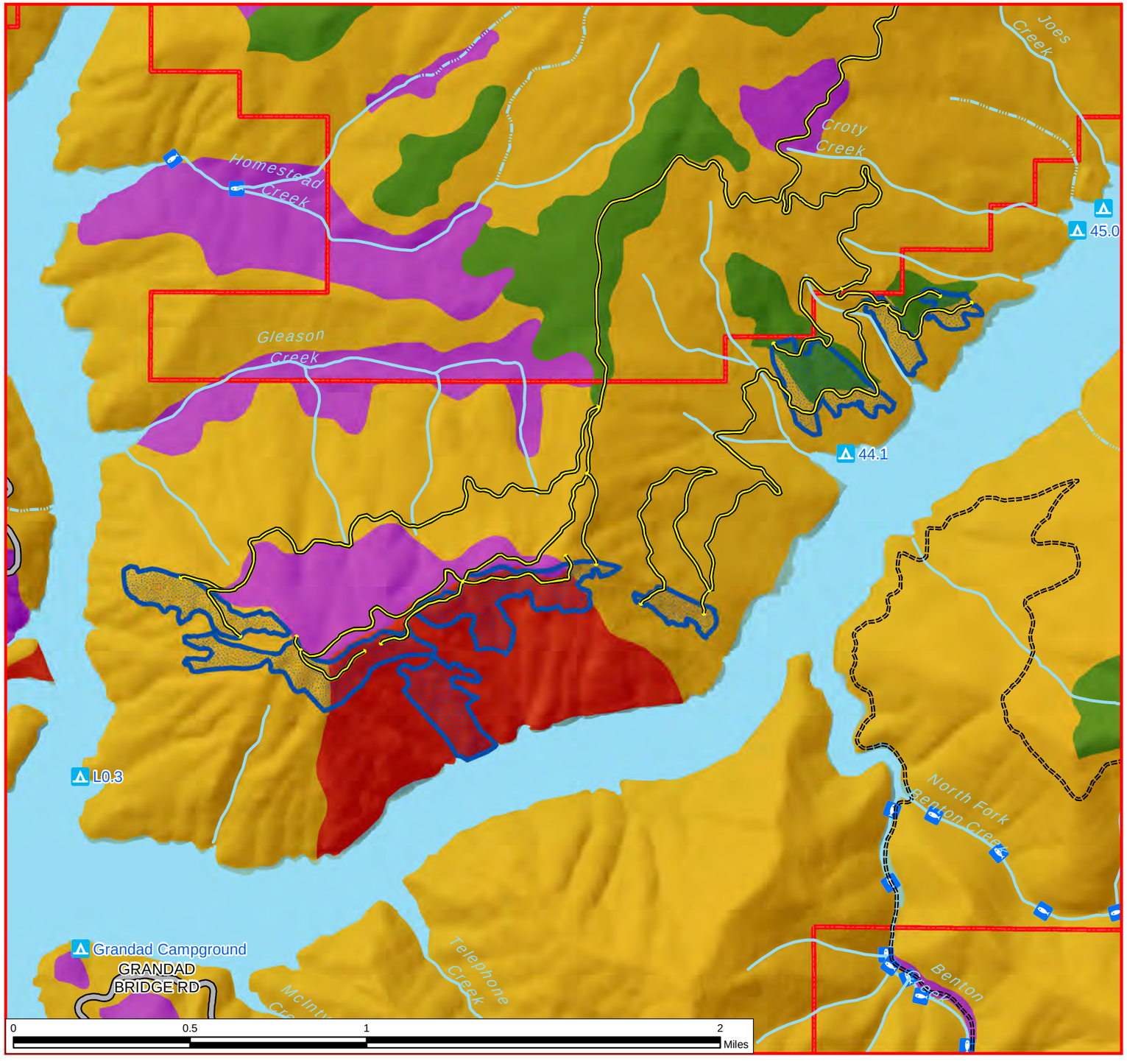
Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
ROBINSON - LONG CR FORAGE ENHANCEMENT

FY 2016/17

MAP PAGE: D02



Map Legend

- Dworshak Boundary
- Forest Management Project

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Soil Capability Class

- Rock outcrop
- 3
- 4
- 6
- 7
- 8

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/24/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

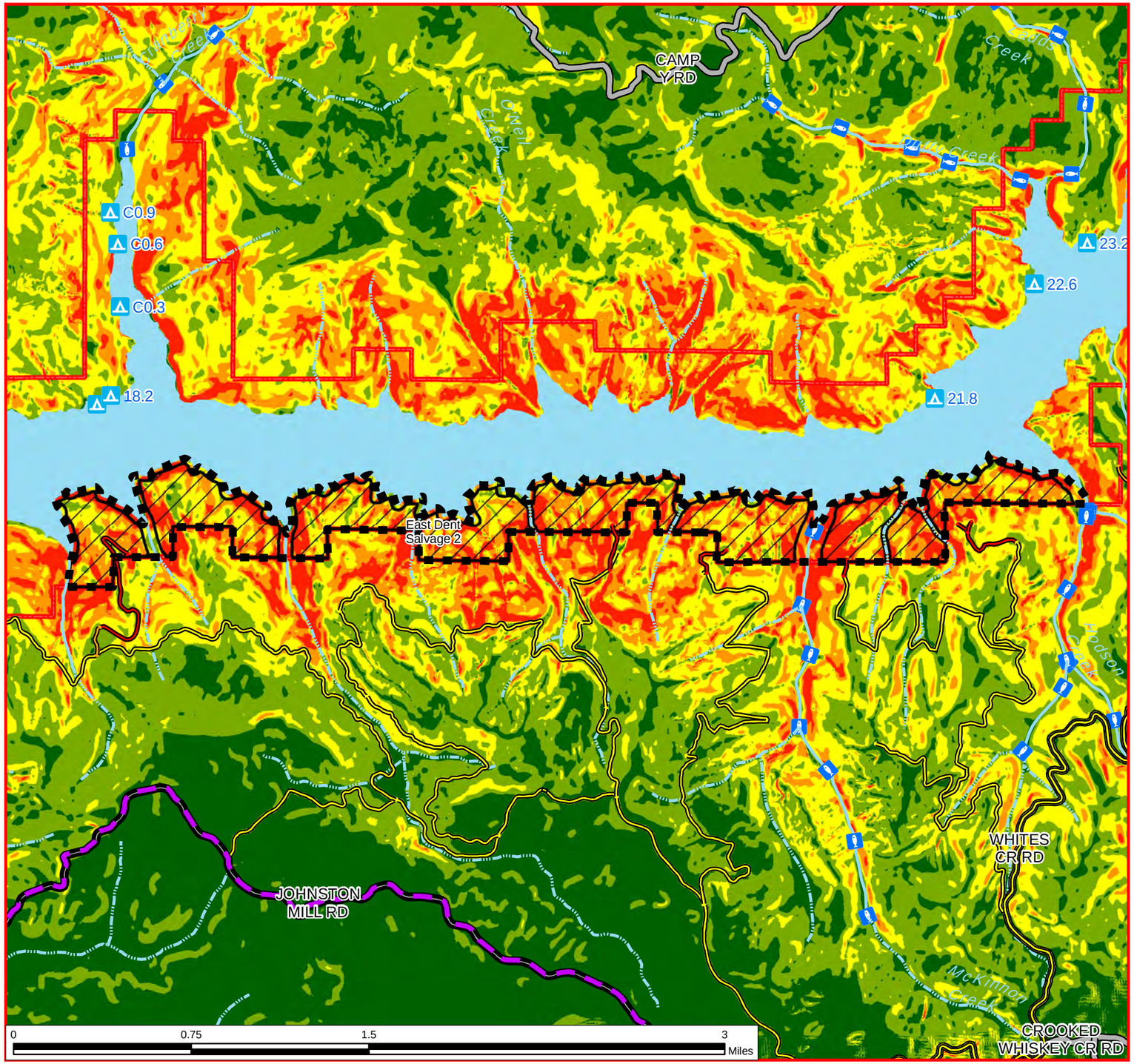
DWORSHAK VEGETATION MANAGEMENT
SOIL CAPABILITY CLASS
HUGHES POINT FORAGE ENHANCEMENT

FY 2016/17

MAP PAGE: D03

APPENDIX C-3

PROJECT SLOPE CLASS MAPS



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

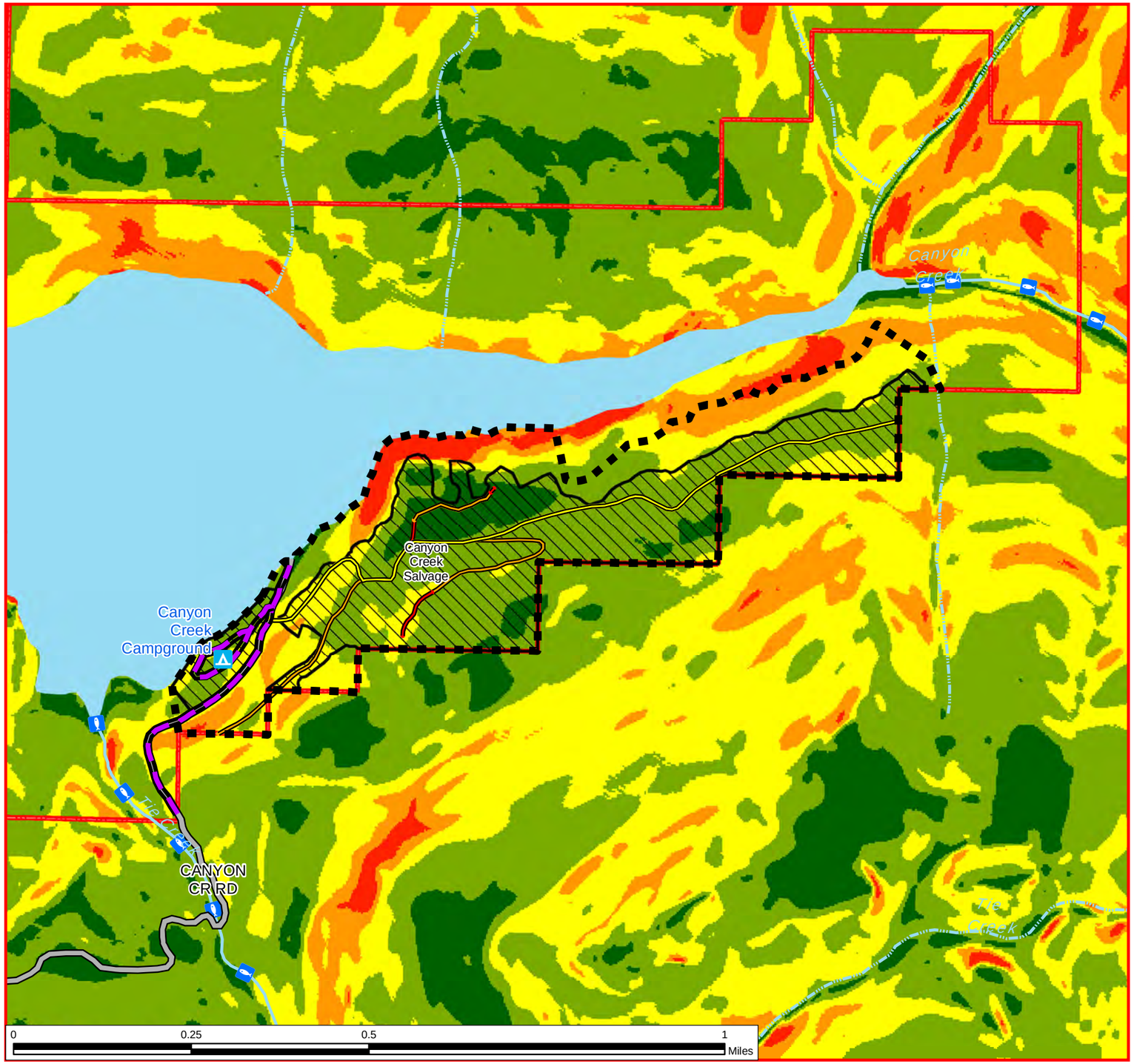
Building Strong ®

N
W E
S

DWORSHAK VEGETATION MANAGEMENT
SLOPE CLASS
EAST DENT SALVAGE 2

FY 2016

MAP PAGE: A01



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

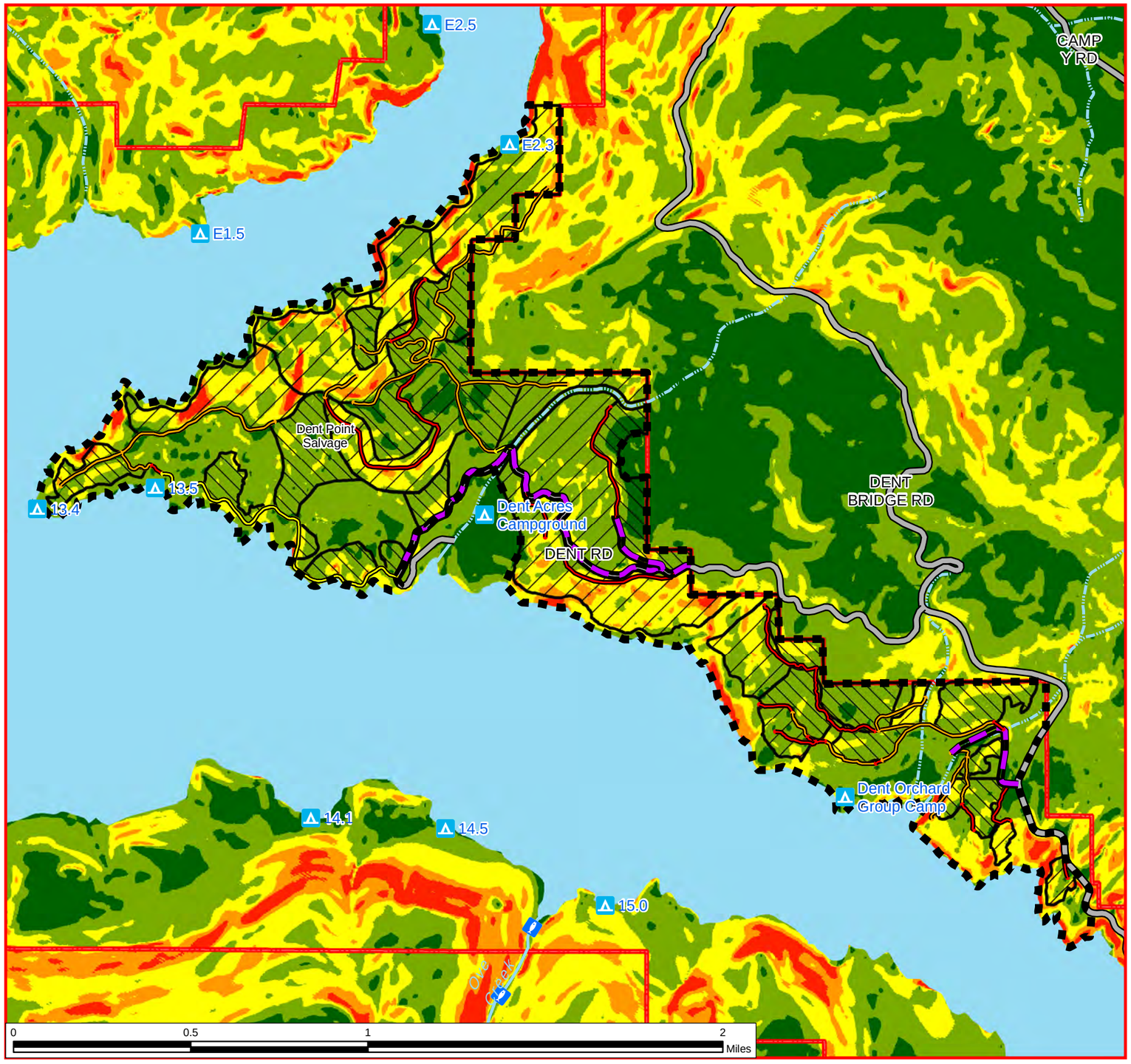
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SLOPE CLASS
CANYON CREEK SALVAGE
FY 2015

MAP PAGE: A02



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

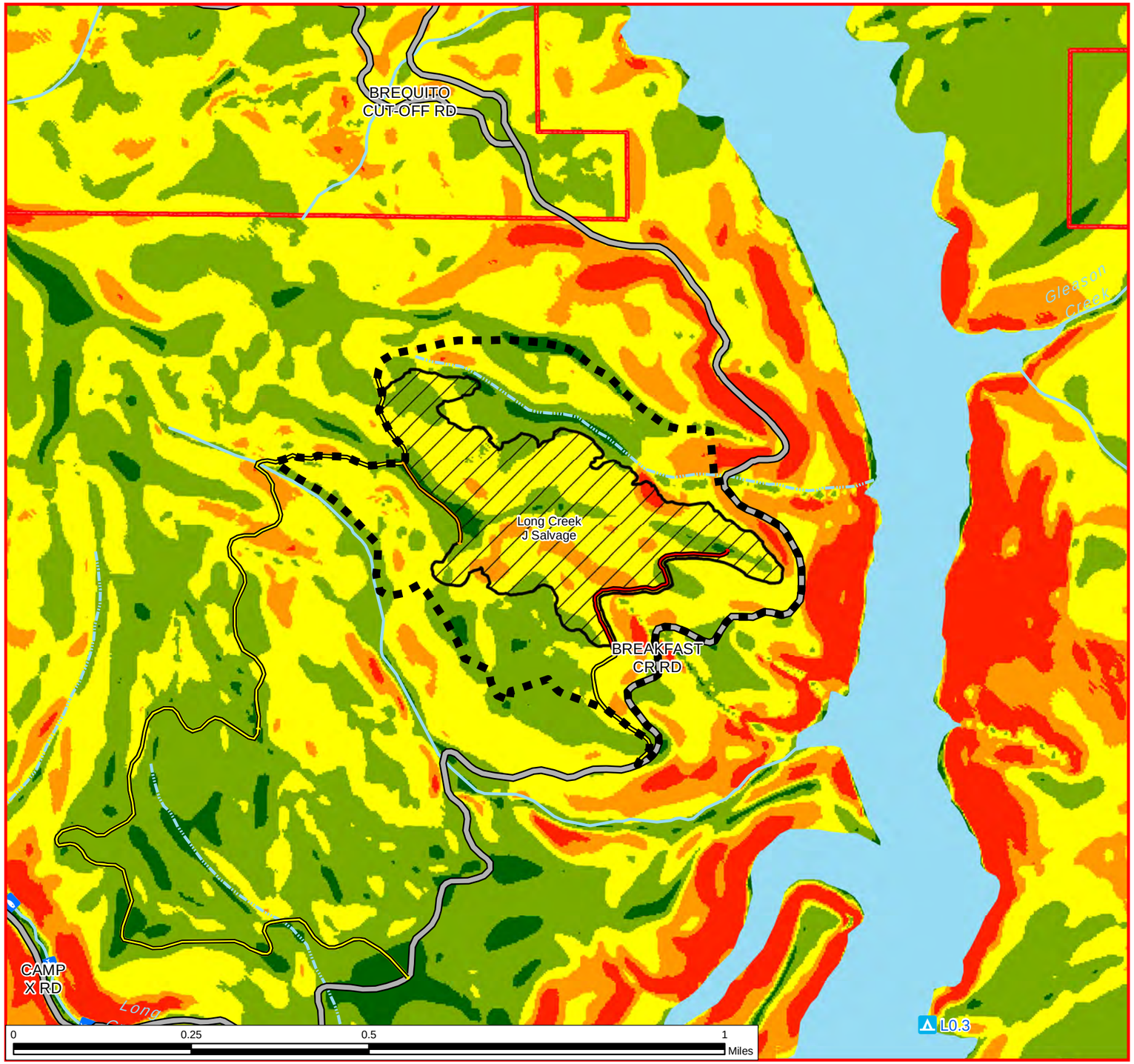
Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SLOPE CLASS
DENT POINT SALVAGE

FY 2016

MAP PAGE: A03



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

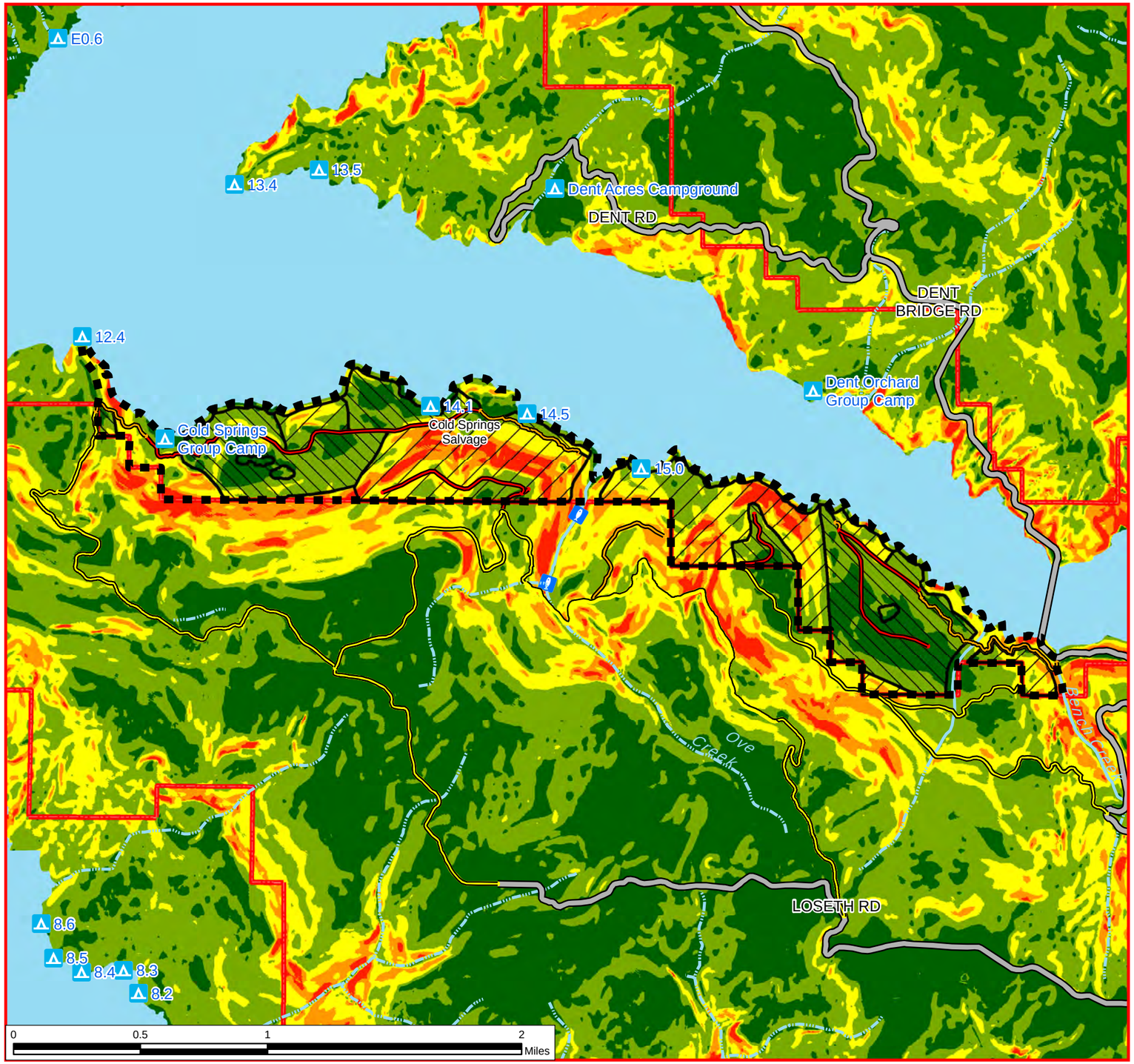
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SLOPE CLASS
LONG CREEK J SALVAGE
FY 2016

