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Elk Creek Master Plan

Jackson County, Oregon



June 2012

Prepared by the
U.S. Army Corps of Engineers
Portland District



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Technical assistance provided by
Tetra Tech, Inc.

EXECUTIVE SUMMARY

A U.S. Army Corps of Engineers (Corps) master plan for an authorized civil works operating project is the document that guides Corps decision making and management of federal land in accordance with federal laws and regulations to manage the project lands, water, and associated resources and to preserve, conserve, develop, restore and maintain the natural, cultural and manmade resources within the project area. The primary components of a master plan include a background narrative, descriptions of the cultural, ecological, and recreational resources in the project area, analysis of recreational needs of the market area, a suite of resource use objectives to guide management and development of the area, and land classifications that determine proper uses.

The Elk Creek project area is a 3,502 acre area held in fee title by the Corps and primarily managed for the purposes of fish and wildlife conservation and enhancement, water quality, and recreation. The project was authorized in 1962 for the purpose of building a dam to provide flood control, recreation, and water supply. However, environmental considerations resulted in the modification of the partially built dam to allow unhindered fish passage through Elk Creek.

The Elk Creek drainage basin is located in the southwestern corner of the Western Cascades physiographic province and covers an area of 134 square miles. Elk Creek is the principal headwater tributary to the Rogue River within the Cascade Mountain Range, and is a subwatershed of the Upper Rogue River basin, which covers 1,615 square miles. Approximately 21 miles downstream from its headwaters, Elk Creek enters the Rogue River east of the city of Trail, Oregon.

Preparation of this master plan required a recreational analysis, including assessment of the current recreation needs of the market area of Elk Creek and the role that the Elk Creek area plays in meeting those recreational needs. Recreation needs were determined through review of existing Corps and state recreation guidance documents, as well as the public outreach process. Findings from the 2008-2012 Oregon Statewide Comprehensive Outdoor Recreation Plan coincide with the voiced desires of the Elk Creek market community. The market community overwhelmingly agreed that improved access was necessary to facilitate recreation, and that the area should provide only low impact and dispersed recreation, especially to youth. The resulting recreation priority for Elk Creek is to provide ample and accessible recreation opportunities to elderly visitors, youth, and an increasingly diverse ethnic population, while preserving the natural value of the area.

An interagency workshop was held in July 2011. Members of federal, state, and local agencies with jurisdictional interest were invited to participate in a workshop session to review the master plan process and provide input. A total of 20 attendees participated, including representatives from the USFWS, ODFW, BLM, Medford Water Commission, Confederated Tribes of the Grand Ronde, Jackson County, Oregon State Police, Rogue River-Siskiyou National Forest, local watershed councils, and Rogue Riverkeepers. Input provided by attendees was used to develop resource use objectives and land classifications.

A public outreach meeting was held at the Upper Rogue River Community Center in Shady Cove, Oregon in September 2011. The purpose of the meeting was to inform the interested public about the ongoing master plan update process, and to solicit input regarding the future development and management of the project area. A total of 22 people signed in to the meeting, though there were an estimated 3 or 4 additional attendees that did not sign in. Input provided was utilized to develop land and recreational use recommendations and resource use objectives.

The primary assets of Elk Creek and the valley it occupies are a combination of its undeveloped condition, its contiguous federally-owned seven mile habitat connection, its value to wildlife, and its accessibility to the public. This combination of valuable natural resources and human accessibility makes it a unique area both in the opportunities it offers and the protection it requires. As a result, this master plan identifies a number of resource use objectives that are intended to maintain the natural character along Elk Creek. These are guided by a single and overriding project objective: give priority to the stewardship of wildland values in all public use planning, design, development, recreation and management activities.

To support and implement the overriding goal, a suite of project wide resource use objectives have been developed for management guidance within the Elk Creek project area. These resource objectives are applicable to all lands throughout the project area and serve as the foundation for the development of specific management objectives in the Natural Resource Management Plan (NRMP) provided in Appendix II.

Land classifications within the Elk Creek project area include a total of 147.1 acres of Project Operations, 591.8 acres of Environmentally Sensitive, 1,341.3 acres of Multiple Resource Management (MRM) – Wildlife Management, and 1,421.8 acres of MRM – Vegetative Management. There are no lands classified as Recreation (high density), Mitigation, MRM – Recreation, MRM – Inactive/and or Future Recreation, or Easement, which are land classifications found at other Corps planning areas.

Current operations in the area include monitoring and maintenance of the fish passage corridor (Phase I), monitoring and maintenance of Elk Creek restoration work (Phase II), providing security, maintaining signs, fences, and gates, and removal of debris as necessary. There are no administration facilities located in the project area. Remaining operation and maintenance duties in the project area are administered by the Resource Manager of the Rogue River Project.

The master plan presents a number of recommendations for management of the project area, based on the resource inventory, public and agency input, and in support of the resource use objectives identified. Overall, the general recommendations for management and development of the project area include; (1) improving accessibility to recreational opportunities, (2) developing a safe and accessible trail system, (3) providing interpretive materials and tours, (4) working with local community, (5) keeping communication open with all interested parties, (6) seek sustainable means of recreation while preserving wildland values, (7) providing improved monitoring and enforcement of prohibited activities, and (8) restoring the area to its natural condition and improving visual quality, to the degree possible.

Detailed project management and development measures are based on the findings of this master plan and are presented in the NRMP provided in Appendix II.

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1 INTRODUCTION



1.1 Authorization and Background

A U.S. Army Corps of Engineers (Corps) master plan is a guidance document that provides direction for the appropriate management of project lands, water, and the associated resources of a civil works operating project, as authorized by Congress. This master plan has been prepared for the project initially identified as the Elk Creek Lake Project, which was authorized under the Rogue River Basin Project by the Flood Control Act of 1962 (P.L. 87-874, 21 September 1962). The purpose of the Elk Creek Lake Project was to provide flood control and recreation through creation of a dam. It was authorized along with two additional dams within the Rogue River Basin, including Applegate and Lost Creek Dams. Though Applegate and Lost Creek Dams have been constructed, the Elk Creek Dam was never completed due to environmental and funding concerns. As a result of the changed status of the Elk Creek Lake Project, it has become necessary to update the existing master plan.

1.2 Purpose of the Master Plan

A Corps master plan for an authorized civil works operating project is the document that guides Corps decision making and management of federal land in accordance with federal laws and regulations to manage the project lands, water, and associated resources and to preserve, conserve, develop, restore and maintain the natural, cultural and manmade resources within the project area.

Master plans are developed for all civil works projects and other fee-owned and easement lands for which the Corps has administrative responsibility, and are to be kept current to reflect changing needs and conditions. The master plan is an essential element in fostering an efficient and cost effective project and natural resources management program, which provides a framework for proper stewardship for the benefit of present and future generations.

Additionally, a master plan should provide the best possible combination of responses to regional needs, resource capabilities, land use suitability, and expressed public interest and desires consistent with authorized project purposes. It should contribute toward a high degree of recreation diversity within the region; emphasize the particular qualities, characteristics, and opportunities of the project, and exhibit consistency and compatibility with national objectives and other state and regional goals and programs.

The master planning process encompasses a series of interrelated and overlapping tasks involving the examination and analysis of past, present, and forecasted future environmental and socioeconomic conditions and trends. The process focuses on three primary components, including (1) regional or local

ecological needs, (2) the capabilities and suitabilities of the existing resources in the project area, and (3) expressed public interests and desires. The master plan shall ensure that economy and quality shall be given equal attention in the future development of new recreation facilities.

This master plan has been developed specifically to provide the structure for implementing management measures within the Elk Creek Lake Project over a planning horizon of at least five years. It reflects the unique combination of resources, uses, and management concerns that occur within the planning area, as well as the input received by stakeholders during public meetings and comment periods.

1.3 Need for Updated Master Plan

The land and resource uses within the project area and in the surrounding community have changed significantly since the most recent master plan was prepared in 1987. Most prominently, the construction of the initially authorized dam was halted due to environmental regulations in 1987. A portion of the dam was subsequently dismantled or “notched” in 2008 to allow Elk Creek to flow freely along the historic streambed and thereby create a fish passage corridor. This has resulted in changes to the management needs, operations, recreational opportunities, and physical resource conditions within the project area that were not anticipated in the 1987 master plan. Other changes include those to the existing demographics of the project region, the associated recreational needs, and opportunities for restoration.

1.4 Applicable Laws, Executive Orders, Regulations, and Policy Guidance

The following federal laws, executive orders, and Corps regulations and guidance are pertinent to the master plan update.