MAP PAGE: A04



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

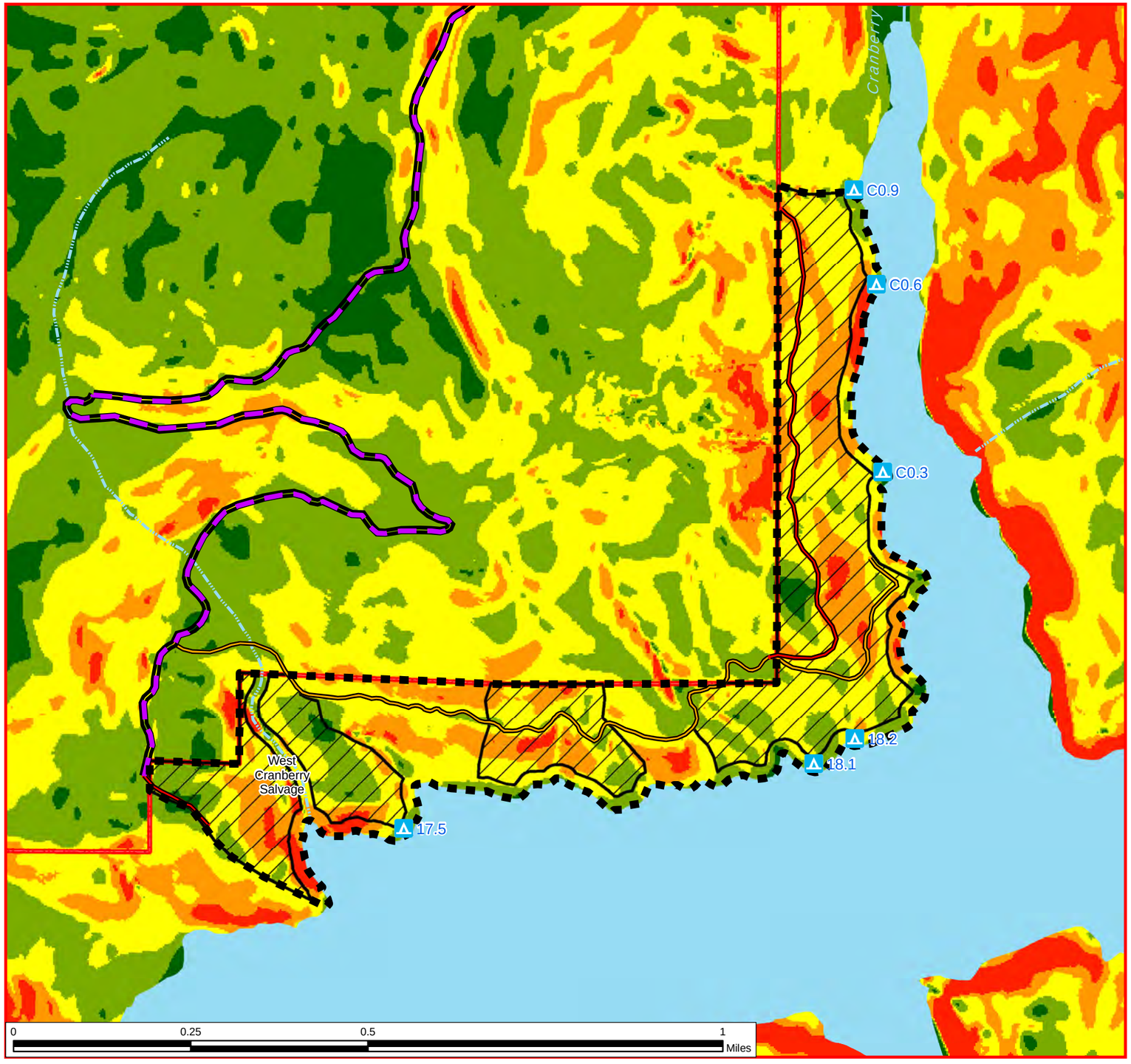
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SLOPE CLASS
COLD SPRINGS SALVAGE
FY 2017

MAP PAGE: A05



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

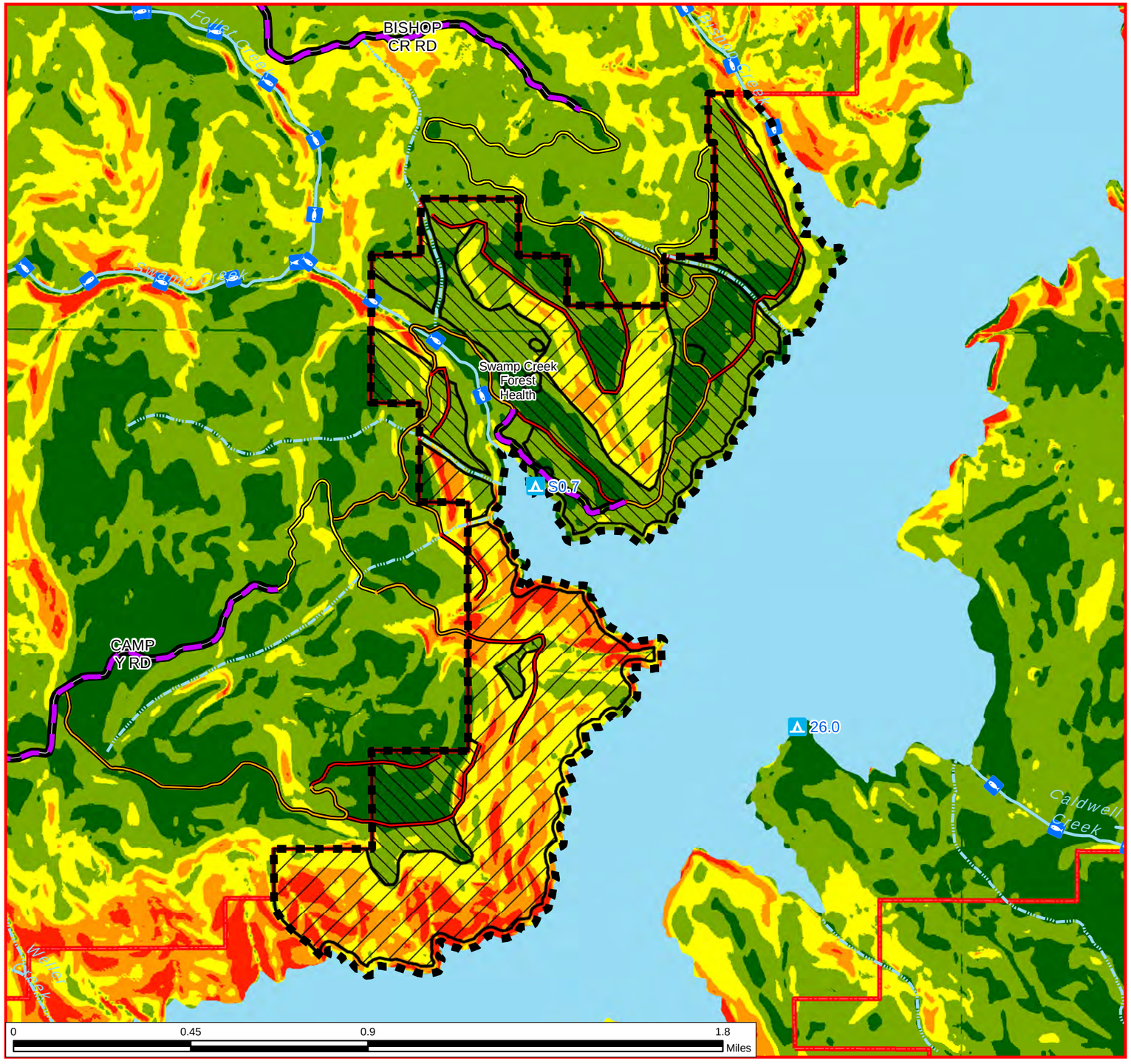
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SLOPE CLASS
WEST CRANBERRY SALVAGE
FY 2017

MAP PAGE: A06



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

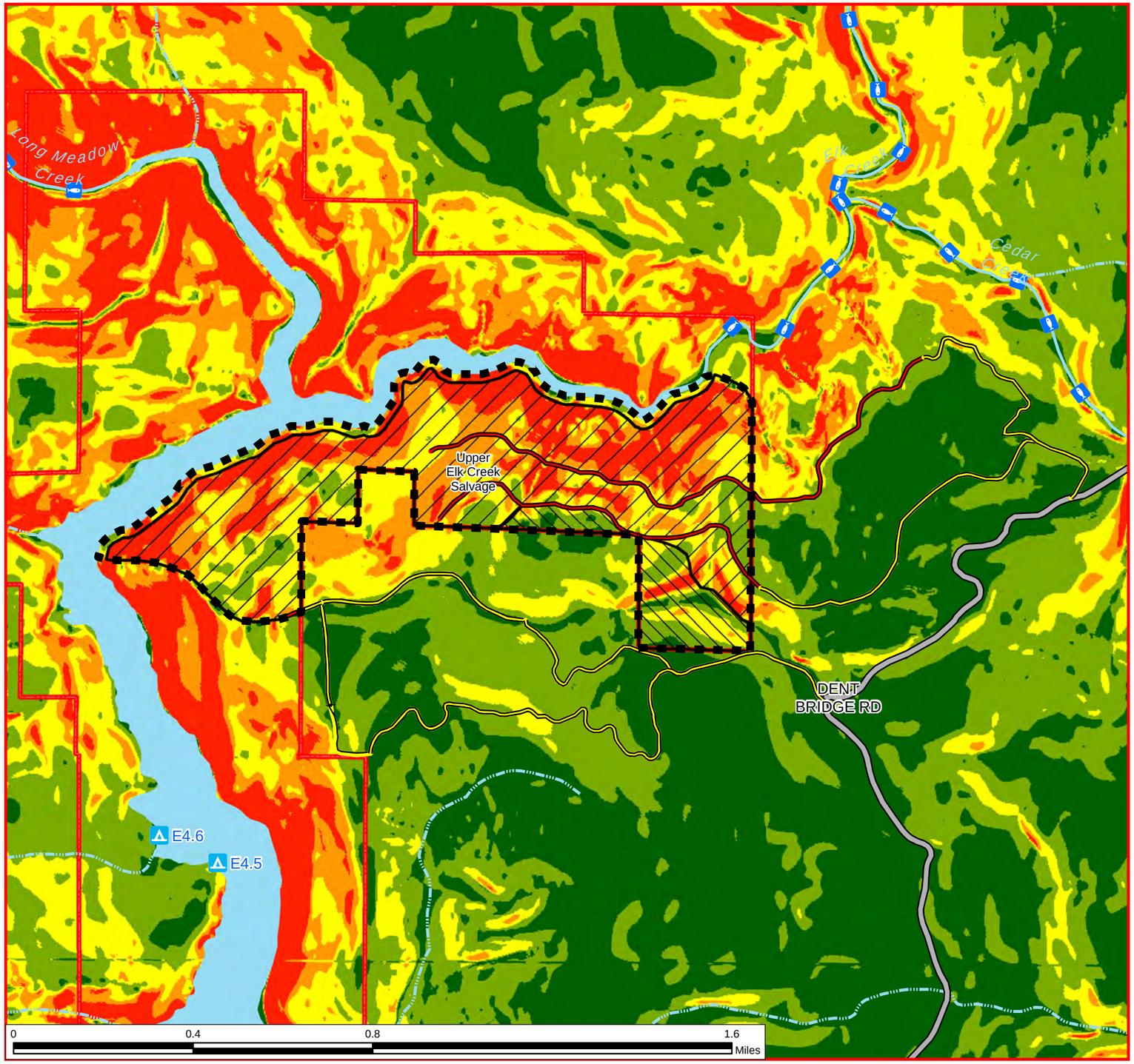
Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SLOPE CLASS
SWAMP CREEK FOREST HEALTH

FY 2018

MAP PAGE: A07



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

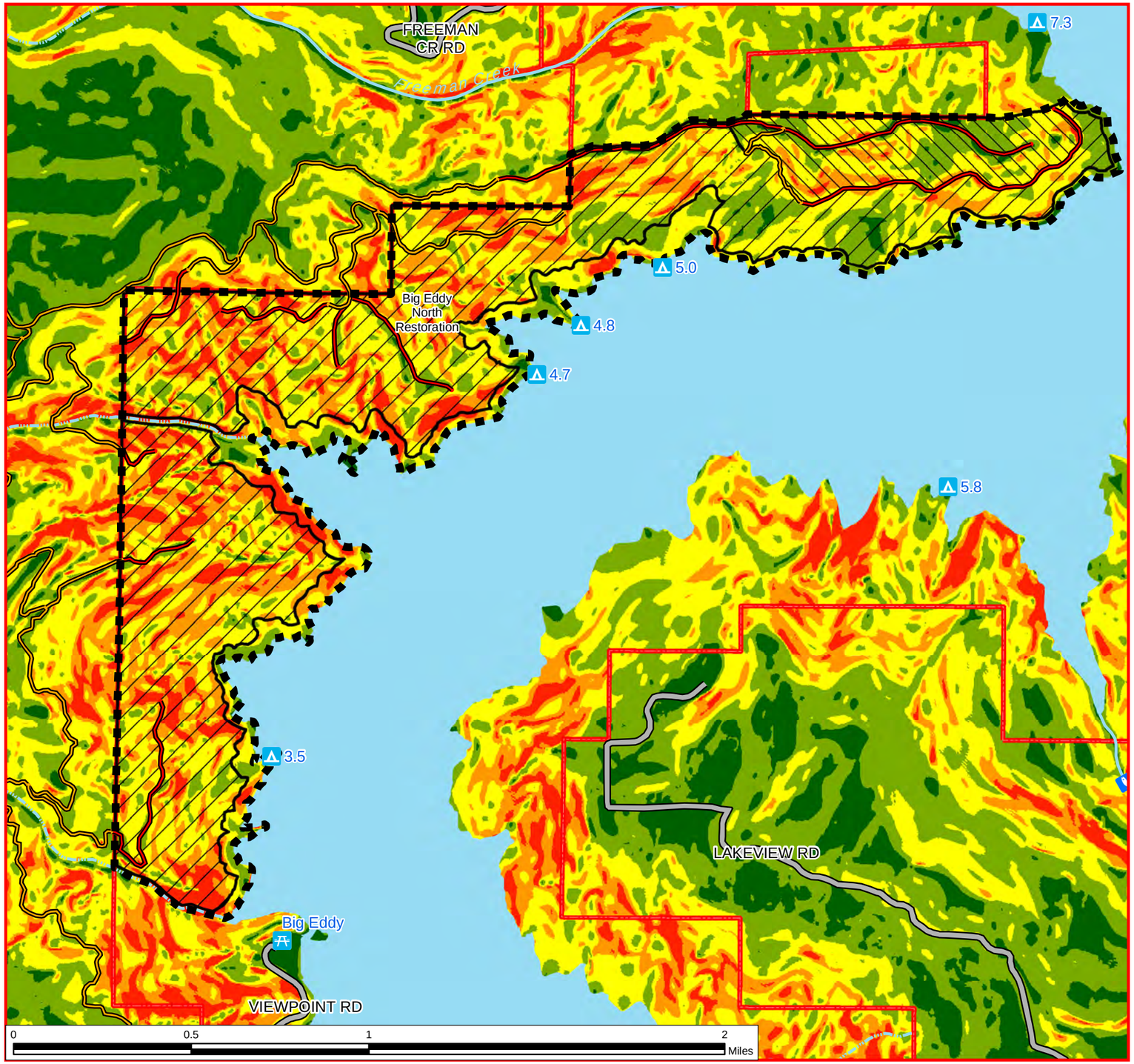
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SLOPE CLASS
UPPER ELK CREEK SALVAGE
FY 2018

MAP PAGE: A08



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers
Walla Walla District

Building Strong ®

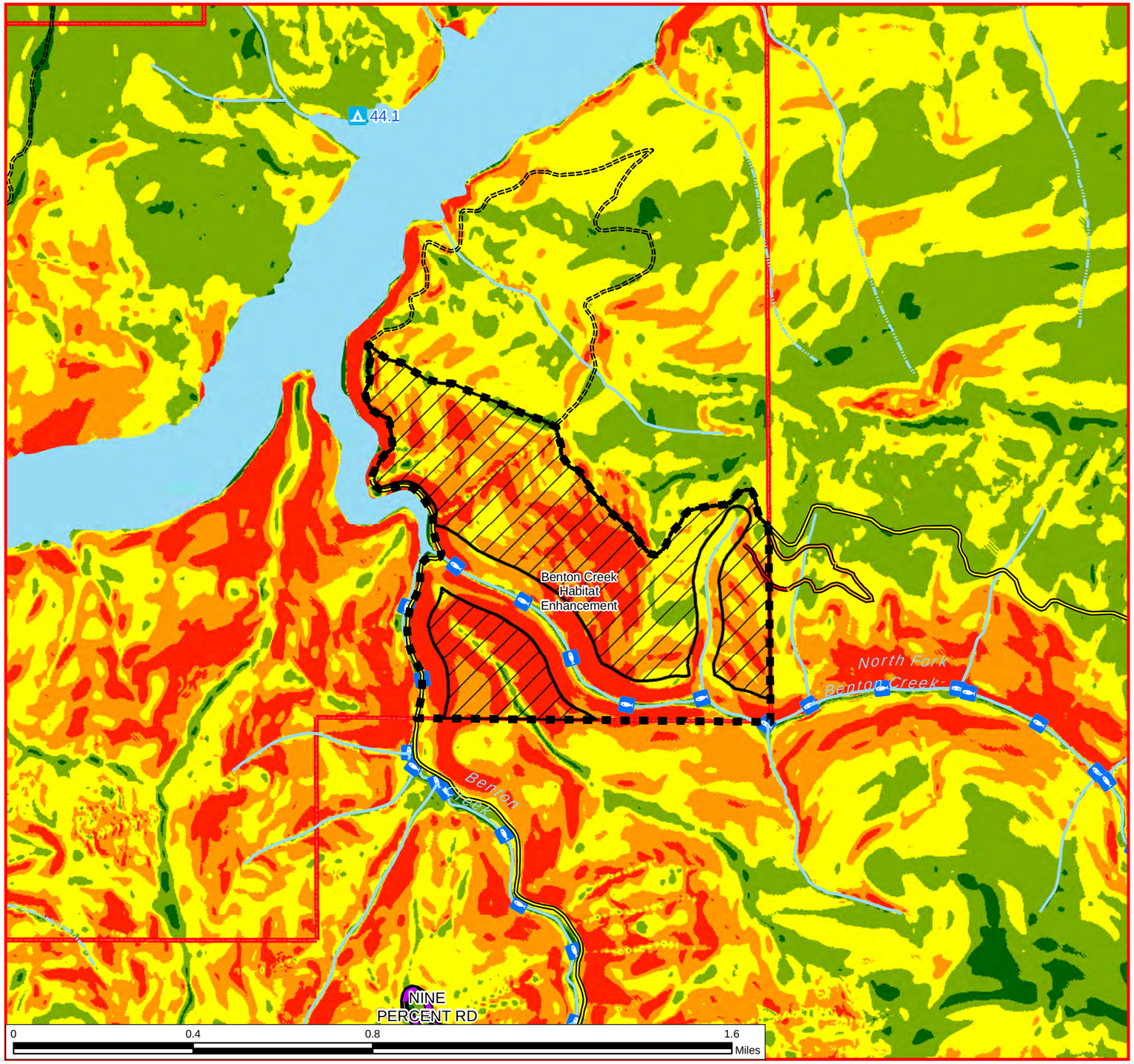
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT SLOPE CLASS

BIG EDDY NORTH RESTORATION

FY 2018

MAP PAGE: B01



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

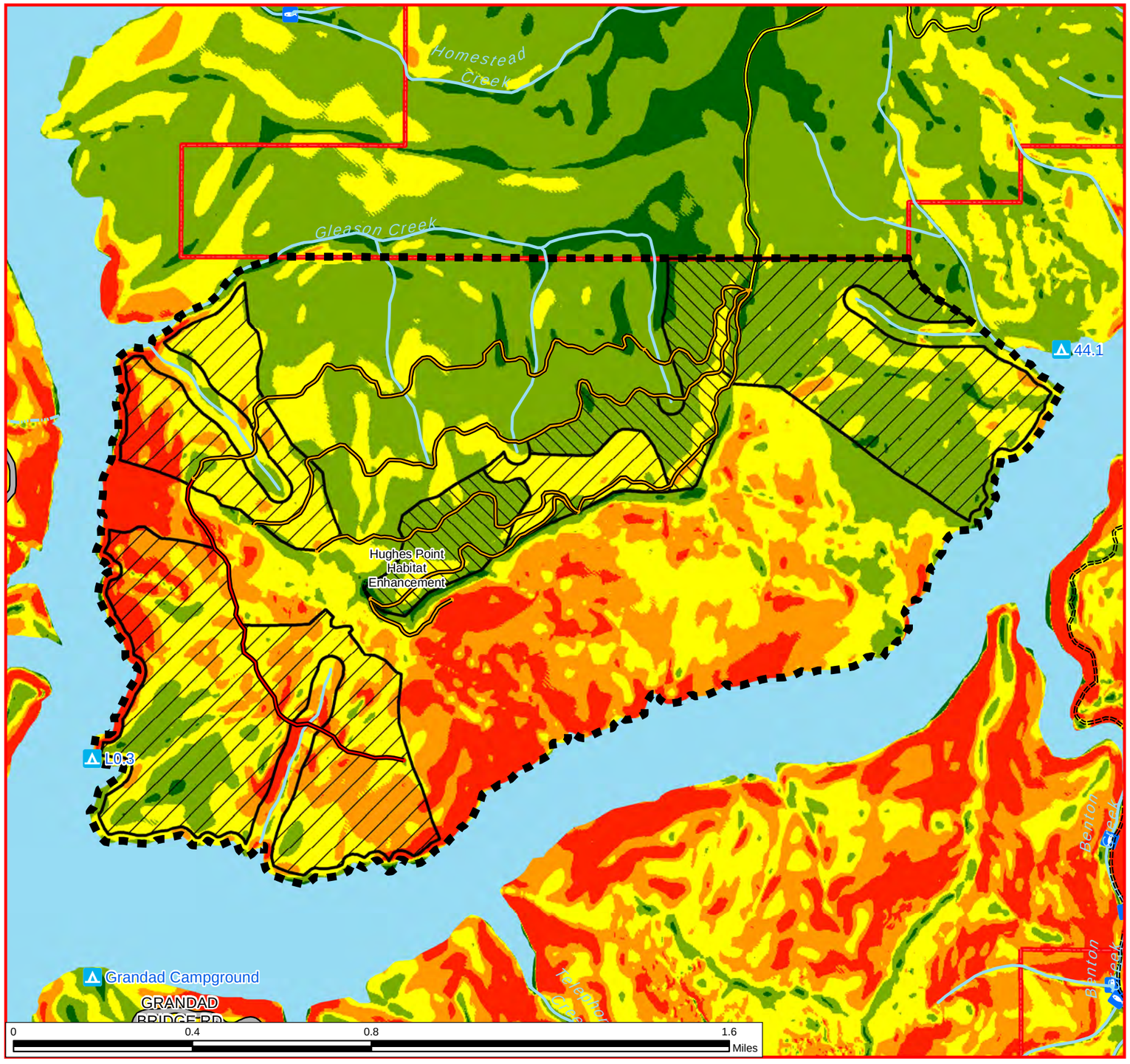
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT SLOPE CLASS

BENTON CREEK HABITAT ENHANCEMENT

FY 2019

MAP PAGE: C01



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

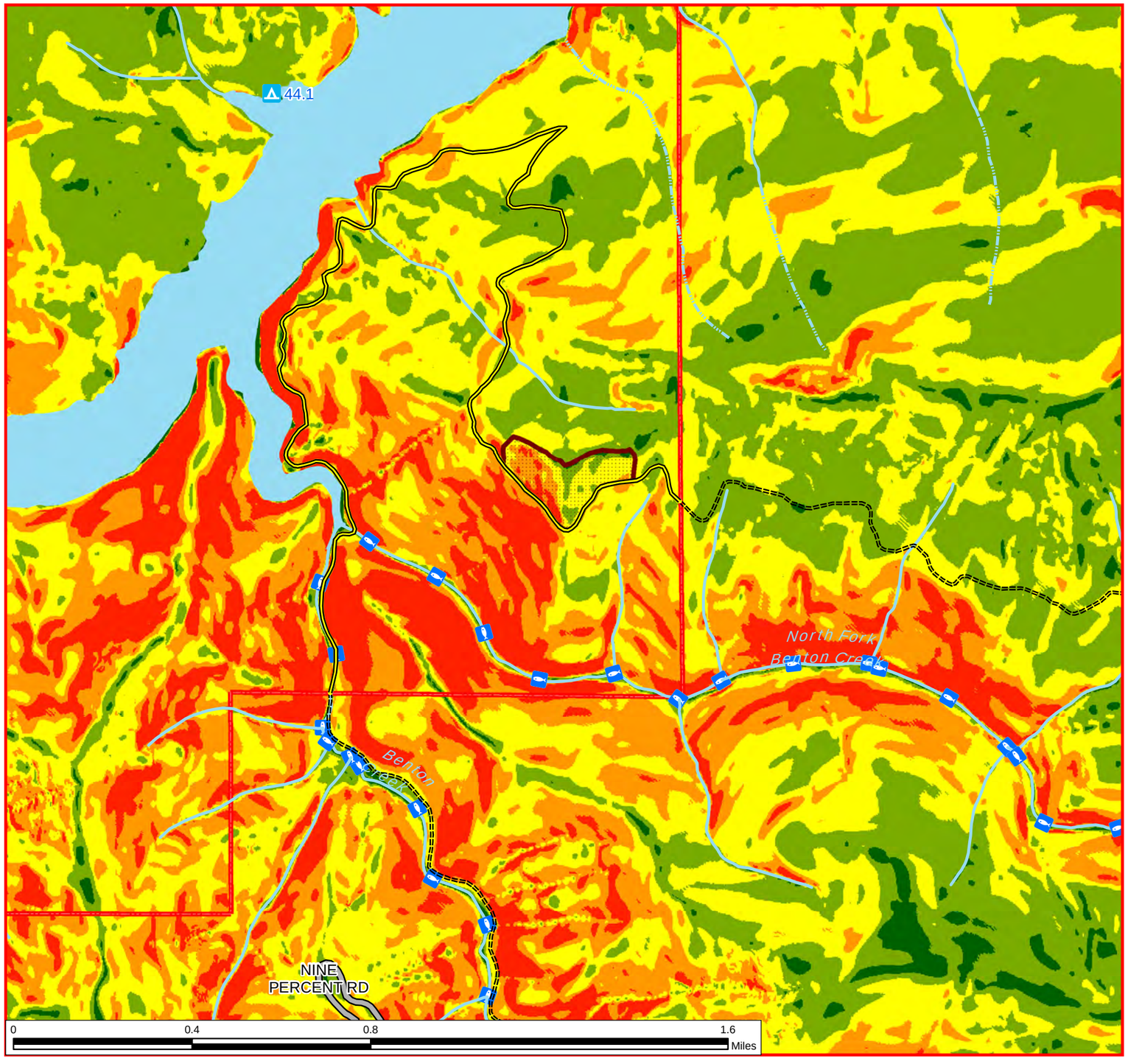
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT SLOPE CLASS

HUGHES POINT HABITAT ENHANCEMENT

FY 2020

MAP PAGE: C02



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

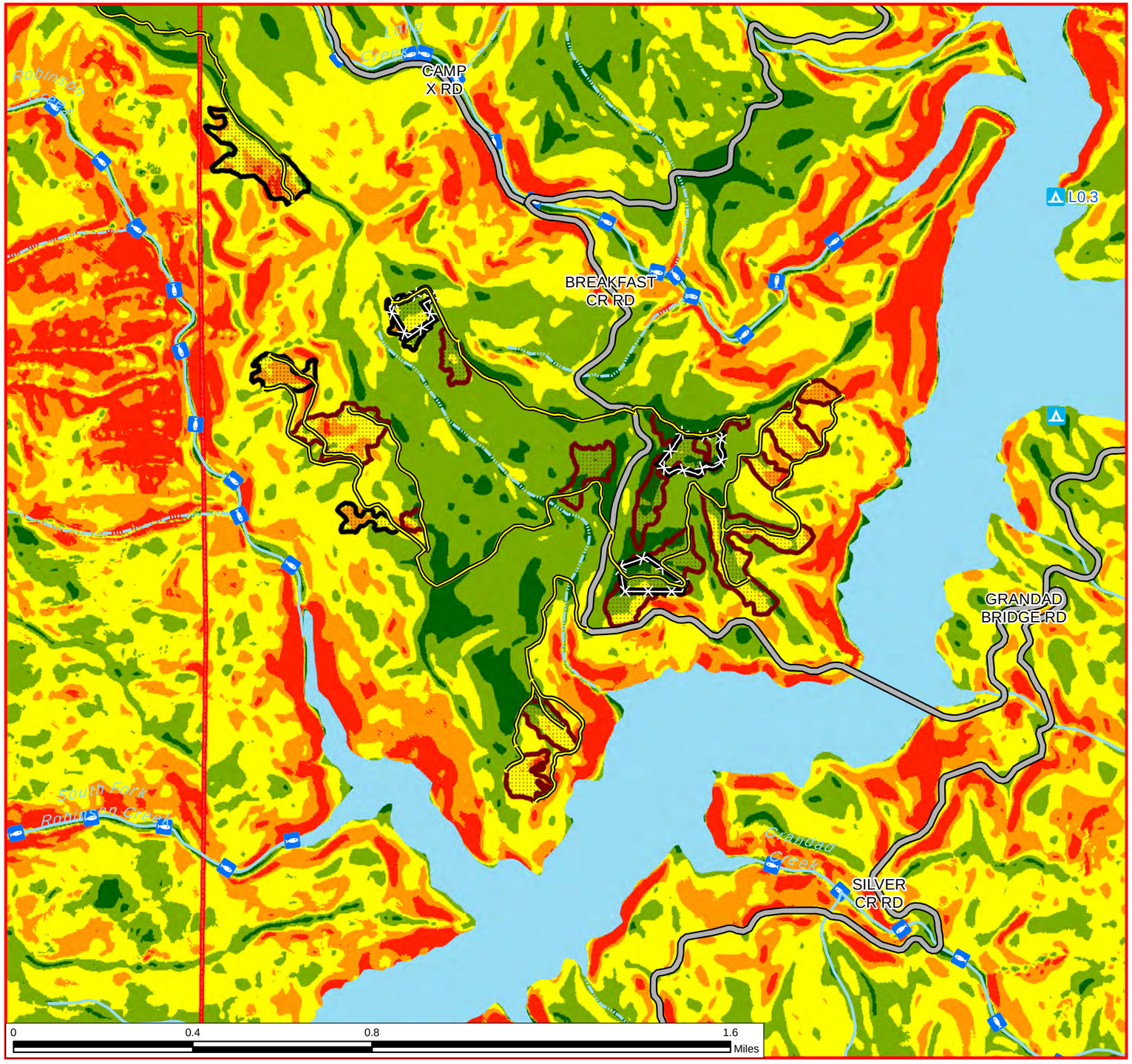
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
SLOPE CLASS
BENTON CR FORAGE ENHANCEMENT
FY 2015

MAP PAGE: D01



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

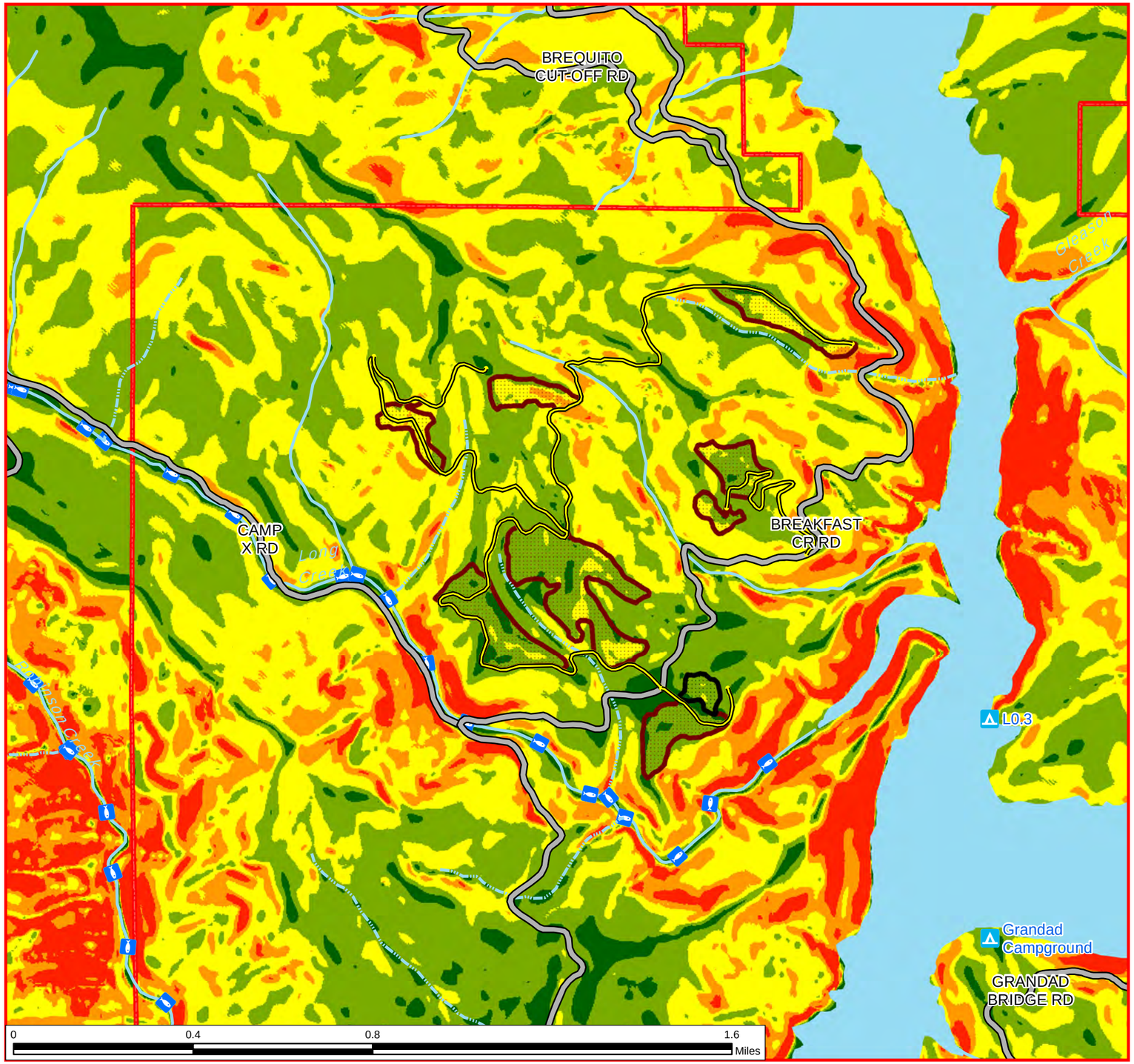
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT SLOPE CLASS

ROBINSON CR FORAGE ENHANCEMENT

FY 2016

MAP PAGE: D02



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

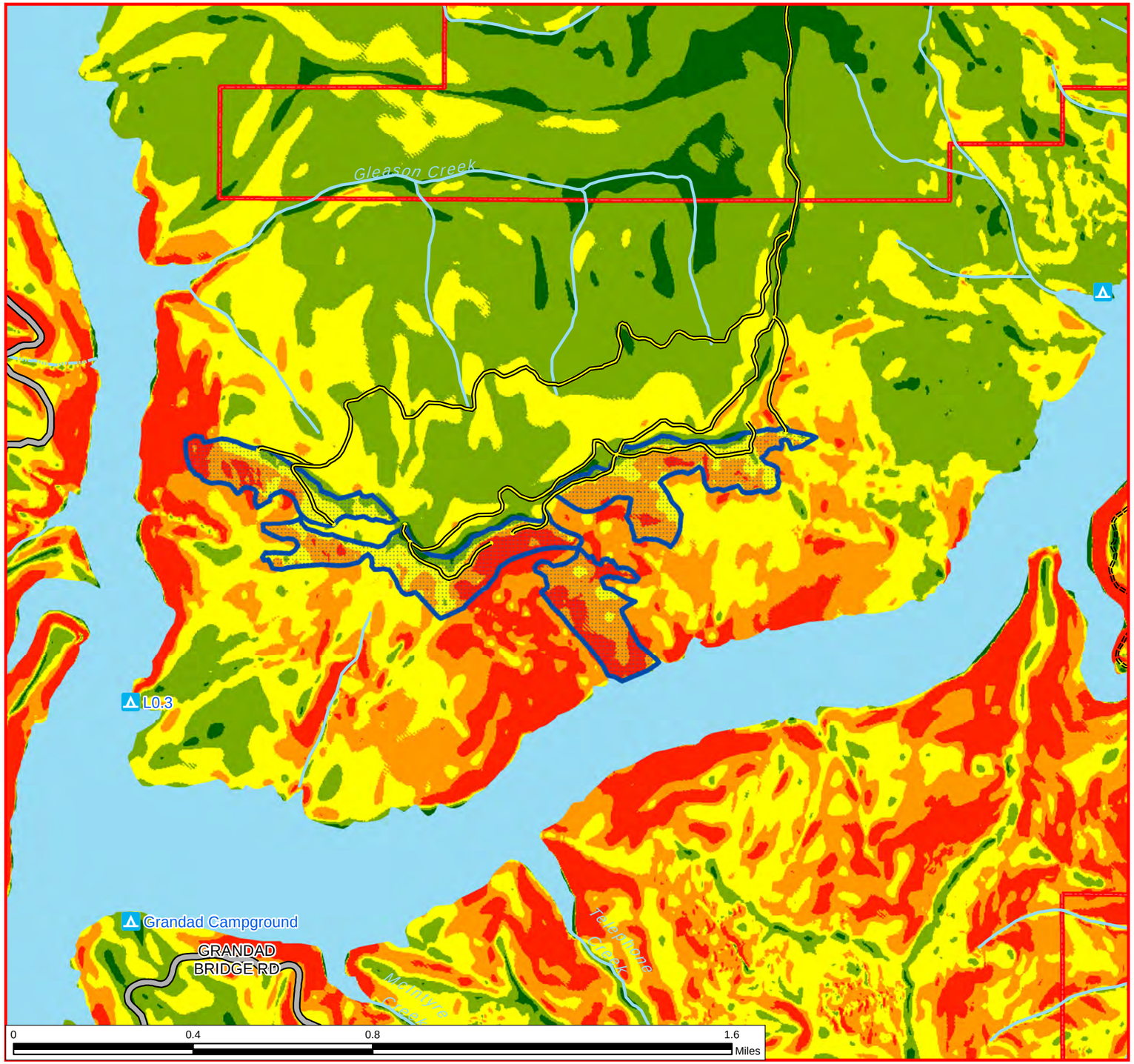
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT SLOPE CLASS

LONG CR FORAGE ENHANCEMENT

FY 2017

MAP PAGE: D03



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

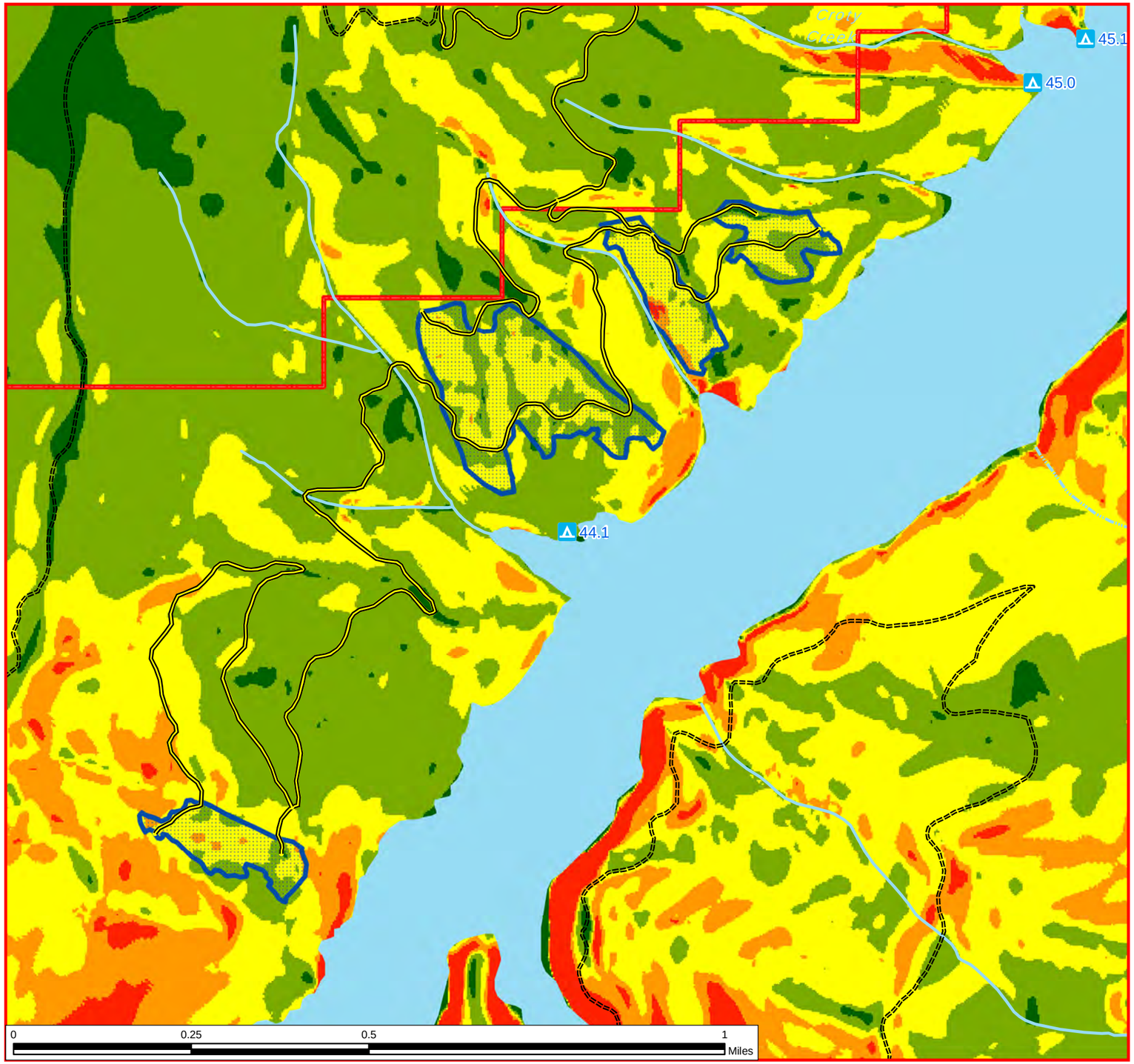
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT SLOPE CLASS

HUGHES POINT FORAGE ENHANCEMENT

FY 2018

MAP PAGE: D04



Map Legend

- Dworshak Boundary
- Forest Management Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Slope Percent

- 0 - 15%
- 15 - 35%
- 35 - 55%
- 55 - 70%
- > 70%

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin
Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT SLOPE CLASS

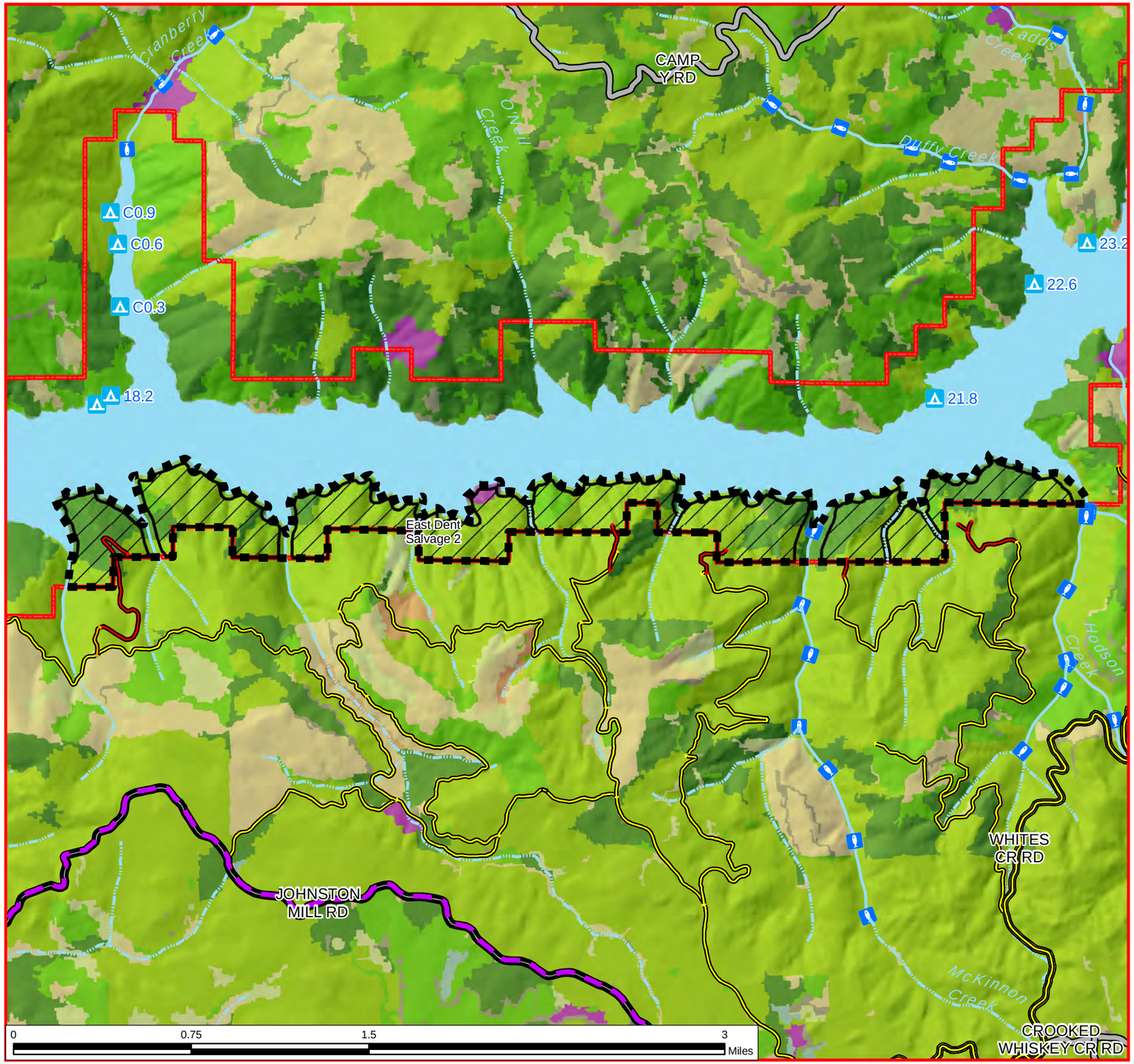
BOEHLS FORAGE ENHANCEMENT

FY 2018

MAP PAGE: D05

APPENDIX C-4

PROJECT FOREST COVER TYPE MAPS



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

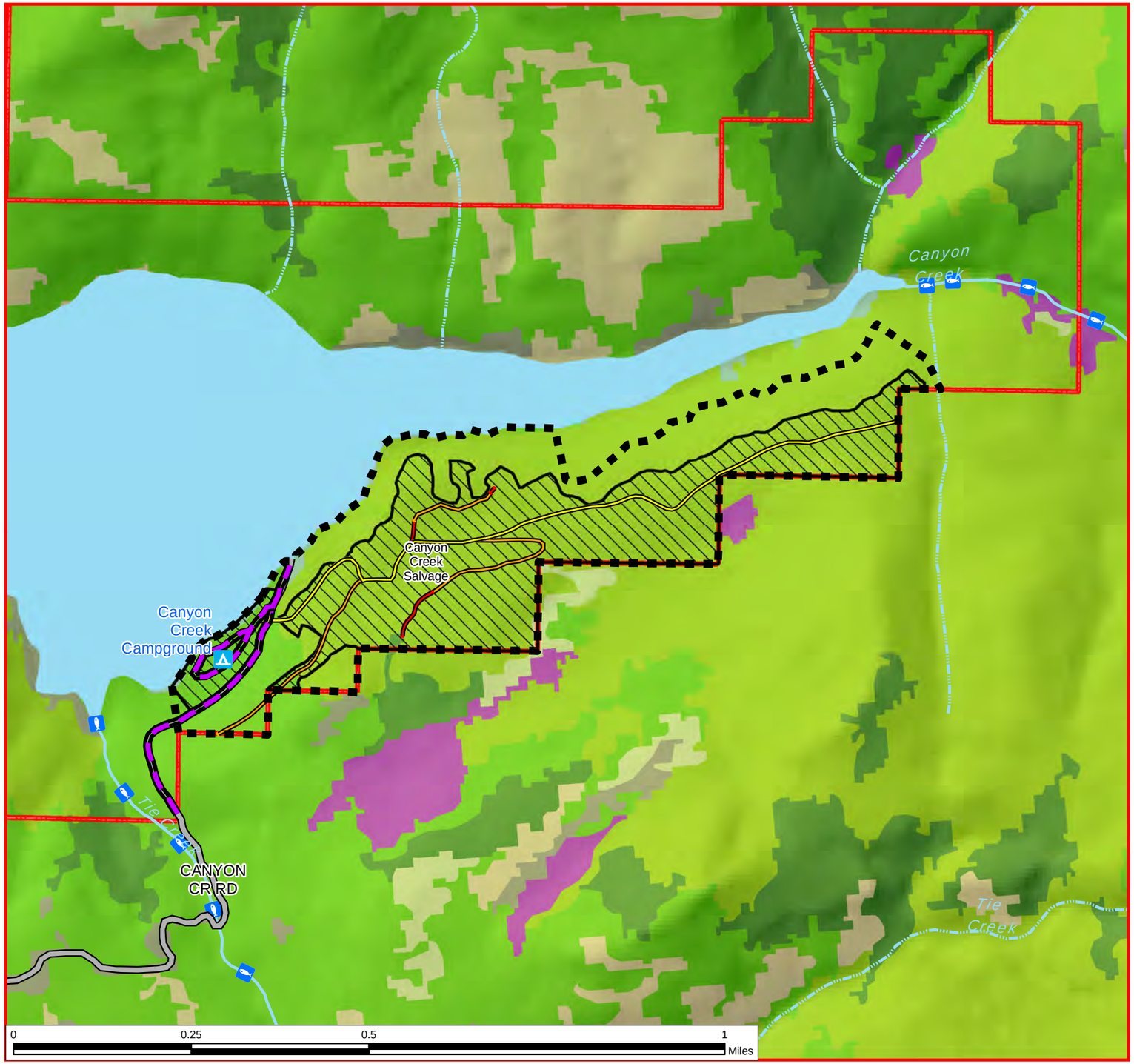
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N W E S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
East Dent Salvage 2
FY 2016