1.4.1 Public Laws

The National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 *et seq.*), provides a framework for federal agencies to minimize environmental damage and requires federal agencies to evaluate the potential of environmental impacts of their proposed actions. Under NEPA, a federal agency prepares an Environmental Assessment (EA) describing the environmental effects of any proposed action and alternatives to that action to determine if there are significant impacts requiring development of an Environmental Impact Statement (EIS) or if a Finding of No Significant Impact (FONSI) is appropriate. The EA must identify measures necessary to avoid or minimize adverse impacts, and all impacts must be reduced to a level below significance in order to rely upon a FONSI.

The Migratory Bird Treaty Act, as amended (16 U.S.C. 703-712), prohibits the taking or harming of any migratory bird, including the taking of any part of the bird or its eggs, without an appropriate federal permit. This covers birds specifically listed therein or named in wildlife treaties between the United States and other countries, including Great Britain, Mexican States, Japan and countries once part of the former Soviet Socialist Republics. Disturbance of the nest of a migratory bird requires a permit issued by the United States Fish and Wildlife Service (USFWS) pursuant to Title 50 of the Code of Federal Regulations.

The Fish and Wildlife Coordination Act of 1958 (16 U.S.C. 661-667e) requires that any agency impounding, diverting, channel deepening, controlling or otherwise modifying a stream or body of water for any purpose, including navigation and drainage, consult with the USFWS. It is intended to give fish and wildlife conservation equal consideration with the purposes of water resource development projects.

The Clean Water Act, as amended (33 U.S.C. 1251-1387), covers regulation of a variety of water resource considerations. It authorizes water quality programs; requires certification from the state water control agencies that a proposed water resource project is in compliance with established effluent

limitations and water quality standards (Section 401); establishes conditions and permitting for discharges of pollutants under the national pollutant discharge elimination system (NPDES) (Section 402); and requires that any non-Corps entity acquire a permit from the Corps for any discharges of dredged materials into the waters of the United States, including wetlands (Section 404). The Act also defines the conditions which must be met by federal projects before they may make discharges into the waters of the United States. Under the Section 404(b)(1) guidelines, as published in 40 CFR 122.6, only the Least Environmentally Damaging Practicable Alternative should be recommended. The United States Environmental Protection Agency (EPA) has primary responsibility for implementing the programs designed to clean up waters of the United States.

The Federal Water Project Recreation Act of 1965, as amended (16 U.S.C. 460l-12 to 460l-21), requires that recreation and fish and wildlife enhancement be given full consideration in federal water development projects.

The Clean Air Act, as amended (42 U.S.C. 7401-7671q), establishes federal standards for regulation of seven toxic air pollutants. It also establishes attainment and maintenance of National Ambient Air Quality Standards (NAAQS) (Title I), motor vehicles and reformulation (Title II), hazardous air pollutant (Title III), acid deposition (Title IV), operation permits (Title V), stratospheric ozone protection (Title VI), and enforcement (Title VII). Under Section 176(c) of the Clean Air Act Amendments of 1990, the leading agency for a project is required to make a determination of whether the proposed actions “conform” to the State Implementation Plan (SIP).

The Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*), protects threatened and endangered species as listed by the USFWS and the National Marine Fisheries Service (NMFS) from unauthorized take and directs federal agencies to ensure that their actions do not jeopardize the continued existence of such species. Section 7 of the Act defines federal agency responsibilities for consultation with USFWS.

The Magnuson-Stevens Act (16 U.S.C. 1855, Section 305b) requires federal agencies to consult with the National Marine Fisheries Service (NMFS) on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect essential fish habitat (EFH).

The Archaeological and Historic Preservation Act, as amended (16 U.S.C. 469), requires that federal agencies consider the effect of their undertakings, including federally licensed activity or program, on historic American sites, buildings, objects, and antiquities of national significance when taking actions that include, but are not limited to, flooding, the building of access roads, relocation of railroads or highways, and other alterations of the terrain caused by the construction of a dam.

The National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. 470 *et seq.*), requires that federal agencies consider the effect of their undertakings, including federally licensed activities or programs, on properties eligible for the National Register of Historic Places (NRHP).

1.4.2 Executive Orders

Executive Order 11514, Protection and Enhancement of Environmental Quality, amended by Executive Order 11991, Relating to Protection and Enhancement of Environmental Quality, mandates that the federal government provide leadership in protecting and enhancing the quality of the nation’s environment to sustain and enrich human life. Federal agencies must initiate measures needed to direct their policies, plans and programs so as to meet national environmental goals. Section 1 of 11990 amends Section 3(h) of 11514, by directing the Council on Environmental Quality (CEQ) to issue guidelines to federal agencies for implementing procedural provisions of the NEPA. These regulations include

procedures for early EIS preparation and require impact statements to be concise, clear, and supported by evidence that agencies have made the necessary analyses.