MAP PAGE: A01



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N W E S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Canyon Creek Salvage
FY 2015

MAP PAGE: A02

Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Dent Point Salvage
FY 2016

MAP PAGE: A03

Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

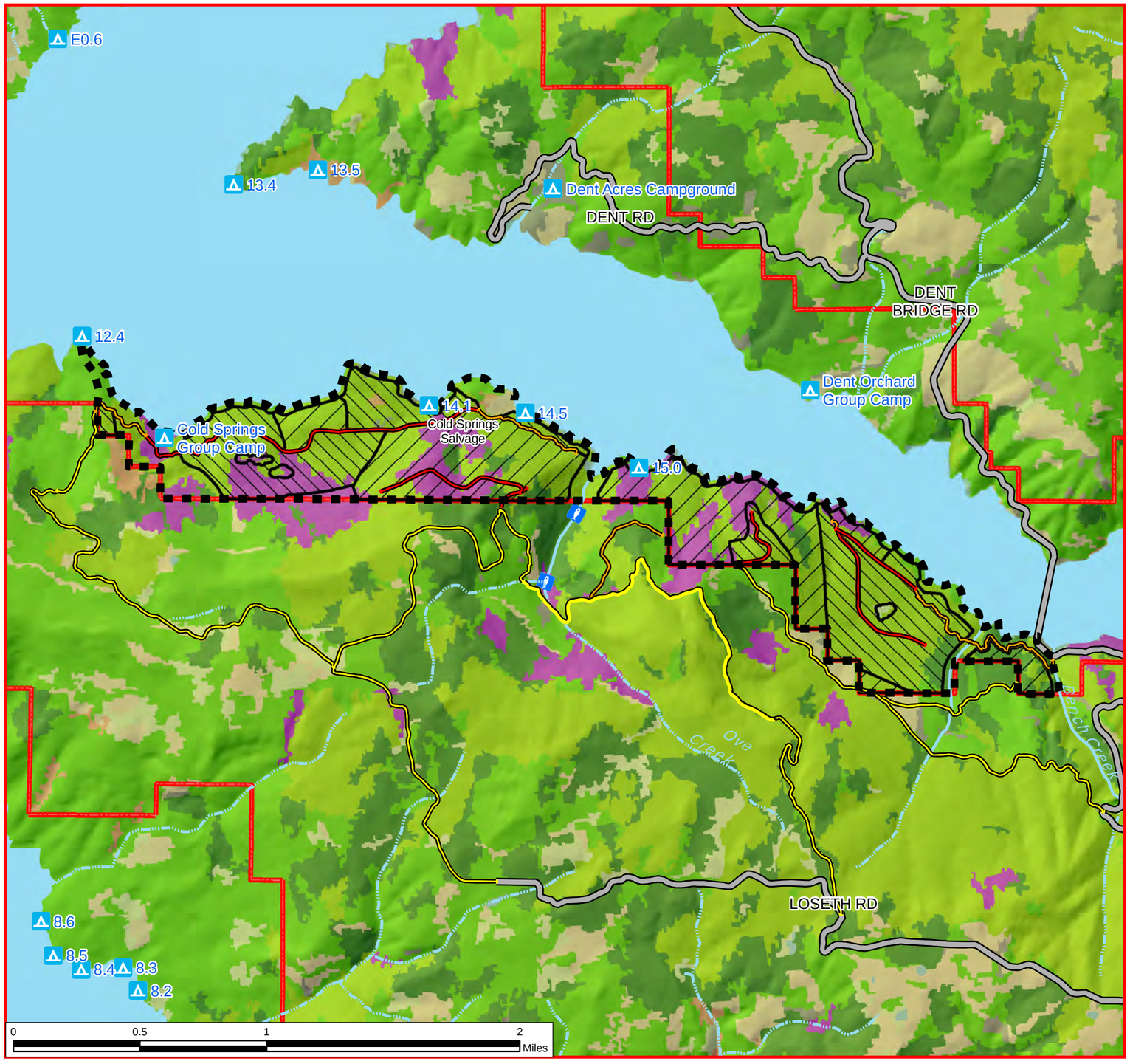
US Army Corps of Engineers
Walla Walla District

Building Strong ®

N
W E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Long Creek J Salvage
FY 2016

MAP PAGE: A04



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Cold Springs Salvage
FY 2017

MAP PAGE: A05

Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers
Walla Walla District

Building Strong ®

N
W E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
West Cranberry Salvage
FY 2017

MAP PAGE: A06

Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

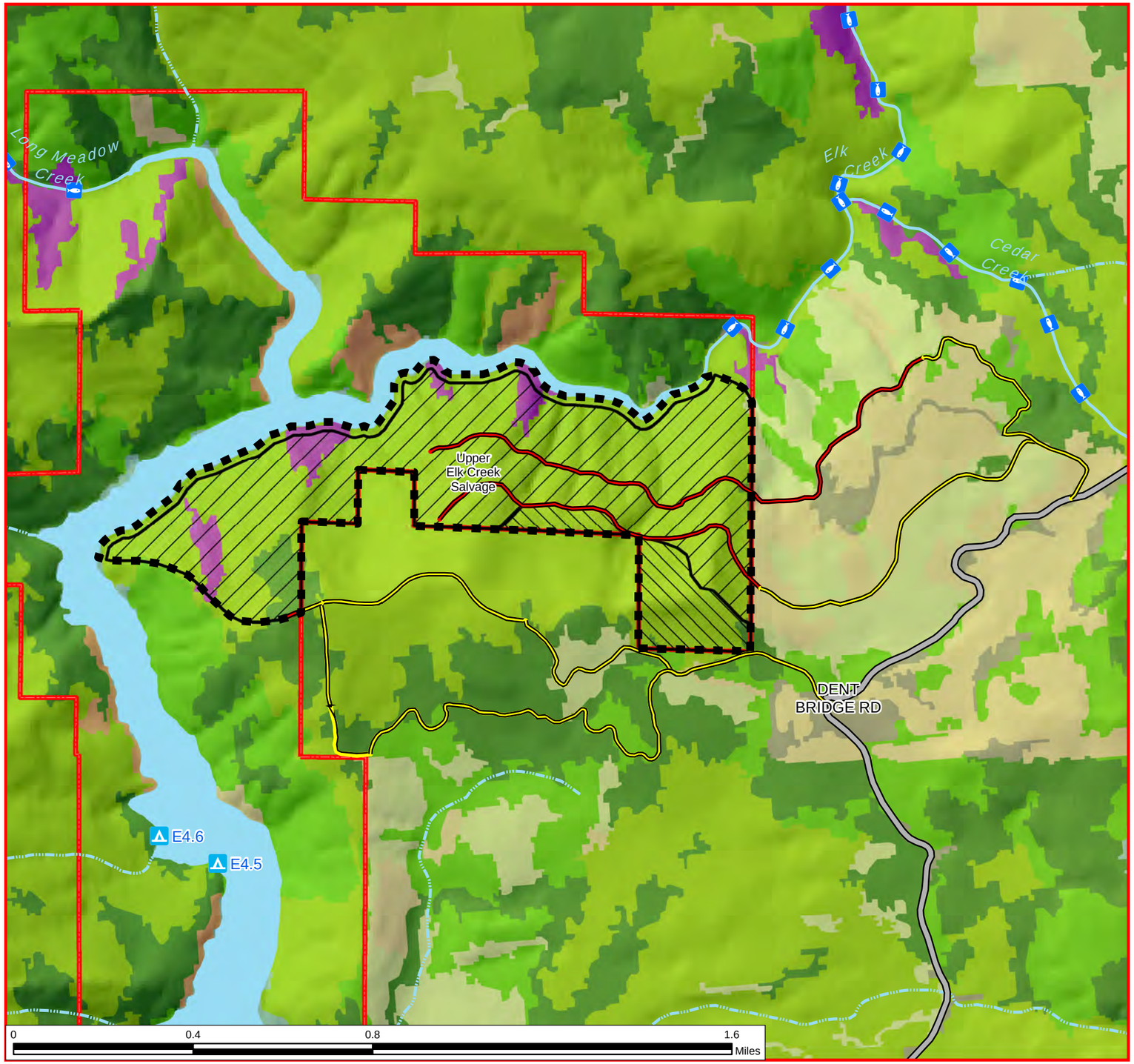
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Swamp Creek Forest Health
FY 2018

MAP PAGE: A07



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

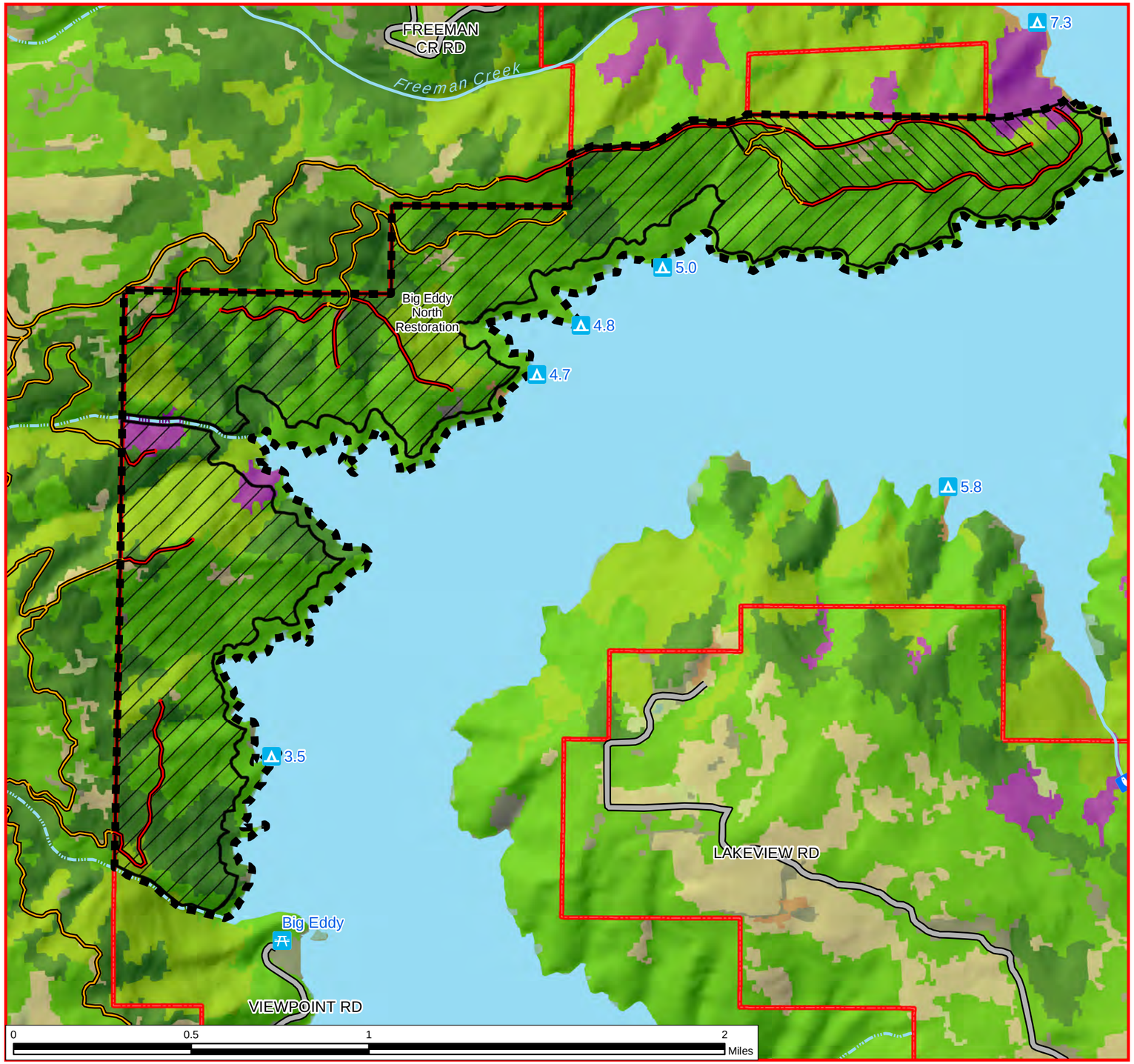
US Army Corps of Engineers
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Upper Elk Creek Salvage
FY 2018

MAP PAGE: A08



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

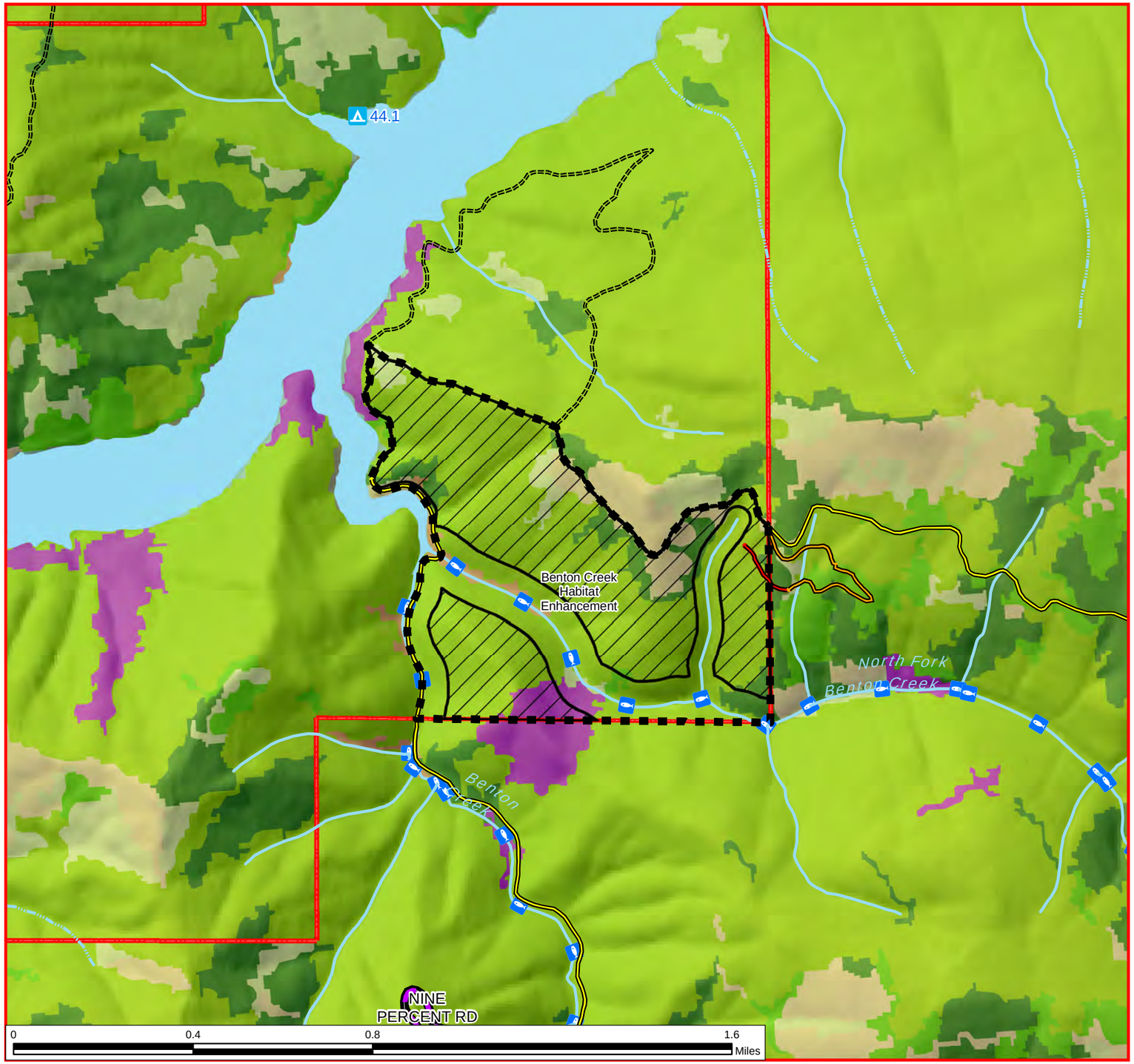
US Army Corps of Engineers
Walla Walla District

Building Strong ®

N
W E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Big Eddy North Restoration
FY 2018

MAP PAGE: B01



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

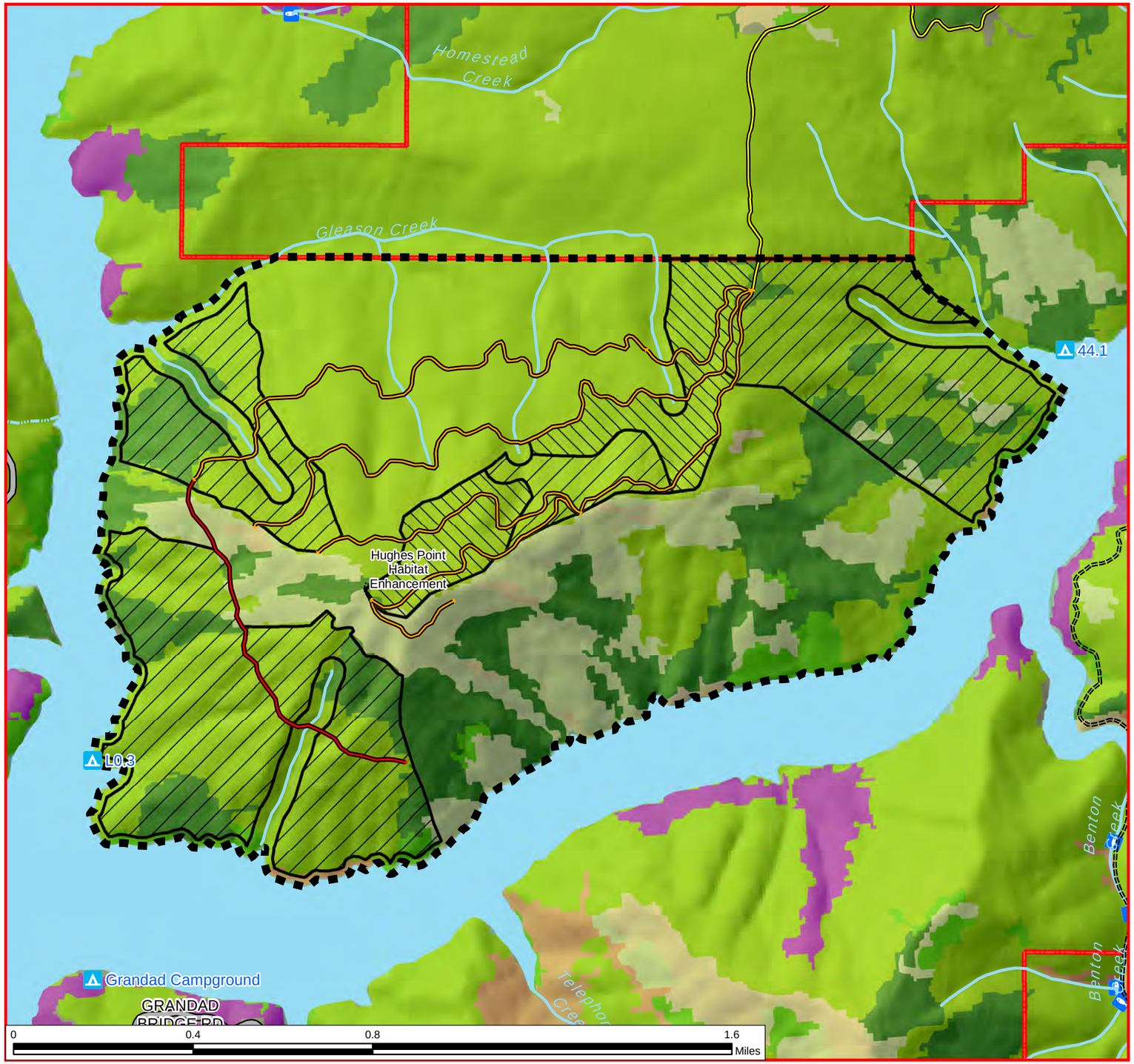
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Benton Creek Habitat Enhancement
FY 2019

MAP PAGE: C01



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

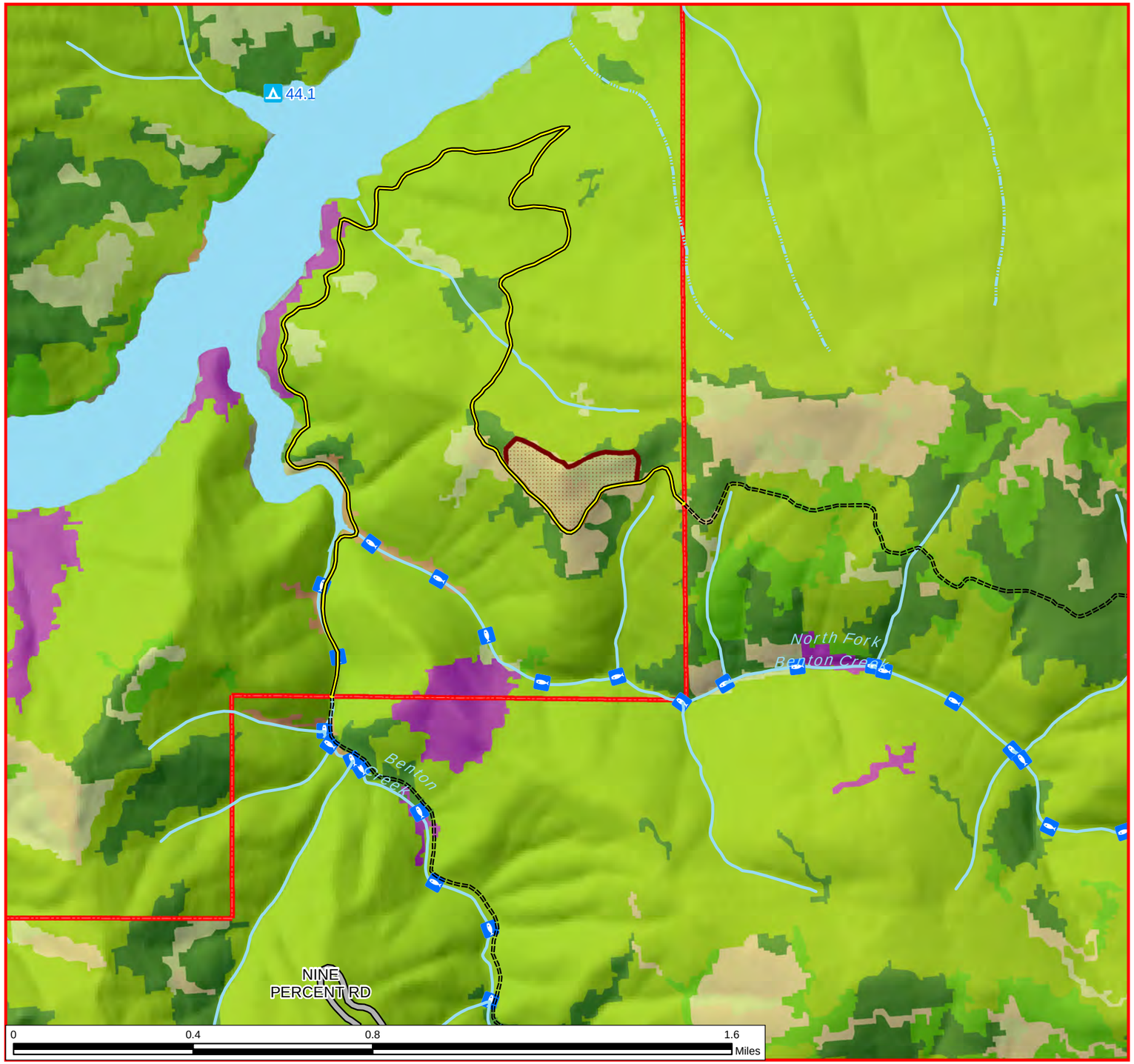
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Hughes Point Habitat Enhancement
FY 2020