Executive Order 11988, Floodplain Management, outlines the responsibilities of federal agencies in the role of floodplain management. Federal agencies are required to evaluate the potential effects of actions on floodplains, and should avoid undertaking actions which directly or indirectly induce growth in the floodplain or adversely affect natural floodplain values. This order requires federal agencies to provide leadership and take action to ensure the following; (1) avoid development in the base (100-year) floodplain unless it is the only practicable alternative, (2) reduce the hazards and risk associated with floods, (3) minimize the impact of floods on human safety, health and welfare, and (4) restore and preserve the natural and beneficial values of the base floodplain.

Executive Order 11990, Protection of Wetlands, states that federal agencies shall take action to minimize destruction, loss or degradation of wetlands, and preserve and enhance the natural and beneficial values of wetlands in the process of carrying out agency responsibilities. Each agency, to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds that there is no practicable alternative to such construction, and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.

Executive Order 12088, Federal Compliance with Pollution Control Standards, requires all federal agencies to ensure that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to federal amenities and activities under control of the agency.

Executive Order 12898, Environmental Justice in Minority Populations and Low Income Populations, requires federal agencies to identify and address disproportionately high and adverse impacts of federal actions, including federal licensed actions, programs, policies, or activities, on minority or low income populations in the United States.

Executive Order 13112, Invasive Species, requires federal agencies to expand and coordinate efforts to prevent the introduction of invasive species and to minimize the economic, ecological, and human health impacts that invasive species may cause.

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, requires that each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement, within two years, a Memorandum of Understanding (MOU) with the USFWS that shall promote the conservation of migratory bird populations.

1.4.3 Corps of Engineers Guidance

Several Corps publications are pertinent to the planning, development, and management of the project. Engineer regulations (ER) establish topic-specific procedural practices that must be followed at Corps District levels. Engineer pamphlets (EP) provide clarification guidance and/or detailed implementation guidance in support of federal laws and regulations. Engineer manuals (EM) provide comprehensive planning and design guidance for a wide range of technical and functional activities.

1.4.4 Engineering Regulations

ER 200-1-5, Policy for Implementation and Integrated Application of the U.S. Army Corps of Engineers Environmental Operating Procedures (EOP) and Doctrine, October 2003, provides specific policy and guidance for implementation and the integrated application of the Corps' EOP and associated doctrine across the full spectrum of Corps' program management initiatives and business processes.

ER 200-2-2, Environmental Quality: Policy and Procedures of Implementing NEPA, March 1988, provides policy and procedural guidance to supplement the CEQ's final regulations implementing the procedural provisions of the NEPA for the Civil Works Program of the Corps.

ER 200-2-3, Environmental Compliance Policies, October 2010, provides the policy for the management of environmental compliance related operations and maintenance activities for Corps civil works projects.

ER 405-1-12, Real Estate Handbook, November 1985, provides guidance on real estate requirements and procedures, including guidance on appraisals, acquisitions, relocation assistance, homeowners' assistance, real estate claims, audits, and recording and reporting.

ER 1105-2-100, Planning Guidance Notebook, April 2000 (original); June 2004 (Appendix D - Amendment 1); June 2004 (Appendix G – Amendment 1); January 2007 (Appendix F - Amendment 2); November 2007 (Appendix H – Amendment 1), provides overall direction by which the Corps civil works projects are formulated, evaluated and selected for implementation. It contains a description of the Corps planning process, Corps missions and programs, specific policies applicable to each mission and program, and analytical requirements.

ER 1110-1-400, Recreation Planning and Design Criteria, July 1987, provides guidance compiled from experience and research for use in the planning and design for recreation areas, sites, and facilities.

ER 1110-2-240, Water Control Management, October 1982; April 1987 (change 1); March 1994 (change 2), prescribes policies and procedures to be followed by the Corps in carrying out water control management activities, including the establishment of water control plans for Corps and non-Corps projects, as required by federal laws and directives.

ER 1130-2-530, Flood Control Operations and Maintenance Policies, October 1996, establishes the policy for the operation and maintenance (O&M) of Corps flood risk management (flood control) and related structures at civil works water resource projects and of Corps built flood risk management projects operated and maintained by non-federal sponsors.