MAP PAGE: C02



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

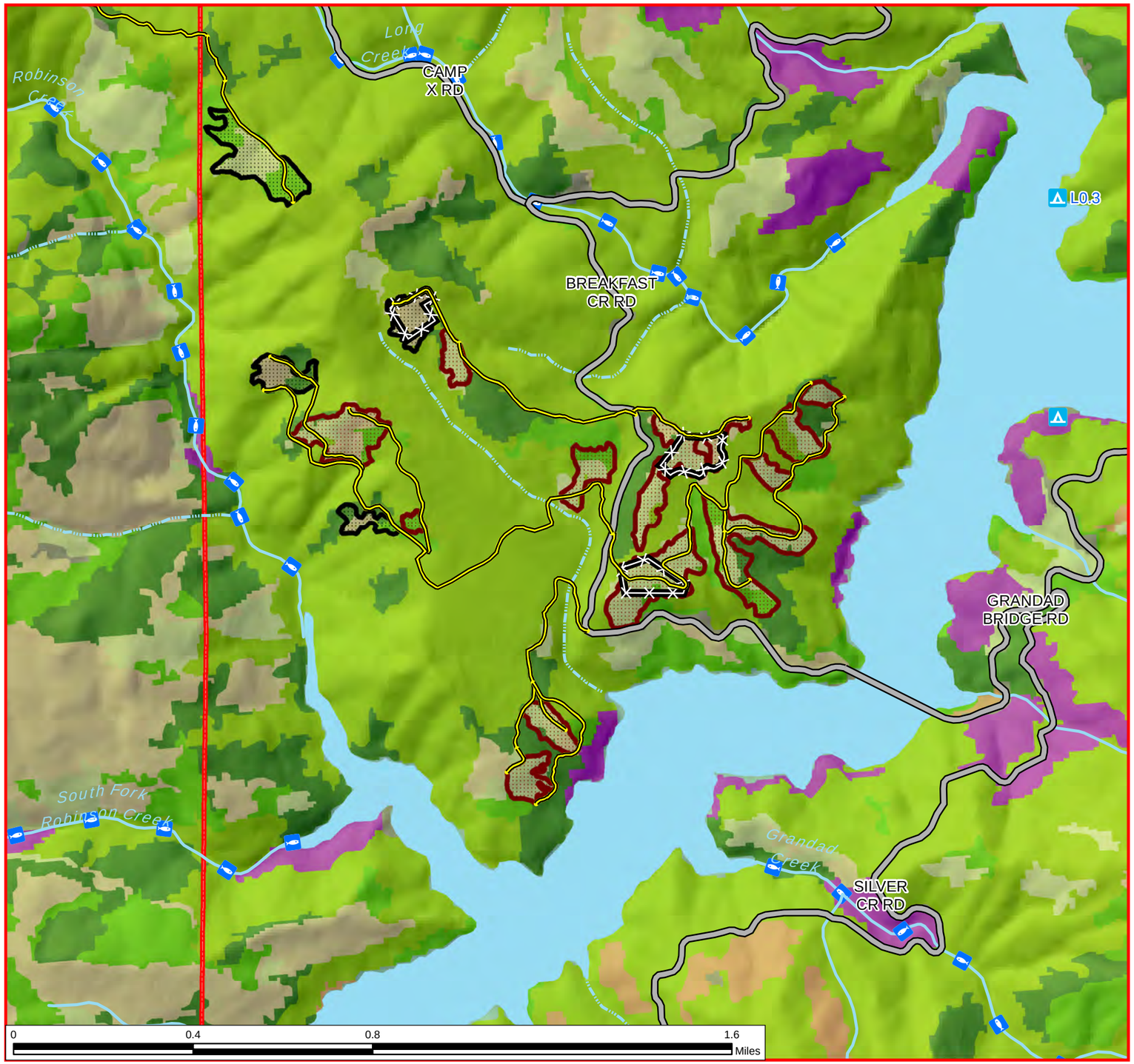
US Army Corps of Engineers
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Benton Cr Forage Enhancement
FY 2015

MAP PAGE: D01



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

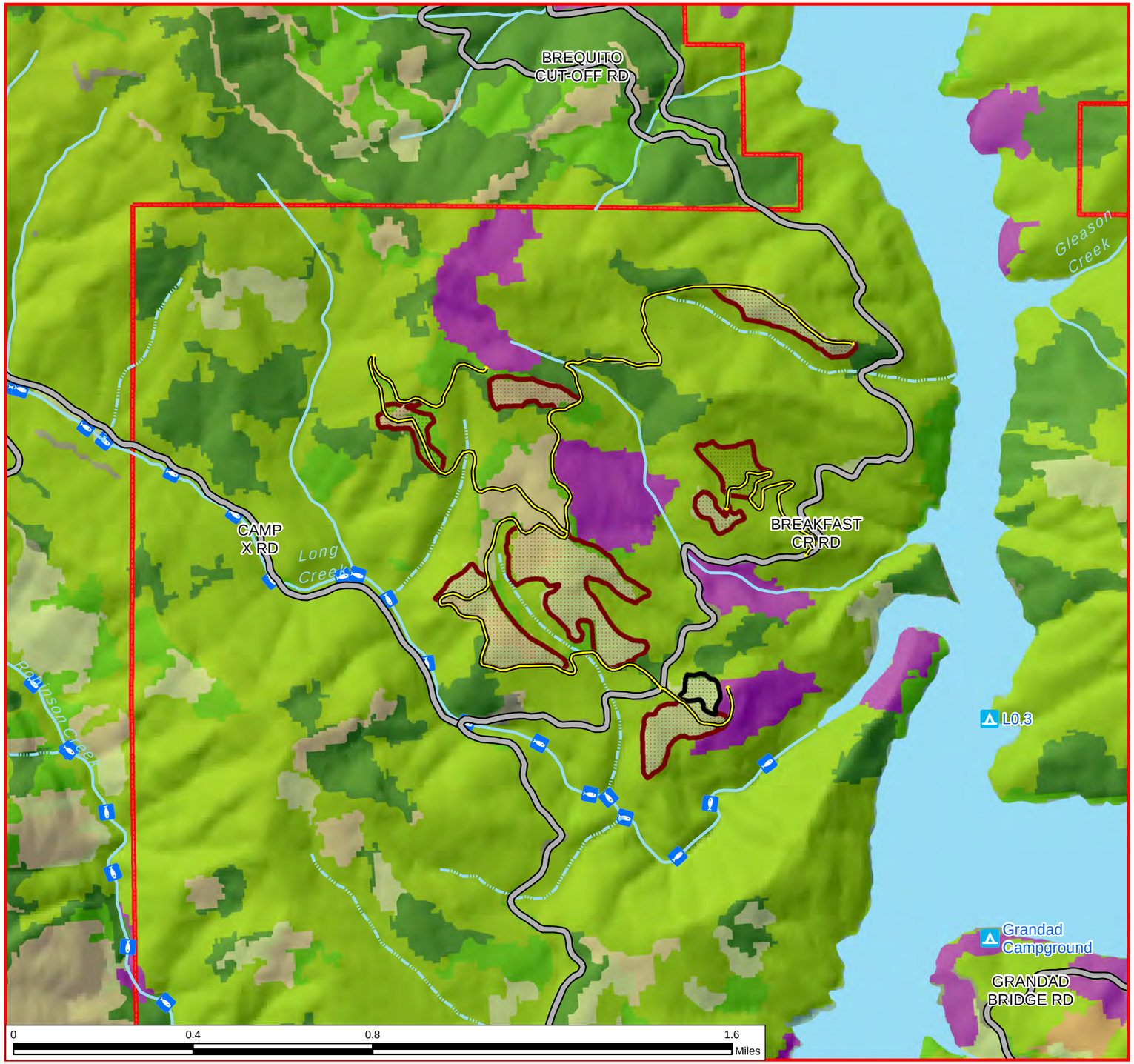
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Robinson Cr Forage Enhancement
FY 2016

MAP PAGE: D02



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

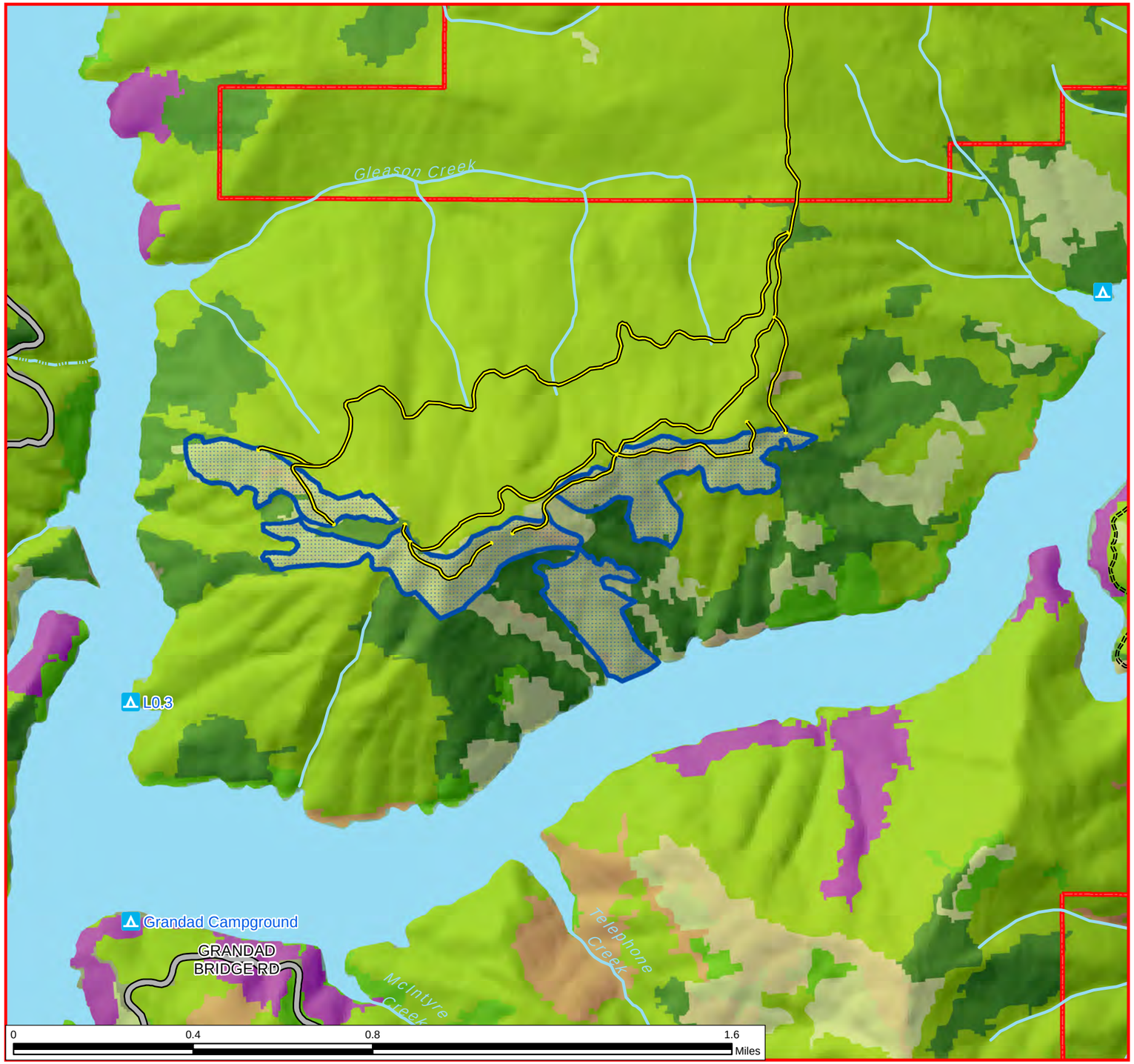
US Army Corps of Engineers
Walla Walla District

Building Strong ®

N
W E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Long Cr Forage Enhancement
FY 2017

MAP PAGE: D03



Map Legend

Dworshak Boundary
Forest Mgt Project
Elk Exclosure Fence

Stream Type, Fish Presence
Perennial Stream, Yes
Perennial Stream, No
Intermittent Stream

Timber Harvest Unit
Cable
Tractor

Browse Planting Area
Baskets Only
Planting / Baskets
Seeding / Baskets

Planned Road Action
Rural - Minor Mtc
Service - Minor Mtc
Service - Reconstruction
Service - New Construction
Public

Dominant Cover Type
Herbaceous
Shrub
Hardwood Mix
Ponderosa Pine
Douglas fir
Grand Fir
Western Red Cedar
Sparse Vegetation
Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

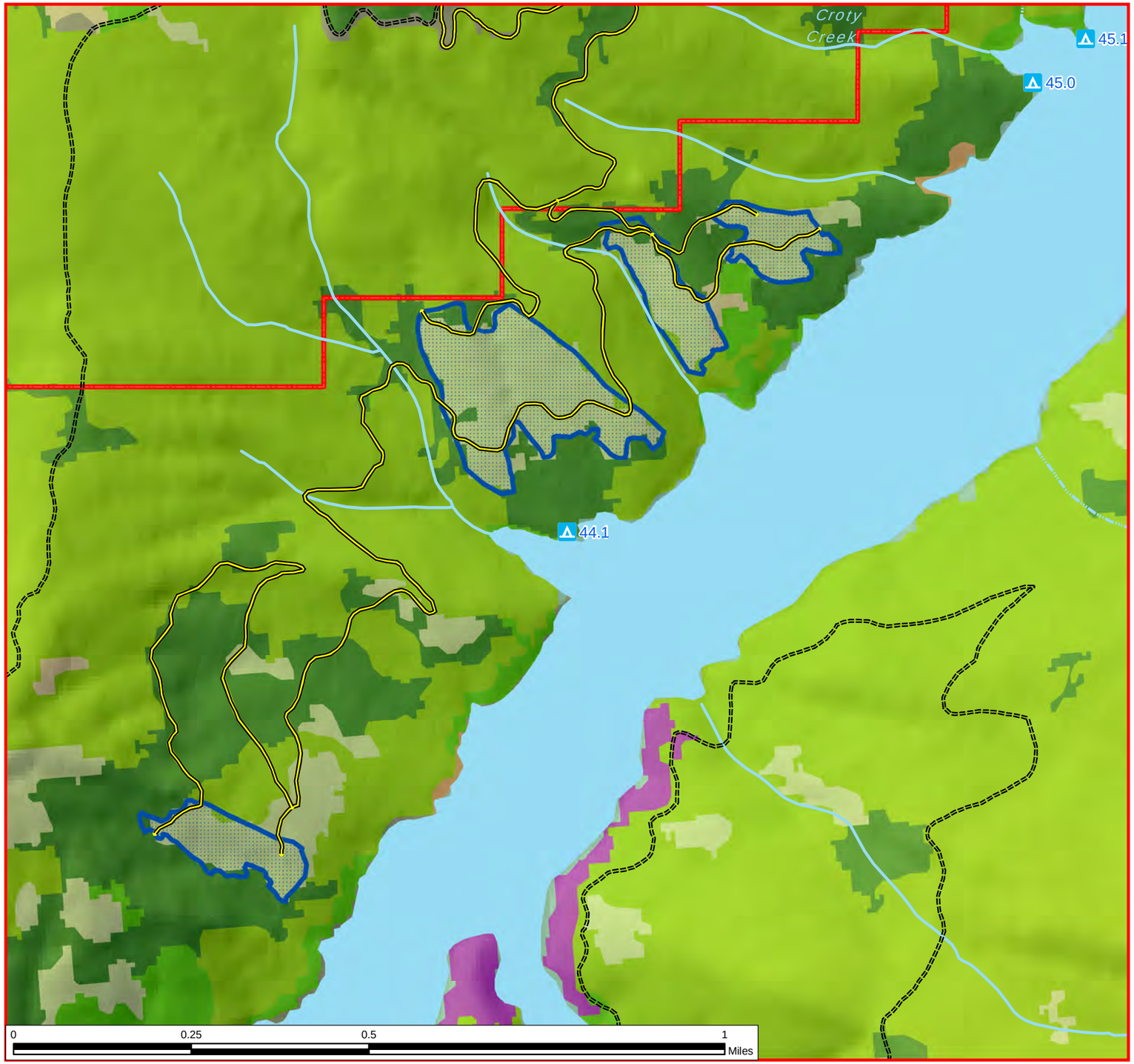
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Hughes Point Forage Enhancement
FY 2018

MAP PAGE: D04



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

Dominant Cover Type

- Herbaceous
- Shrub
- Hardwood Mix
- Ponderosa Pine
- Douglas fir
- Grand Fir
- Western Red Cedar
- Sparse Vegetation
- Water

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers
Walla Walla District

Building Strong ®

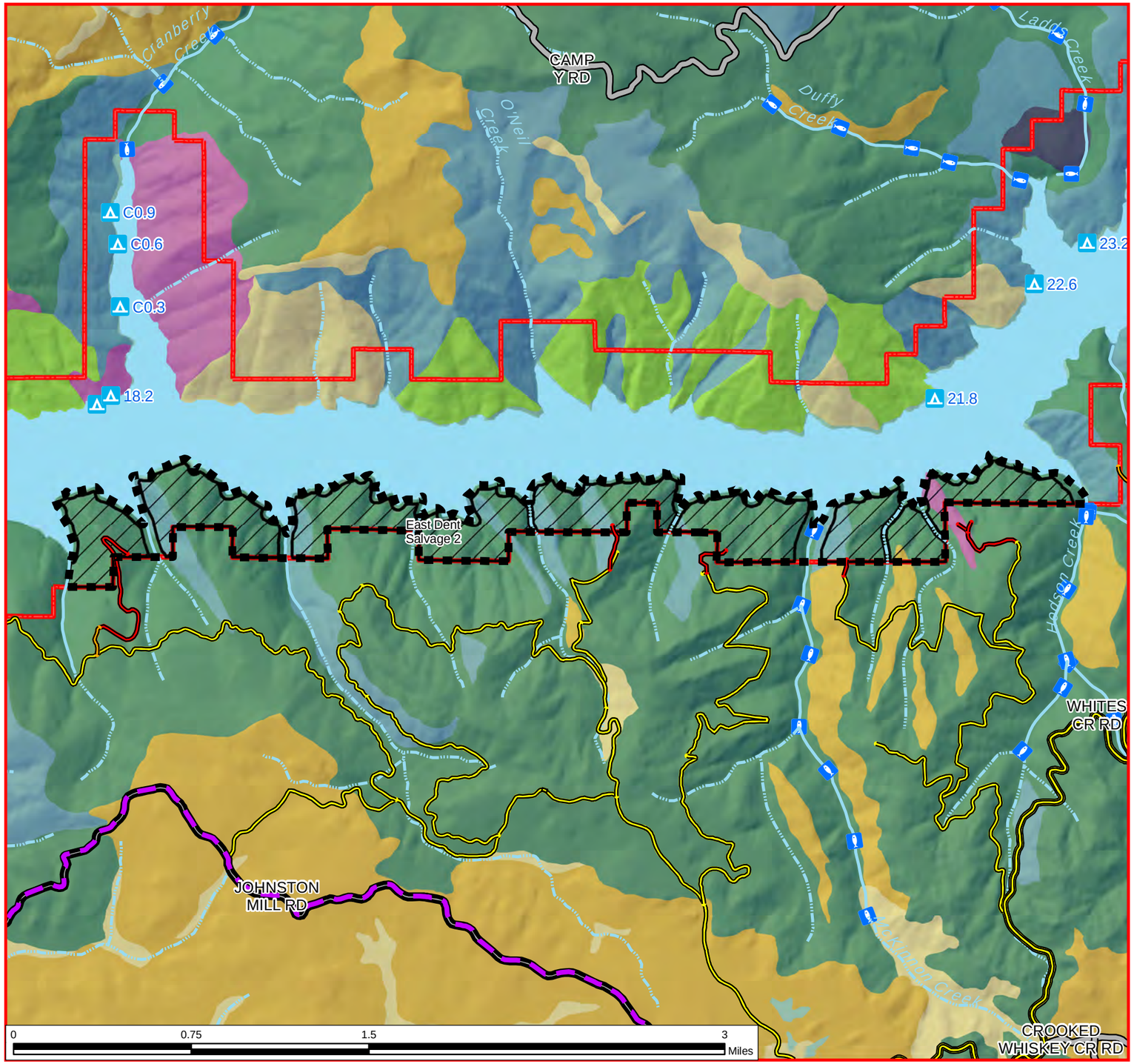
N
W E
S

DWORSHAK VEGETATION MANAGEMENT
DOMINANT COVER TYPES
Boehls Forage Enhancement
FY 2018

MAP PAGE: D05

APPENDIX C-5

PROJECT FOREST HABITAT TYPE MAPS



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

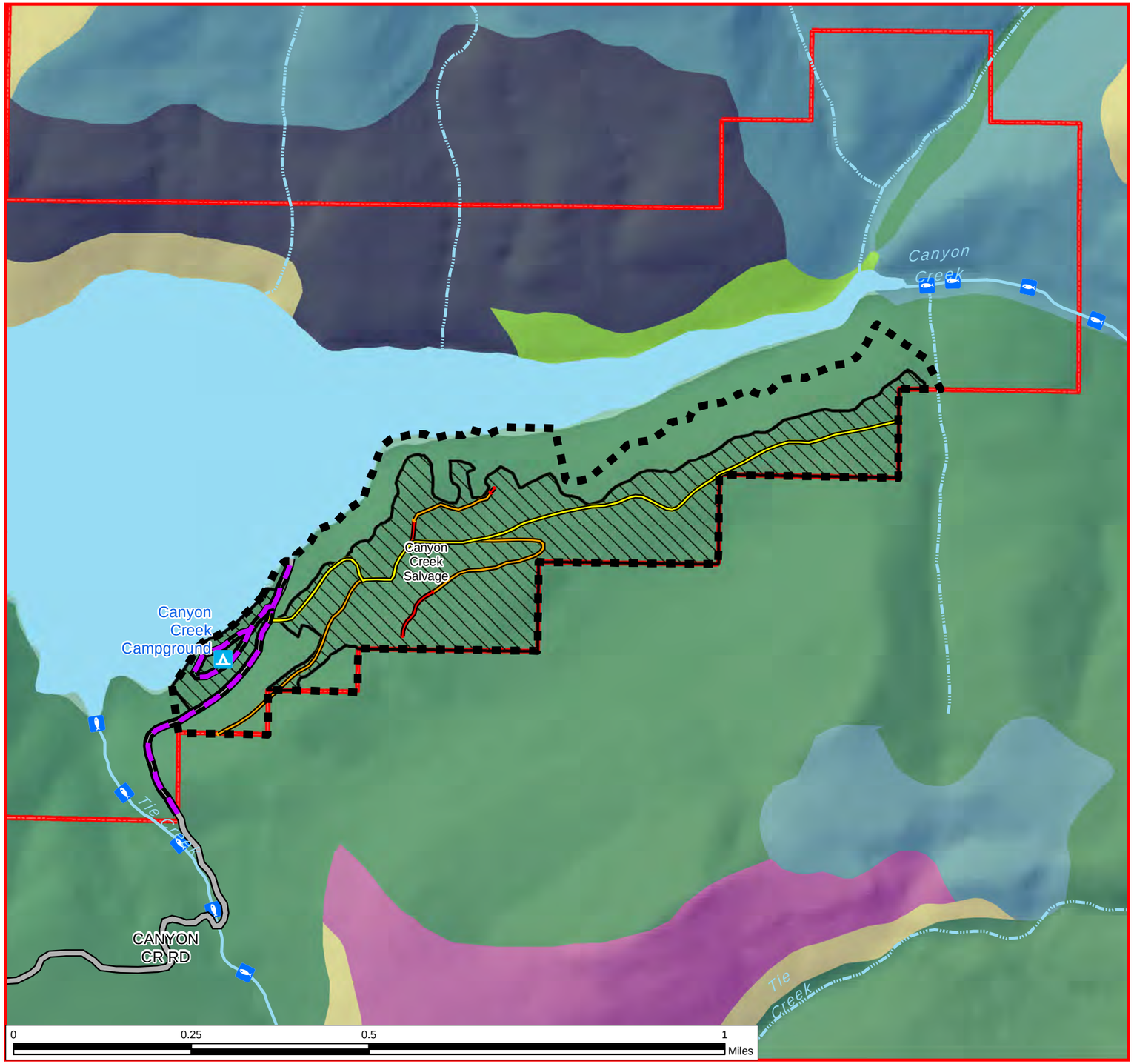
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

EAST DENT SALVAGE 2

FY 2016

MAP PAGE: A01



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

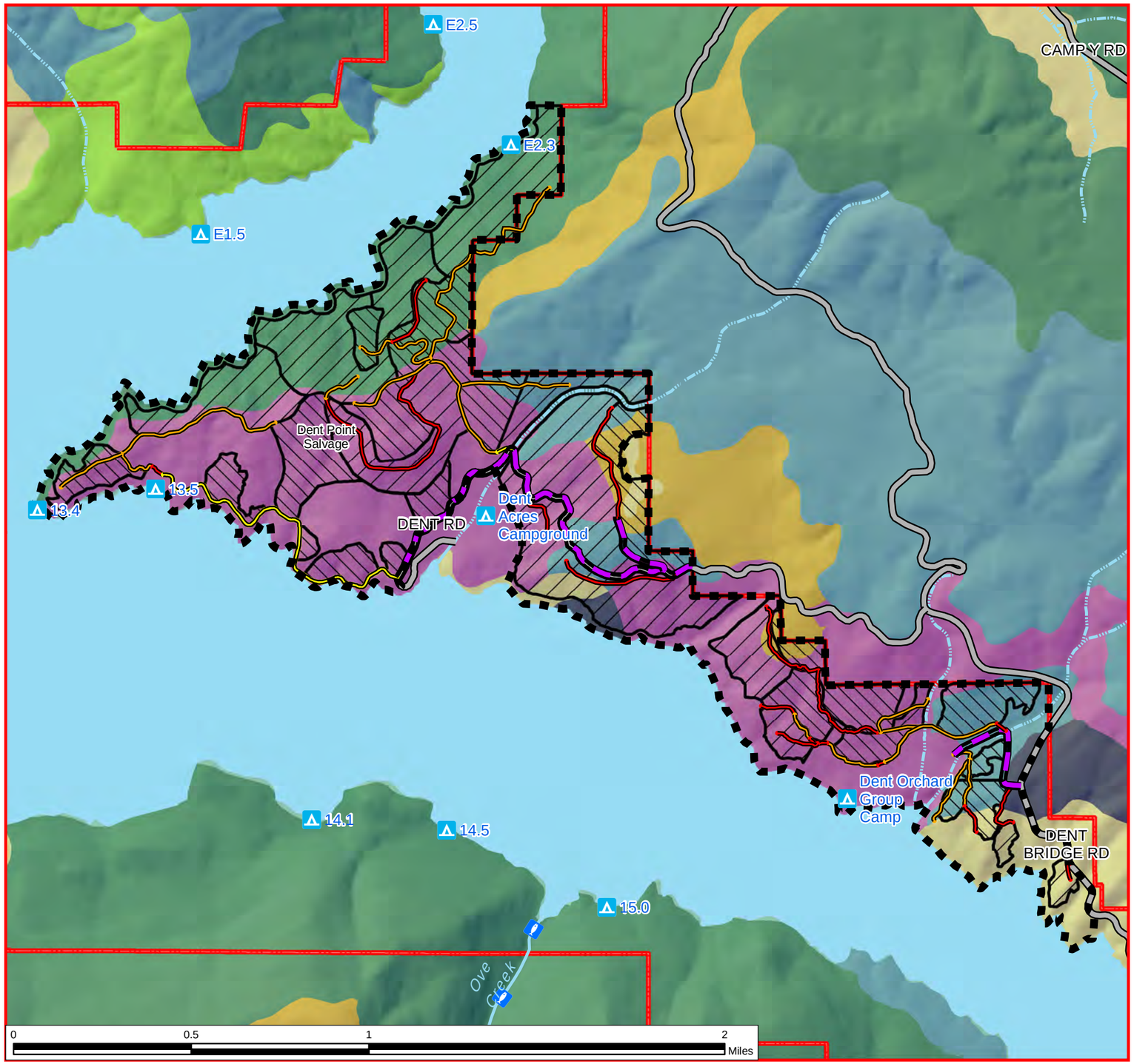
N
W E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

CANYON CREEK SALVAGE

FY 2015

MAP PAGE: A02



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

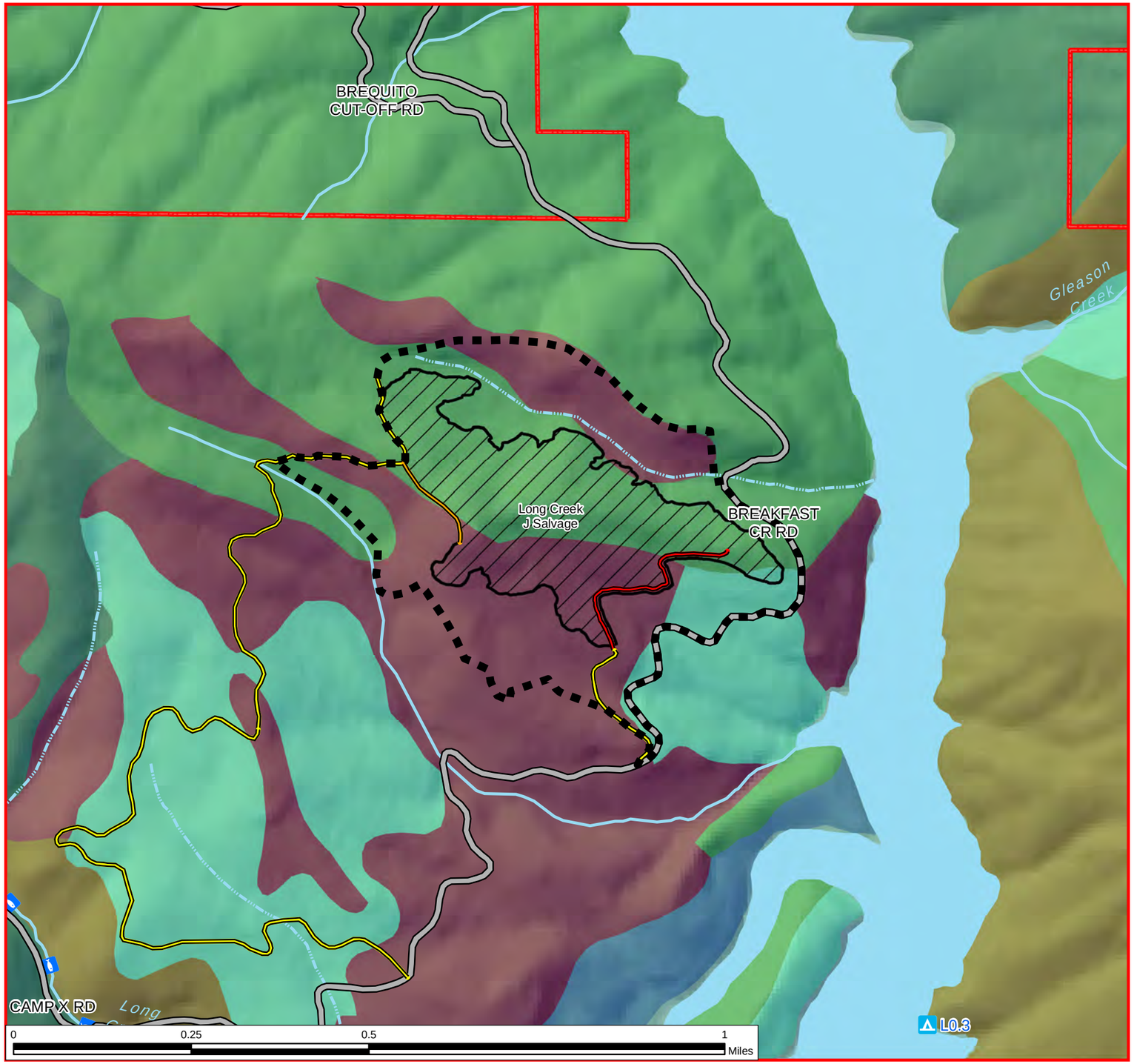
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

DENT POINT SALVAGE

FY 2016

MAP PAGE: A03



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

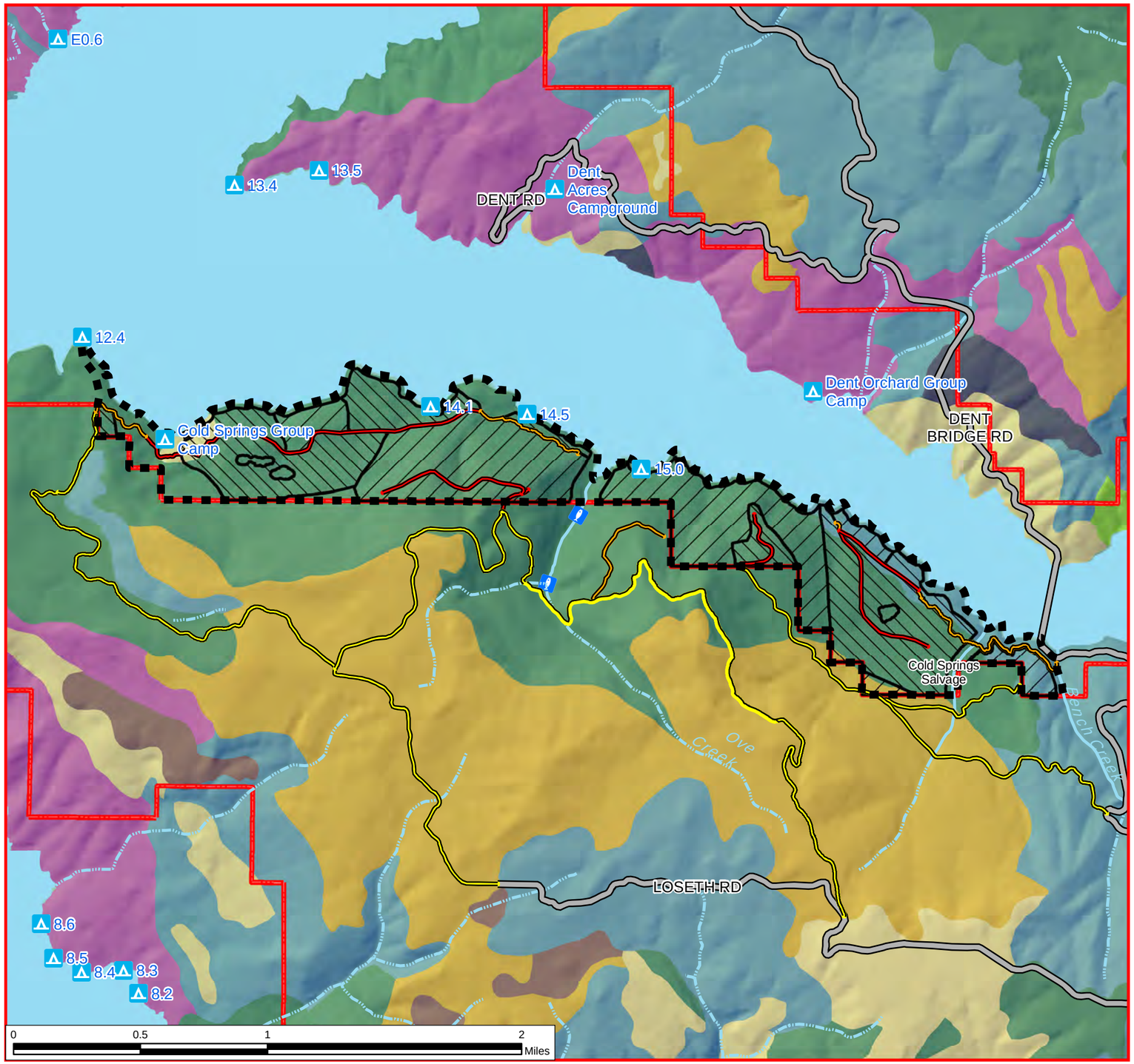
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

LONG CREEK J SALVAGE

FY 2016

MAP PAGE: A04



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

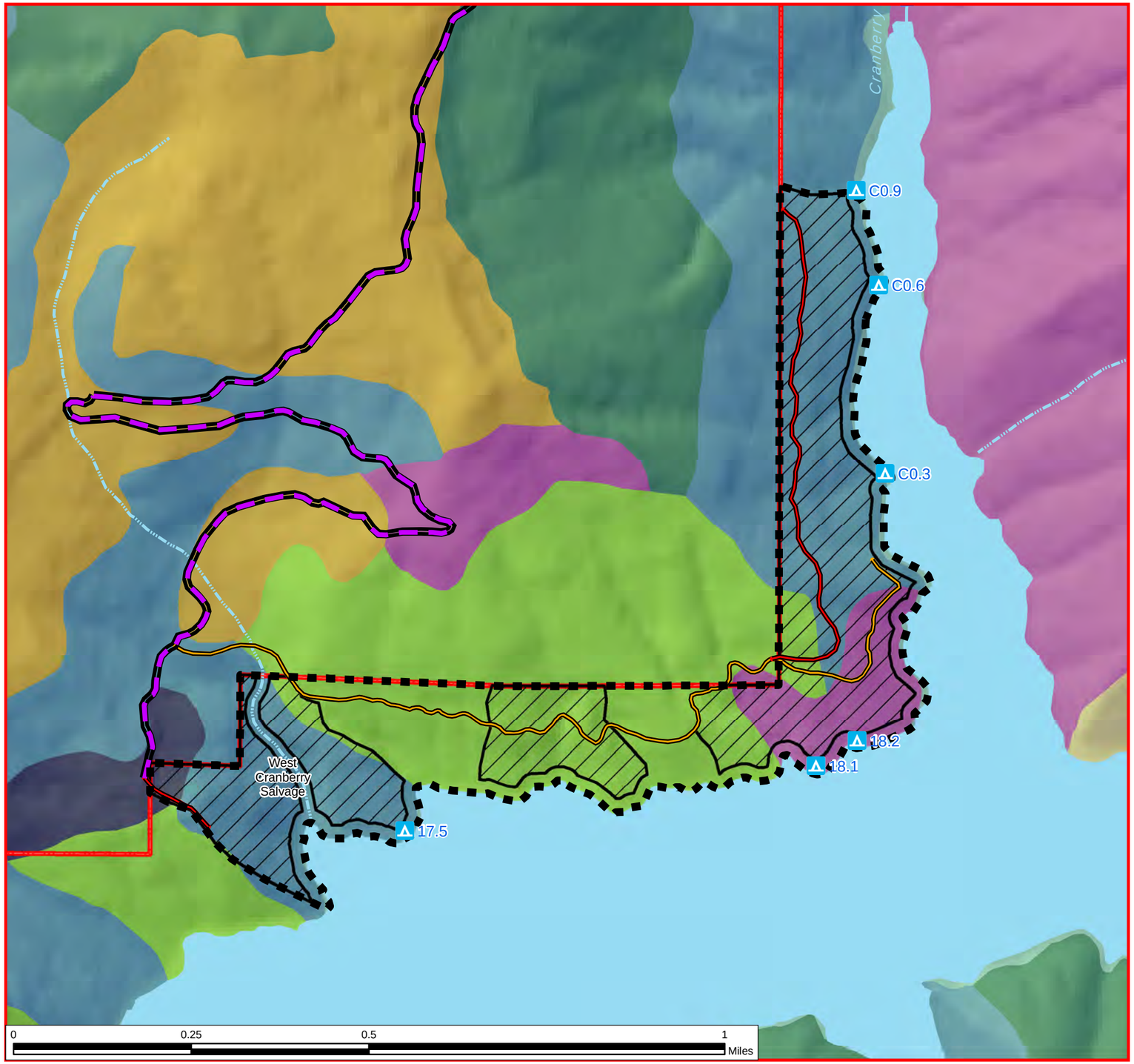
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

COLD SPRINGS SALVAGE

FY 2017

MAP PAGE: A05



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers®
Walla Walla District

Building Strong ®

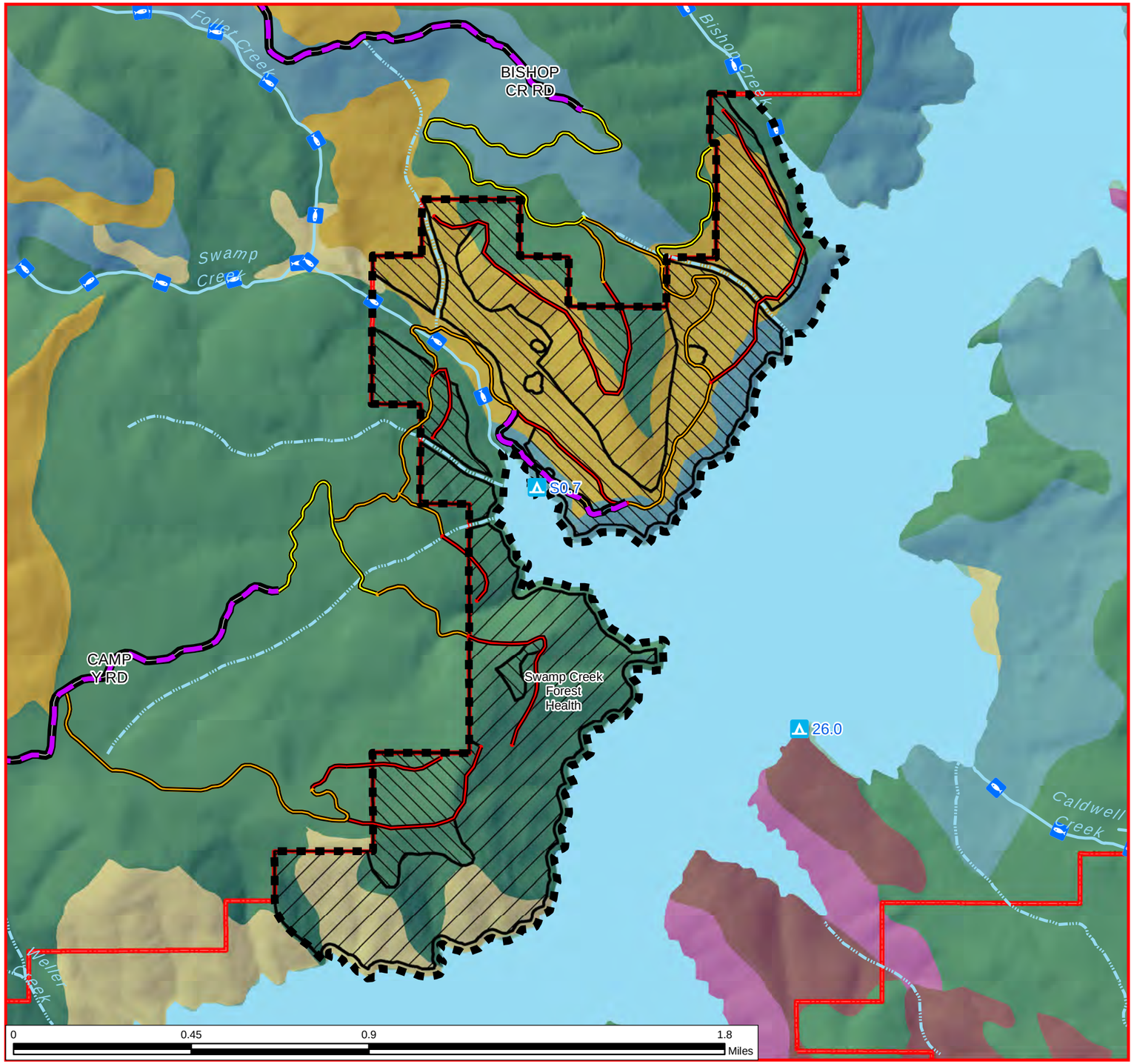
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

WEST CRANBERRY SALVAGE

FY 2017

MAP PAGE: A06



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.00000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

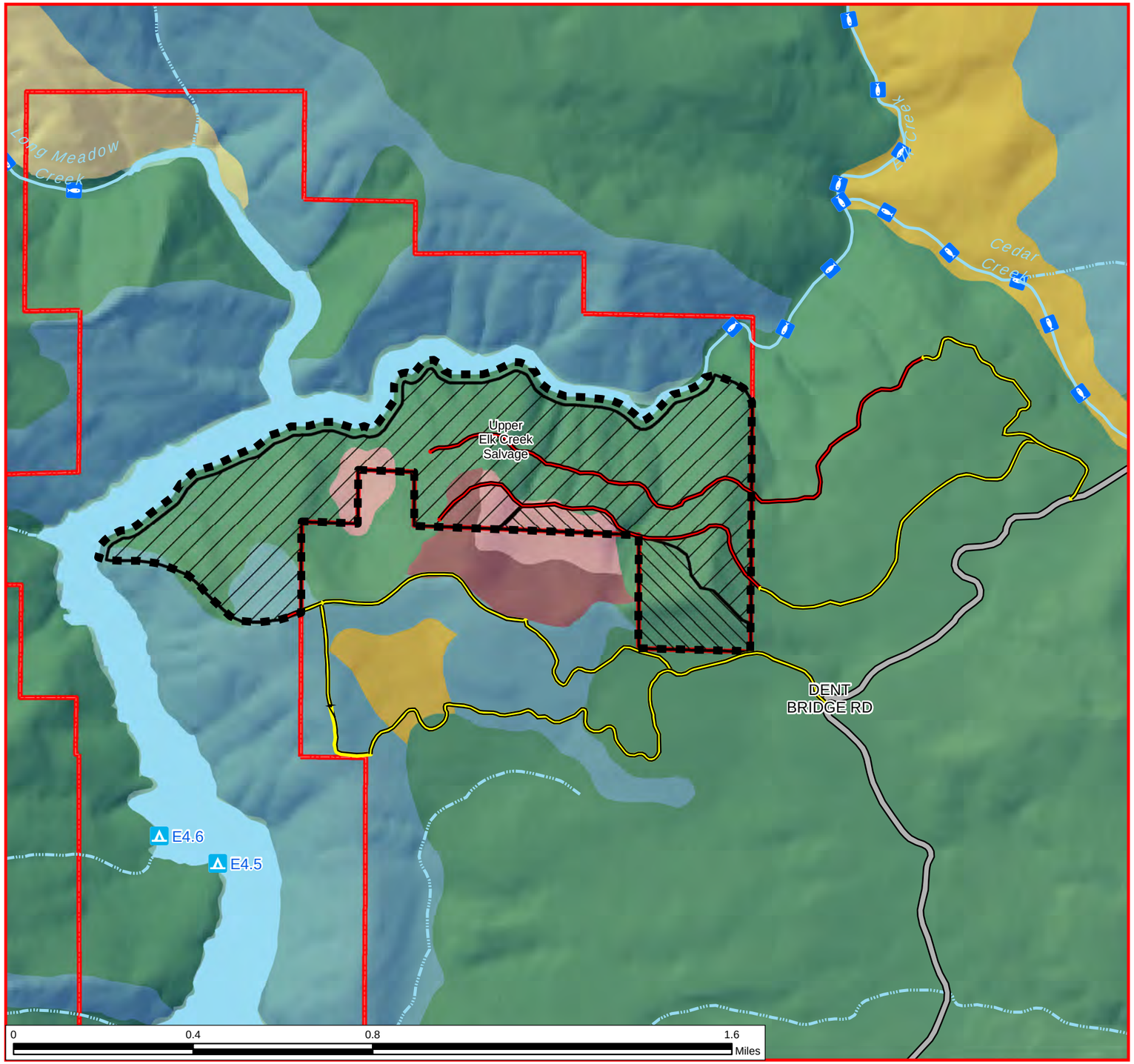
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

SWAMP CREEK FOREST HEALTH

FY 2018

MAP PAGE: A07



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

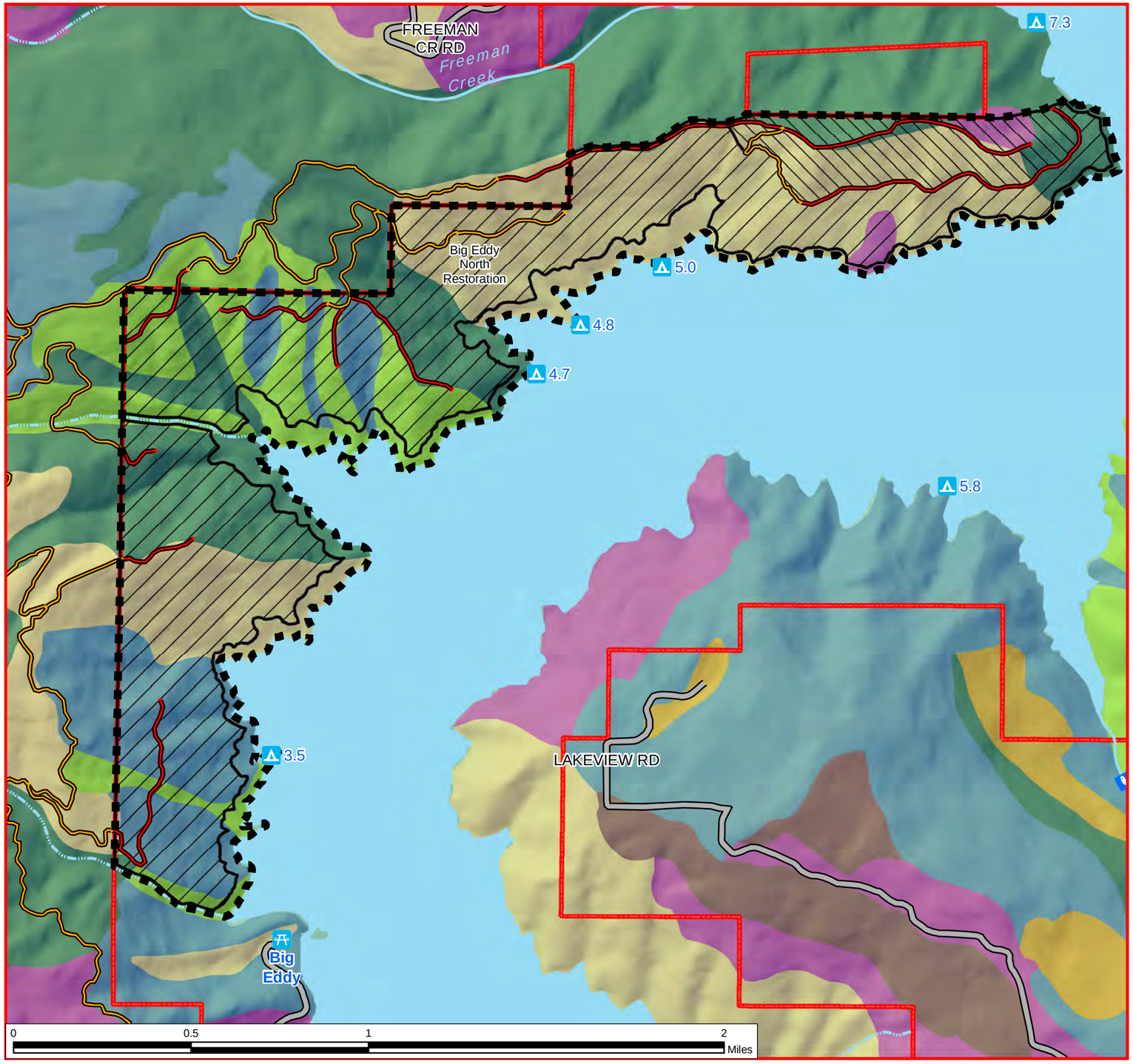
N
W E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

UPPER ELK CREEK SALVAGE

FY 2018

MAP PAGE: A08



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

BIG EDDY NORTH RESTORATION

FY 2018

MAP PAGE: B01

Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

BENTON CREEK HABITAT ENHANCEMENT

FY 2019

MAP PAGE: C01

Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

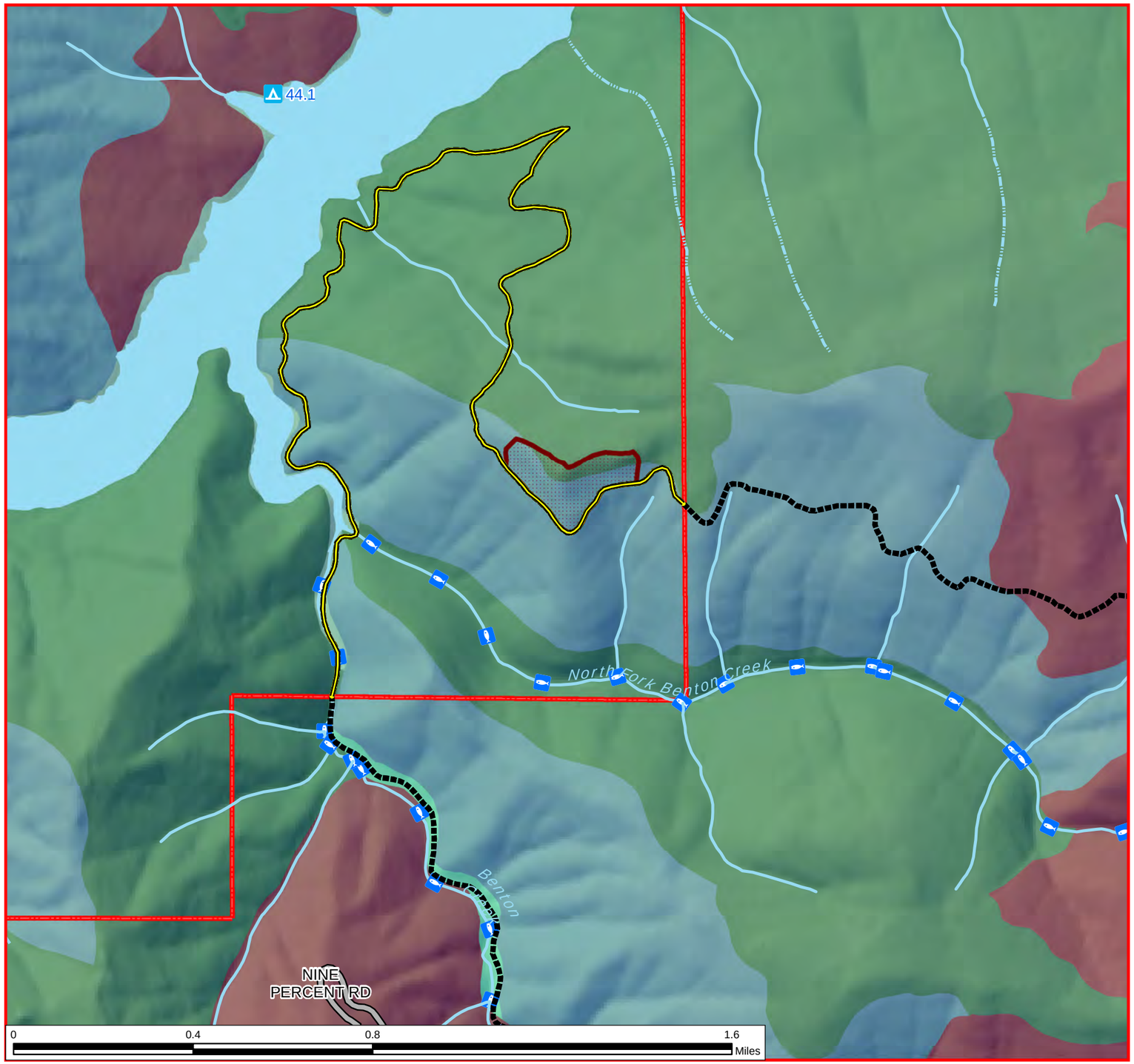
US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT
HABITAT TYPES
HUGHES POINT HABITAT ENHANCEMENT
FY 2020

MAP PAGE: C02



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

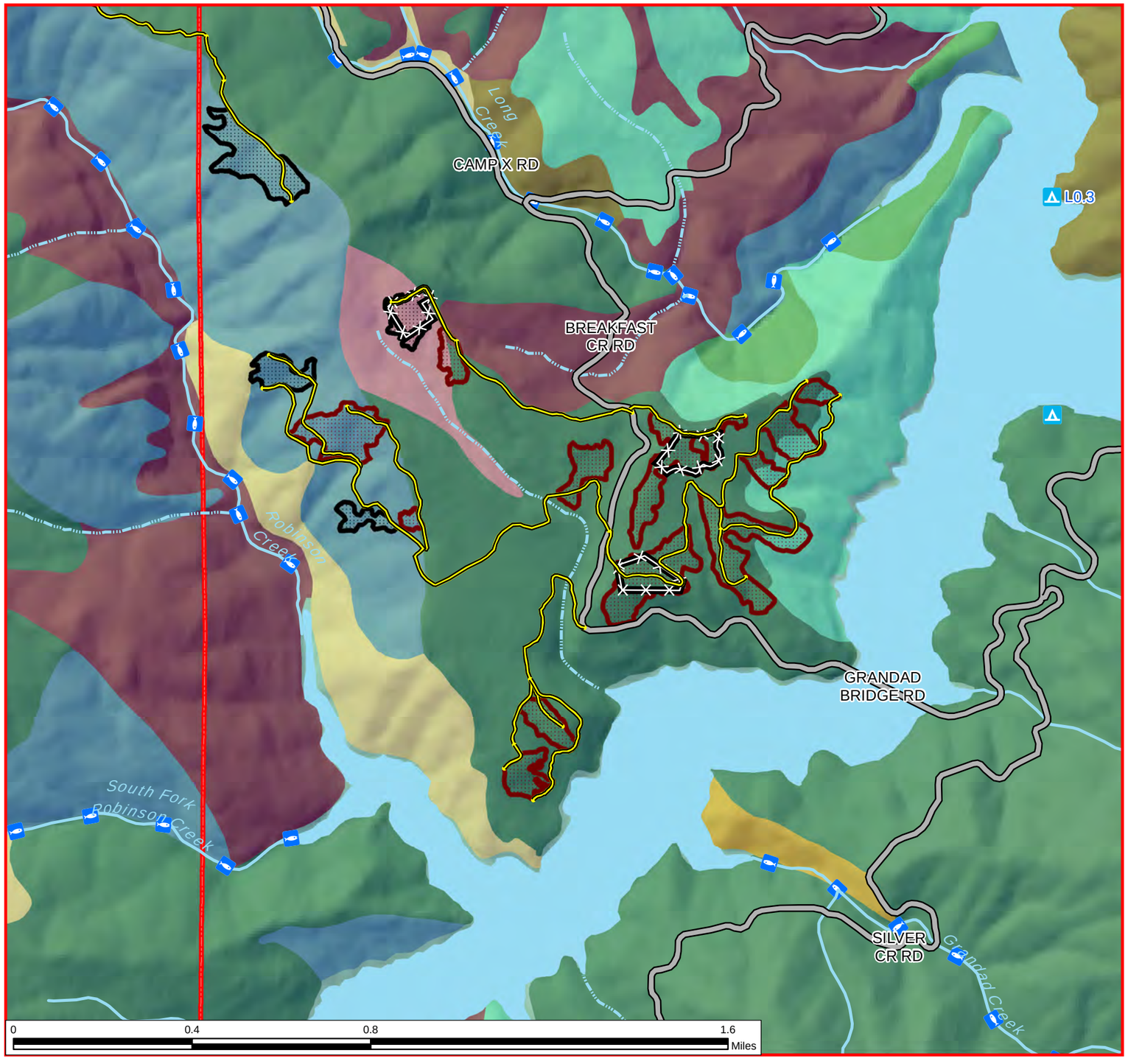
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

BENTON CR FORAGE ENHANCEMENT

FY 2015

MAP PAGE: D01



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

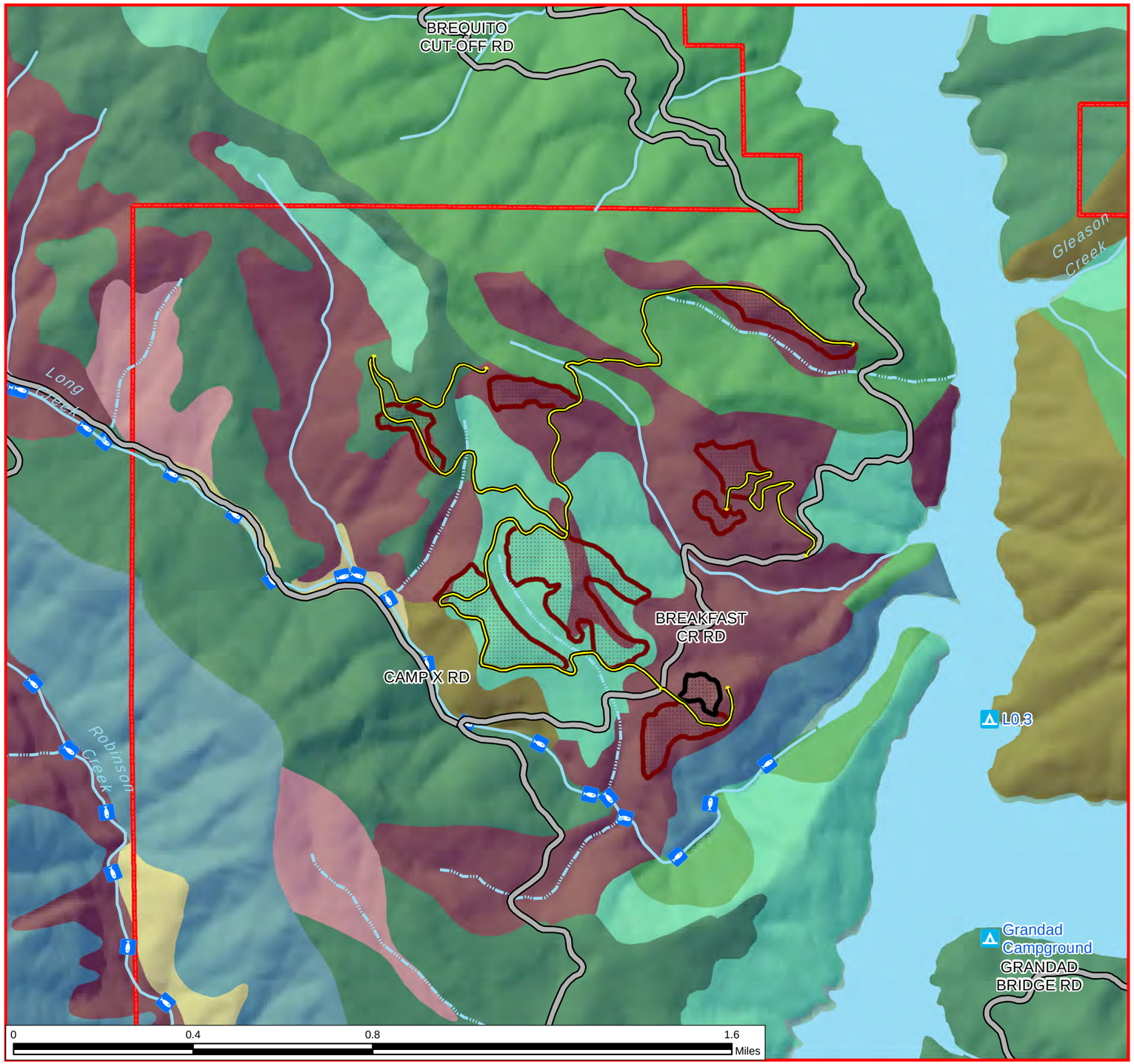
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

ROBINSON CR FORAGE ENHANCEMENT

FY 2016

MAP PAGE: D02



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

LONG CR FORAGE ENHANCEMENT

FY 2017

MAP PAGE: D03

Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

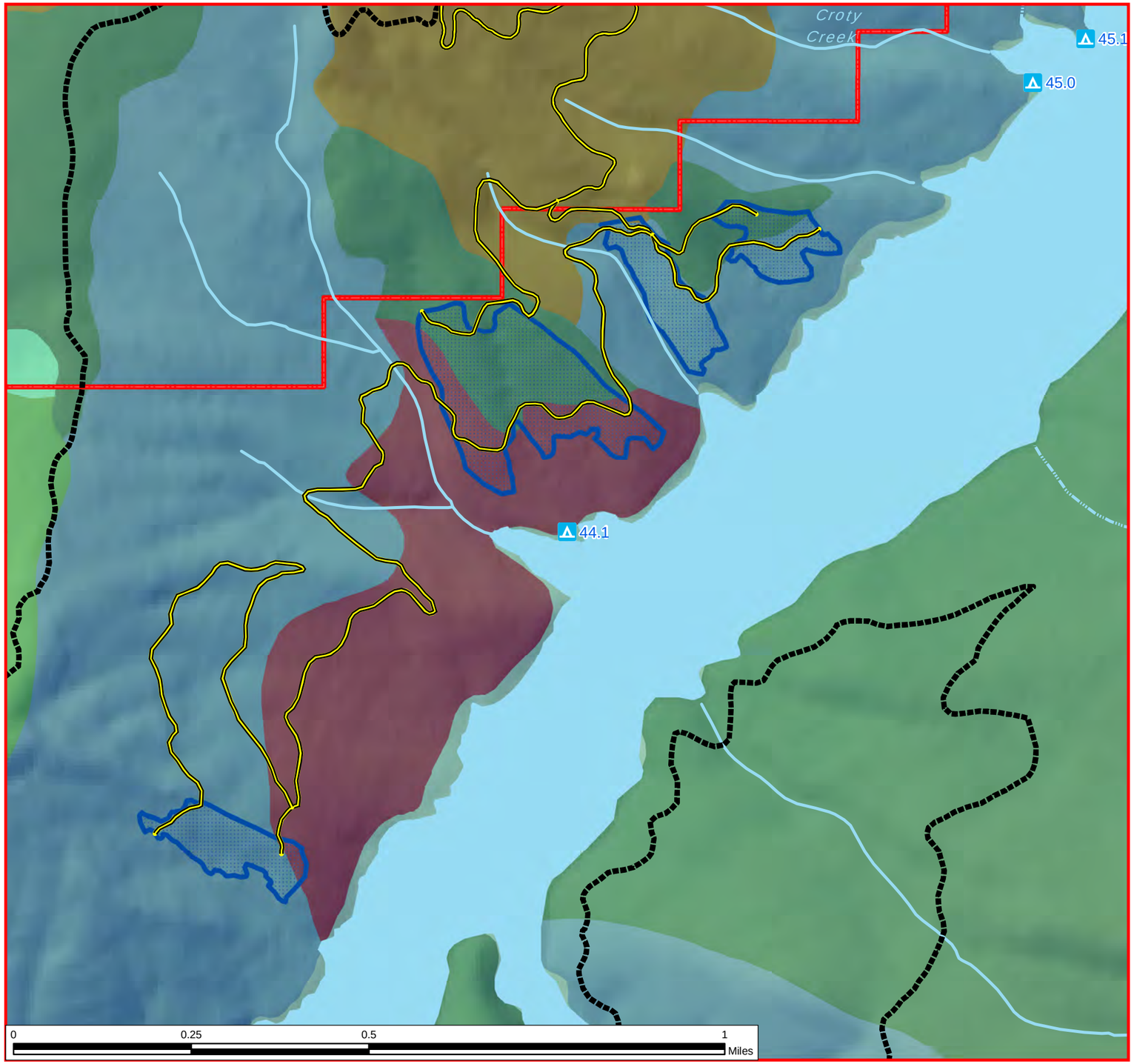
N
W
E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

HUGHES POINT FORAGE ENHANCEMENT

FY 2018

MAP PAGE: D04



Map Legend

- Dworshak Boundary
- Forest Mgt Project
- Elk Exclosure Fence

Stream Type, Fish Presence

- Perennial Stream, Yes
- Perennial Stream, No
- Intermittent Stream

Timber Harvest Unit

- Cable
- Tractor

Browse Planting Area

- Baskets Only
- Planting / Baskets
- Seeding / Baskets

Planned Road Action

- Rural - Minor Mtc
- Service - Minor Mtc
- Service - Reconstruction
- Service - New Construction
- Public

NRCS Habitat Types

- rock outcrop, meadow
- Douglas-fir/snowberry
- Douglas-fir/ninebark
- grand fir/ninebark
- grand fir/bride's bonnet
- grand fir/wild ginger
- ponderosa pine/Idaho fescue
- ponderosa pine/snowberry
- western hemlock/bride's bonnet
- western redcedar/maidenhair
- western redcedar/oakfern
- western redcedar/bride's bonnet
- western redcedar/wild ginger

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US

Author: Dworshak GIS - S. Martin Date: 2/25/2015

US Army Corps of Engineers ®
Walla Walla District

Building Strong ®

N
W
E
S

DWORSHAK VEGETATION MANAGEMENT HABITAT TYPES

BOEHLS FORAGE ENHANCEMENT

FY 2018

MAP PAGE: D05

APPENDIX D

PROPOSED MINIMIZATION/AVOIDANCE MEASURES

Proposed Minimization/Avoidance Measures
for
Dworshak Five Year Vegetation Management Plan (FY (2015-2020) Projects

The Corps proposes the following minimization/avoidance measures as part of the proposed action for each project identified in the Five Year Vegetation Management Plan (FY 2015-2020).

A. Impact Minimization Measures

The following impact minimization measures would be implemented by the Corps:

1) The Pacific Anadromous Fish Strategy/Inland Fish Strategy (PACFISH/INFISH) would be used as a guide in creating and maintaining riparian habitat conservation area (RHCA) buffers around all water sources. All tributaries to the reservoir are intermittent streams, with the exception of those portions of the Little NF Clearwater River (containing bull trout), Breakfast Creek, Reeds Creek, and Silver Creek. All of the intermittent streams in the proposed projects are not ESA-listed fish bearing streams. PACFISH/INFISH guidelines suggest a RHCA encompassing 50 ft either side of these intermittent streams.

   The Corps' plan is to meet the PACFISH/INFISH guideline as a minimum on all intermittent streams unless the topography is such that inside of 50 ft the slope breaks and surface water would no longer drain into the stream in question. The land type within the project boundary is classified as "breaklands" by the USFS. Due to the type of landscape associated with breaklands, there are frequent changes in relief among these drainages creating narrow drainages less than 100 ft in width. For example, if a given stream drainage is only 40 ft wide (20 ft either side) protecting vegetation (prohibiting harvest) for 50 ft either side of the stream does nothing but limit our opportunity for wildlife habitat or ecological restoration work. Using the same understanding, the Corps would likely protect well over 50 ft if the slope breaks over 50 ft (e.g. 75 ft). In terms of the conditions within the RHCAs described by INFISH the Corps would plan to adhere to all once the RHCAs are established.
2) Fuel and lubricants would be stored outside RHCAs in project staging areas.
3) Refueling within RHCAs would be avoided.
4) Equipment would be staged outside RHCAs when not in use.
5) Equipment would be inspected for leaks and cleaned in project staging areas prior to RHCA entry. Any detected leaks would be repaired before the vehicle enters an RHCA.
6) A spill prevention and control plan would be developed and discussed to equipment operating personnel prior to instream work.
7) Ephemeral stream channels would not be used as forwarder/skid trails, landing sites, or road locations. Equipment would cross ephemeral channels at designated crossings to minimize soil disturbance. Vegetative debris would be placed in the designated crossings to reduce soil displacement and compaction.
8) Contamination of waterbodies by drip torch fuel would be avoided. Refueling and storage of drip torch fuel would occur outside of RHCAs. Crossing any waterbody with a drip torch containing fuel would be prohibited.
9) All burning would be executed in accordance with developed burn plans.

10) Fires would not be ignited within RHCAs.
11) Fires would only be allowed to back-down within RHCAs. The Corps would also require the following for each FY 2015-2020 project:
    a. Handlines on overly steep slopes and select when possible ridge tops for dozer lines,
    b. that firelines would not run along streams in RHCAs, but may, at times, have to run into RHCA's,
    c. waterbars on all firelines (firelines would need to tie into wet draws to prevent escaped fire).
12) Once initial prescribed burns are executed and fuel loads are reduced, the project area would be monitored to evaluate the need for subsequent prescribed burns.
13) All snags within project areas would be left unless they present a hazard to logging activities. Leaving the dominant and codominant trees would also provide for snag replacement trees.
14) Minimizing development of new roads within proposed projects.
15) Using best management practices to control erosion damage, particularly on roads.
16) All roads would have erosion bars installed where needed upon project completion.
17) Re-vegetation of road surfaces with native grass seed mix upon project completion if road is no longer needed.
18) Project specific erosion and sediment control measures include:
    a. Prohibiting harvest within RHCAs.
    b. Measures in place to monitor for and reduce the potential for the establishment of invasive plants in disturbed areas associated with broadcast and pile burning include the Corps requiring contractors to ensure that their equipment is clean. The Corps would conduct annual inventories of noxious weeds and target recently burned areas as priority for inventories. Currently the Corps treats all known noxious weeds populations.
    c. Seeding all roads and landings after use.
    d. Using berms, water bars, cross-draining, diversions, sediment traps, out sloping, and/or silt fences.
    e. Scattering slash material.
    f. Closing work sites during heavy rains and snowfall.
19) Access restriction barriers would be installed to prevent unauthorized motorized access.
20) In the unlikely event that a redd is observed, it would be avoided. However, there are no known spawning locations near any proposed project.
21) A no disturbance zone, with a radius of 150 feet, would be maintained around all known and active raptor nests from April 1 through August 15. If tree removal is needed within this no disturbance zone, the removal would be conducted between August 16 and March 31. In addition, neither the nest tree(s), nor any other trees within 50 feet of the nest tree, may be removed. A Corps wildlife biologist would survey the sale area prior to harvest activity to determine if there are active raptor nests within the units. See Appendix E for further details.
22) Eagles:
    a. Avoid clear-cutting or removal of overstory trees within 330 feet (100 meters) of both active and alternate nests at any time.

b. Avoid timber harvesting operations, including road construction and chain saw and yarding operations, during the nesting season within 660 feet (200 meters) of the nest. The distance may be decreased to 330 feet around alternate nests within a particular territory, including nests that were attended during the current nesting season but not used to raise young, after eggs laid in another nest within the territory have hatched.
c. Selective thinning and other silviculture management practices designed to conserve or enhance habitat, including prescribed burning close to the nest tree, should be undertaken outside the nesting season.
d. If burning during the nesting season is necessary, do the following:
    i. Conduct burns only when adult eagles and young are absent from the nest tree (i.e., at the beginning of, or end of, the nesting season, either before the particular nest is active or after the young have fledged from that nest).
    ii. Take precautions such as raking leaves and woody debris from around the nest tree to prevent crown fire or fire climbing the nest tree.
    iii. Avoid construction of log transfer facilities and in-water log storage areas within 330 feet (100 meters) of active and alternate nests nest
e. To avoid disturbing nesting bald eagles and their young, do not fly aircraft within 1000 feet (305 meters) of the nest, except where eagles have demonstrated tolerance for such activity

B. Best Management Practices

Typical types of best management practices would depend on site-specific conditions, but would generally include the following.

1) Preferred order of retention species would be based on existing stand composition.
2) Retain all trees within 50 feet on each side of draws showing scoured flow channel or having flowing water.
3) Retain all trees within 50 feet of seeps, springs, and bogs.
4) Retain all trees within 50 feet of raptor nests.
5) Retain all trees within 100 feet of the ordinary high water mark of the reservoir.
6) Retain all trees within 100 feet of each minicamp.
7) Retain all snags and culls (unless they present a safety hazard).
8) Select and remove trees with faded needles to enhance forest health.
9) Select and remove trees to improve forest health if evidence of insect or disease attacks is observed in centralized locations affecting numerous trees. This should further provide a more natural mosaic.
10) In helicopter-yarded stands, generally the minimum diameter at breast height (DBH) tree marked would be 9 inches. Top diameter specifications would be 6 inches.
11) Do not retain any trees with an 80 % or greater crown ratio; mainly grand fir, Douglas fir, or open grown ponderosa pine in planned burn units. These trees would likely burn if left in place.
12) Ensure diversion of surface runoff around road construction.
13) Place berms to prevent runoff to local creeks around road construction.

14) Use erosion bars and sediment traps for road construction.
15) Care would be taken to minimize the visual intrusiveness of the operation on the reservoir user.
16) Road obliteration work would be conducted during dry conditions when the potential for erosion is minimal.
17) All disturbed surfaced roads and trails shall be grass seeded with native grass species upon completion.
18) Ensure diversion of surface runoff around road obliteration work.
19) Place sediment traps and/or silt fences to prevent runoff to local creeks around road obliteration work.
20) Any instream work would be done under dry conditions either through dewatering or done when intermittent streams are dry.

APPENDIX E

MBTA AND BGEPA IMPACT AVOIDANCE AND MINIMIZATION PLAN

Dworshak Project Vegetation Management

Migratory Bird Treaty Act
Bald and Golden Eagle Protection Act

Impact Avoidance and Minimization Plan

U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

August 5, 2015

1. Introduction

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712, as amended) prohibits the taking of and commerce in migratory birds (live or dead), any parts of migratory birds, their feathers, or nests. Take is defined in the MBTA to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof. The Bald and Golden Eagle Protection Act (BGEPA) prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions. Take under the BGEPA includes both direct taking of individuals and take due to disturbance. Disturb in is defined as: "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR 22.3). "In addition to immediate impacts, this definition also covers impacts that result from human-caused alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagles return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering" (USFWS 2011).

Executive Order (EO) 13186 directs federal agencies to avoid or minimize the negative impact of their actions on migratory birds, and to take active steps to protect birds and their habitat. This EO also requires federal agencies to develop Memorandum of Understandings (MOU) with the USFWS to conserve birds including taking steps to restore and enhance habitat, prevent or abate pollution affecting birds, and incorporating migratory bird conservation into agency planning processes whenever possible. The Department of Defense (DoD) has completed, and is currently implementing, their MOU with the USFWS.

The MOU between USFWS and DoD specifically pertains to several categories of DoD activities, including natural resource management activities. This includes, but is not limited to

habitat management, erosion control, forestry activities, invasive weed management, and prescribed burning. The MOU also indicates that the DoD will:

- incorporate conservation measures,
- identify migratory bird species likely to occur in the area of the proposed action, and
- assess the effects of proposed actions on species of concern, through NEPA.

This plan documents how Corps will comply with the MBTA[1], the BGEPA[2], EO 13186[3], MOU between USFWS and DoD[4], guidance for implementing the MOU[5], and the agreed upon conservation measures[6].

1.1. Partners in Flight Bird Conservation Regions (BCRs)

Bird Conservation Regions (BCRs) are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. BCR's are a hierarchical framework of nested ecological units delineated by the Commission for Environmental Cooperation (CEC). The CEC framework comprises a hierarchy of four levels of eco-regions. At each spatial level, spatial resolution increases and eco-regions encompass areas that are progressively more similar in their biotic (e.g., plant and wildlife) and abiotic (e.g., soils, drainage patterns, temperature, and annual precipitation) characteristics.

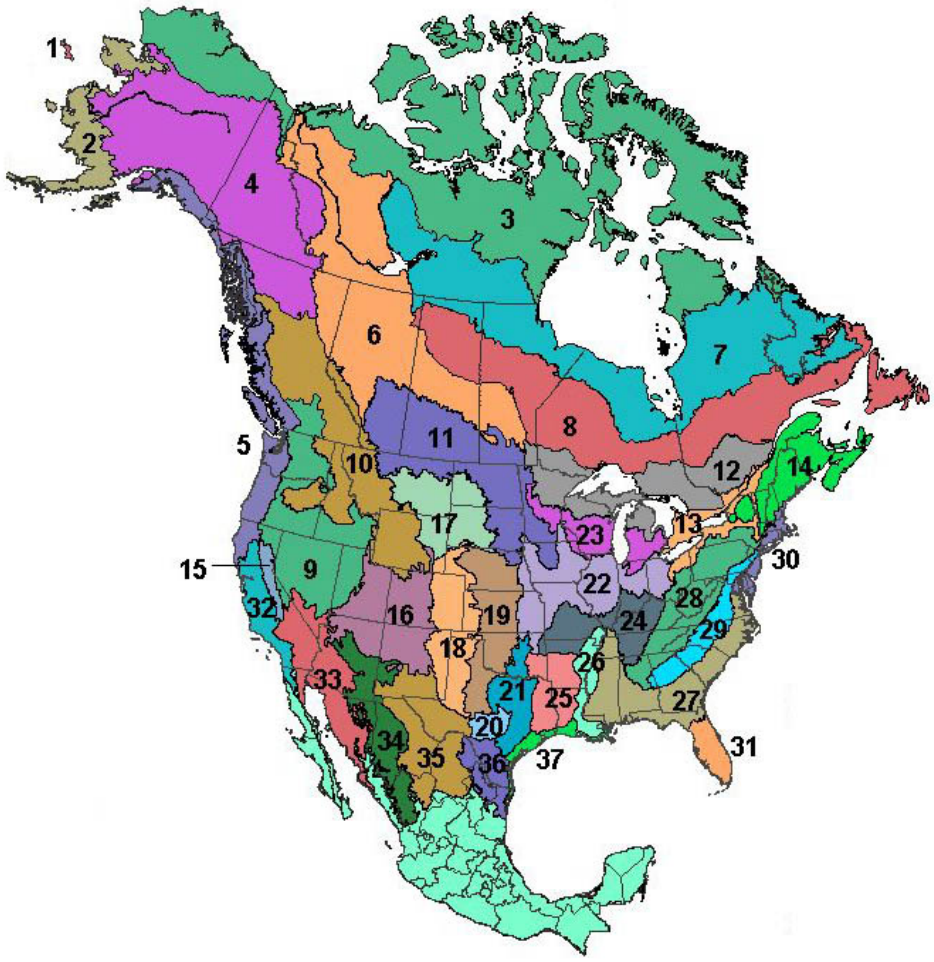
A mapping team comprised of members from United States, Mexico, and Canada assembled to develop a consistent spatial framework for bird conservation in North America. The team's U.S. members met to apply the framework to the United States and developed a proposed map of BCRs. The map was presented to and approved by the U.S. North American Bird Conservation Initiative (NABCI) Committee during its November 1999, meeting. The map is a dynamic tool (Figure 1). Its BCR boundaries will change over time as new scientific information becomes available. It is expected that the map will be updated every three years[7].

The overall goal of these BCR lists are to accurately identify the migratory and resident bird species (beyond those already designated as federally threatened or endangered) that represent our highest conservation priorities.

BCR lists are updated every five years by the U.S. Fish and Wildlife Service. The proposed action is entirely within BCR 10 (Northern Rockies) (Figure 1).

[1] http://www.fws.gov/laws/lawsdigest/migtrea.html
[2] http://www.fws.gov/migratorybirds/mbpermits/regulations/BGEPA.PDF
[3] http://www.fws.gov/migratorybirds/Partnerships/migbrdeo.pdf
[4] http://www.dodpif.org/downloads/EO13186_MOU-DoD.pdf / http://www.dodpif.org/downloads/DoDMOUextensionSignature.pdf
[5] http://www.dodpif.org/downloads/EOMOU-guidance.pdf
[6] http://www.dodpif.org/downloads/DoD_Conservation_Measures.pdf
[7] More information on BCR's can be found at http://www.nabci-us.org/bcrs.htm

Figure 1 BCRs.



1.2. Birds of Conservation Concern (BCC)

In December 2008, the U.S. Fish and Wildlife Service released The Birds of Conservation Concern Report (BCC) which identifies species, subspecies, and populations of migratory and resident birds not already designated as federally threatened or endangered that represent highest conservation priorities and are in need of additional conservation actions.

While the bird species included in *BCC 2008* are priorities for conservation action, this list makes no finding with regard to whether they warrant consideration for Endangered Species Act (ESA) listing. The goal is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions. It is recommended that these lists be consulted in accordance with Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds."

In the DoD and USFWS MOU, both parties shall:

> "Emphasize an interdisciplinary, collaborative approach to migratory bird conservation in cooperation with other governments, State and Federal agencies, and non-federal partners within the geographic framework of the NABCI Bird Conservation Regions, and strive to protect, restore, enhance, and manage habitat of migratory birds, and prevent or minimize the loss or degradation of habitats on DoD managed lands."

This report should also be used to develop research, monitoring, and management initiatives. *BCC 2008* is intended to stimulate coordinated and collaborative proactive conservation actions among Federal, State, Tribal, and private partners. The hope is that, by focusing attention on these highest-priority species, this report will promote greater study and protection of the habitats and ecological communities upon which these species depend, thereby contributing to healthy avian populations and communities.

2. Implementation of the MOU and Conservation Measures

Identification of species likely to breed within the harvest or treatment areas will be obtained prior to any work commencing. This information will be obtained through current knowledge of species utilization. Dworshak maintains an extensive GIS database of landbird observations and habitat types present, enabling correlations to derive species utilization of the landscape. Species likely to breed within the treatment area will be compared to birds of conservation concern as established by the USFWS in 50 CFR 10.13 list[8], the BCC list[9], and birds within the BCR[10], but may also include PIF priority management species[11], etc. The combined BCC and BCR list is shown in Table 1 (below). Four species, sage grouse, sage sparrow, sage thrasher, and and yellow billed cuckoo were removed from Table 1 because of the lack of suitable nesting habitat in the Dworshak area.

Table 1 Combined BCC and BCR% species list.

BCC	BCR Number	BCR Name	Species Common Name	Species Scientific Name	Family
x	10	Northern Rockies	Bald Eagle	Haliaeetus leucocephalus	Accipitridae
x	10	Northern Rockies	Barrow's Goldeneye	Bucephala islandica	Anatidae
x	10	Northern Rockies	Black Rosy-Finch	Leucosticte atrata	Fringillidae
x	10	Northern Rockies	Black Swift	Cypseloides niger	Apodidae
x	10	Northern Rockies	Black-backed Woodpecker	Picoides arcticus	Picidae
x	10	Northern Rockies	Blue Grouse	Dendragapus obscurus	Phasianidae
x	10	Northern Rockies	Brewer's Sparrow	Spizella breweri	Emberizidae
x	10	Northern Rockies	Calliope Hummingbird	Selasphorus calliope	Apodidae
x	10	Northern Rockies	Cassin's Finch	Haemorhous cassinii	Fringillidae
x	10	Northern Rockies	Ferruginous Hawk	Buteo regalis	Accipitridae
x	10	Northern Rockies	Flammulated Owl	Psiloscops flammeolus	Strigidae
x			Harlequin Duck	Histrionicus histrionicus	Anatidae
x	10	Northern Rockies	Lewis' Woodpecker	Melanerpes lewis	Picidae
x	10	Northern Rockies	Loggerhead Shrike	Lanius ludovicianus	Laniidae
x	10	Northern Rockies	Long-billed Curlew	Numenius americanus	Scolopacidae
x	10	Northern Rockies	McCown's Longspur	Rhynchophanes mccownii	Calcaridae
x	10	Northern Rockies	Olive-sided Flycatcher	Contopus cooperi	Tyrannidae
x	10	Northern Rockies	Peregrine Falcon	Falco peregrinus	Falconidae
x	10	Northern Rockies	Rufous Hummingbird	Selasphorus rufus	Trochilidae

[8] http://www.fws.gov/migratorybirds/RegulationsPolicies/mbta/mbtintro.html
[9] http://www.fws.gov/migratorybirds/Partnerships/migbrdeo.pdf
[10] http://www.nabci-us.org/map.html
[11] http://pif.rmbo.org/

x	10	Northern Rockies	Swainson's Hawk	Buteo swainsoni	Accipitridae
x	10	Northern Rockies	Townsend's Warbler	Setophaga townsendi	Parulidae
x	10	Northern Rockies	Trumpeter Swan	Cygnus buccinator	Anatidae
x	10	Northern Rockies	Upland Sandpiper	Bartramia longicauda	Scolopacidae
x	10	Northern Rockies	White-headed Woodpecker	Picoides albolarvatus	Picidae
x	10	Northern Rockies	Williamson's Sapsucker	Sphyrapicus thyroideus	Picidae
x	10	Northern Rockies	Willow Flycatcher	Empidonax traillii	Tyrannidae

3. Impact Avoidance and Minimization Measures (BMPs)

The DoD Conservation Measures states that the DoD will:

> "Use base line surveys and knowledge of annual cycle of bird species known to occur on a site to avoid potentially harmful activities to habitats used for nesting, migration stopover, and nonbreeding. During sensitive habitat use periods, relocate or limit training and target areas, modify air operations, and avoid or limit construction and maintenance activities. Plan ahead and concentrate activities during times of minimum habitat use by birds."

The Conservation Measures specifically call out "*Habitat Conservation and Enhancement,*" and indicates that the DoD will:

> "Develop and implement conservation measures that improve existing habitat, create new habitat, enhance degraded habitat, or improve conditions for birds. These measures include wetland protection, maintenance and enhancement of forest buffers, elimination of feral animals (including feral cats) that may be a threat to migratory birds or their habitat, reduction or elimination of harmful grazing practices, and appropriate control and elimination of invasive and non-native species that crowd out other species necessary to migratory bird survival. Al conservation measure should be detailed in the installation INRMP. Examples may include:
>
> Forest management
> - Convert to uneven-age and/or other progressive forest management that enhances available habitat values.
> - Maintain and enhance bottomland hardwood forests.
> - Create snag trees or protect existing snags during forestry programs.
>
> Habitat enhancement/restoration
> - Maintain and restore priority habitats.
> - Incorporate habitat enhancement into project review and project design.
> - Create habitat as mitigation programs.
> - Promote nest box and platform programs.
> - Encourage nesting in tower structures, where appropriate."

The Corps will adhere to the following impact avoidance and minimization measures (also referred to as Best Management Practices, or BMPs) to comply with the MBTA, the BGEPA, EO 13186, MOU between USFWS and DoD, the DoD guidance for implementing the MOU, and the agreed upon conservation measures:

1. One of the main objectives for vegetation management at Dworshak is to promote forest health, and improve habitat.
    a. The Corps will use this as the primary guiding factor when working through the procedure below.
    b. The Corps will weigh the benefits to BCC and BCR species from any given treatment versus the impacts to other species when designing treatment implementation and timing.
2. Planning for vegetation management activities will always consider treatments outside the nesting season first, as long as that window will allow the Corps to optimize its management objectives, and will allow the work to be done safely and economically.
3. The Corps will use existing GIS data to establish a base line assessment of what bird species are present in which habitats during what times of the year in treatment areas.
4. The Corps will use standards and protocols for determining any specific species or nesting occurrences in treatment areas, as necessary.
5. If the work cannot be done outside the nesting season, based on information in this document, the Corps will:
    a. Use the Dworshak Wildlife Biologist to evaluate whether or not there is enough available habitat on Project outside a treatment area for a species that may be impacted in a treatment area, as identified in the procedure below, prior to implementation of the work. This determination will help inform implementation design.
    b. Maintain a 150 ft nest buffer for raptors to the greatest extent practicable.
    c. Maintain a 50 ft nest buffer for other MBTA species to the greatest extent practicable.
    d. Maintain a 330 ft nest buffer for eagles when there is a visual barrier between the nest and the work activity.
    e. Maintain a 660 ft nest buffer for eagles when there is no visual barrier.
    f. Seek a MBTA or BGEPA permit (as appropriate) if avoidance and minimization to the greatest extent practicable will not avoid take under the MBTA, or take or disturbance under the BGEPA.

4. Procedures

The Corps will follow the procedure identified below to comply with the MBTA when planning the implementation of each vegetation management action.

1. Will treatments affecting migratory birds or eagles be conducted within the general avian breeding season? The Corps will determine if the proposed action can be conducted outside the nesting season and still safely and economically optimize management objectives. In general, the nesting season for migratory birds is identified as April 1-August 15. Actions taken outside this time period will not result in take under the MBTA. Project specific planning may require more specific identification of the specific nesting seasons for each of identified species within a treatment area to allow for a more precise work window outside the nesting season. This will be done on a case-by-case basis determined by the Project Wildlife Biologist in consultation with the District's

Environmental Compliance Section. In general, the nesting season for eagles is January 1-August 15.

a. An answer of "no" to #1 would result in a "no take" and "no disturbance" (disturbance applies to the BGEPA only) determination by the Corps, and the action may proceed.
b. An answer of "yes" to #1 would result in moving to #2.

2. Are birds of conservation concern likely to breed within the project area? The Dworshak GIS database will be queried to identify any known BCC or BCR species on the list in Table 1. It will also be queried for any other known occurrences of other MBTA species. The Corps will also use the Dworshak GIS database to identify habitat types, and associate likely occurrences of birds in each habitat type, based on the birds' habitat requirements, and use this information to assist in identifying potential species occurrences in a treatment area. The Dworshak Wildlife Biologist and Forester will use this information to inform the project design. With this information, they will determine if the project can be modified to be done outside the nesting season and still meet the management objectives.

    a. An answer of "no" to #2 would result in a "no take" and "no disturbance" (disturbance applies to the BGEPA only) determination by the Corps, and the action may proceed.
    b. An answer of "yes" to #2 would result in moving to #3.

3. Are there active BCC species nests within the treatment area? A qualified bird/wildlife biologist will be employed to conduct nesting surveys for BCC speciesprior to vegetation management activities. Eagle nests are documented and routinely updated in the Dworshak GIS database. Many BCC species' nests would not be able to be specifically located, but behavioral observations may be used to identify areas where active nests for a given species are likely to exist. This information will determine if there are active nests in the action area, or is there an inactive nest near other active nests or part of a colony that will be impacted. .

    a. An answer of "no" to #3 would result in a "no take" and "no disturbance" (disturbance applies to the BGEPA only) determination by the Corps, and the action may proceed.
    b. An answer of "yes" to #3 would result a "may take" determination by the Corps, and moving to #4.

4. Can BMPs be used to eliminate impacts to breeding BCC species present? The Dworshak Wildlife Biologist and Forester will determine if the project can be modified on the ground to avoid impacts, or changed to be performed outside the nesting season. This answer is determined by direct survey and documentation by a qualified biologist. The Corps may employ the general impact and avoidance measures (BMPs) to avoid or minimize impacts to migratory birds. This will be done on a case-by-case basis determined by the Project Wildlife Biologist in consultation with the District's Environmental Compliance Section, using all of the information collected to this point

(as described above). This will determine if the project can avoid or minimize impacts to migratory birds.

a. An answer of "yes" to #4 would result in a "no take" and "no disturbance" (disturbance applies to the BGEPA only) determination by the Corps with the requirement that the appropriate BMPs be implemented and recorded in the project Environmental Commitment Checklist and Specifications.
b. An answer of "no" to # 4 would result in moving to #5.

5. If impacts have been avoided and minimized to the greatest extent practicable (as described above), and there is the potential for take or disturbance. Under the MBTA, the Corps must determine if the action result in intentional or unintentional take under the MBTA. For BGEPA, simply move to #6.

    a. Intentional (aka direct) take: move to #6.
    b. Unintentional (aka indirect, incidental) take: move to #7.

6. The Corps will seek a MBTA or BGEPA take permit from local USFWS Permit Office. If needed, the Corps will seek a BGEPA permit for any work within 330 ft of an active nest that has a visual barrier between the nest and activities, within 660 ft of an active nest that does not have a visual barrier between the nest and activities, or for destruction of an eagle nest from local USFWS Permit Office. Move to #8.

    REGION 1: Hawaii, Idaho, Oregon, Washington

    U.S. Fish and Wildlife Service
    Migratory Bird Permit Office
    911 N.E. 11th Avenue
    Portland, OR 97232-4181
    Tel. (503) 872-2715
    Fax (503) 231-2019
    Email permitsR1MB@fws.gov

7. There is no provision in the MBTA for unintentional take. The District's Environmental Compliance Section shall contact the local USFWS Permit Office to coordinate further avoidance and minimization measures to the greatest extent possible. Due diligence shall be recorded, see 8.

8. Monitoring is required to determine extent and type of take (species affected, numbers of birds, numbers of eggs, numbers of nests, etc.).

5. References

USFWS (U.S. Fish and Wildlife Service). 2011. Bald Eagle Management Guidelines and Conservation: Pacific Region. Available at: http://www.fws.gov/pacific/eagle/ . Updated January 10, 2011.