ER 1130-2-540, Environmental Stewardship Operations and Maintenance Guidance Procedures, November 1996 (Original); 04 Nov 2002 (change 1); July 2005 (change 2); August 2008 (change 3), establishes land management policy for Corps-administered project lands and water, based on various authorizing legislation and the principles of good environmental stewardship. Environmental stewardship includes both passive and proactive management to sustain healthy ecosystems and biodiversity and conserve natural resources, such that Corps lands and waters are left in a condition equal to or better than their condition when acquired, and such that those natural and cultural resources are available to serve the needs of present and future generations. This regulation requires that management plans be prepared for all Corps administered lands and waters.

ER 1130-2-550 Recreation Operations and Maintenance Policies 15 November 1996 (original); 01 October 1999 (change 1); 01 Mar 02 (change 2); 15 Aug 02 (change 3); 30 August 2008 (change 4); 30 March 2009 (change 5) provides guidance for the operation and maintenance of facilities at Corps Civil Works Projects.

ER 1165-2-26, Implementation of Executive Order 11988 on Floodplain Management, March 1984, sets forth general policy and guidance for Corps implementation of Executive Order 11988, Floodplain Management, as it pertains to planning, design, and construction of Civil Works Projects, to activities under the operation and maintenance program, and to the real estate program of the Corps. The policy of the Corps with respect to floodplain management is to formulate projects which, to the extent possible, avoid or minimize adverse impacts associated with use of the base (100-year) floodplain and avoid inducing development in the base floodplain unless there is no practicable alternative. When a

determination is made that no practicable alternative to undertaking an action in the floodplain exists, it will be appropriately documented and the features or qualities of the floodplain that make it advantageous over alternative non-floodplain sites shall be described and adequately supported.

ER 1165-2-119, Modifications to Completed Projects, September 1982, provides guidance on the use of available authorities, as compared to the need of new project authorizations, for study and accomplishment of modification to completed projects.

ER 1165-2-400, Recreation Planning, Development and Management Policies, August 1985, defines the objectives, philosophies and basic policies for the planning, development and management of outdoor recreation and enhancement of fish and wildlife resources at Corps water resource development projects.

1.4.5 Engineering Pamphlets

EP 310-1-6, Corporate Information: Graphic Standards Manual, September 1994 (original); June 2006 (Change 1), establishes a unified approach regarding the use of Corps logotype and preparation of visual communications. The manual covers the use of the logo in business cards, signs, publications, forms, vehicles, and miscellaneous items.

EP 310-1-6a, Sign Standards Manual Volume 1, June 2006, provides direction and guidance for signage, including planning, use, placement, materials, and maintenance, at Corps civil works projects.

EP 310-1-6b, Sign Standards Manual Volume 2, Appendices, June 2006, provides guidance on procurement procedures, materials and specifications, sign maintenance procedures, typography reference, reference material, and reproduction materials for signage at Corps civil works projects.

EP 1130-2-540, Environmental Stewardship and Maintenance Guidance and Procedures, November 1996 (original); November 2002 (change 1); July 2005 (change 2); 11 August 2008 (change 3), establishes guidance for the management of environmental stewardship related operations and maintenance activities at Corps civil works projects and supplements ER 1130-2-540, Environmental Stewardship Operations and Maintenance Policies.

EP 1130-2-550, Recreation Operations and Maintenance Guidance and Procedures, November 1996 (as amended), establishes guidance for the preparation of master plans and operations management plans for Corps Civil Works Projects.

EP 1165-2-316, Rules and Regulations Governing Public Use of Water Resources Development Projects Administered by the Chief of Engineers, May 2000, establishes rules and regulations pertaining to the recreation land use and safety measures at Corps administered water resource and development projects.

ER 1165-2-400, Recreation Planning, Development, and Management, 9 August 1985, defines the objectives, philosophies and basic policies for the planning, development

Corps Vision

The Corps' ongoing vision of water resources management is one of sustainability and environmental stewardship in natural resources management.

"The Army Corps of Engineers is the steward of the lands and waters at Corps water resources projects. Its Natural Resources Management Mission is to manage and conserve those natural resources, consistent with ecosystem management principles, while providing quality public outdoor recreation experiences to serve the needs of present and future generations. In all aspects of natural and cultural resources management, the Corps promotes awareness of environmental values and adheres to sound environmental stewardship, protection, compliance, and restoration practices. The Corps manages for long term public access to, and use of, the natural resources in cooperation with other federal, state, and local agencies as well as the private sector. The Corps integrates the management of diverse natural resource components such as fish, wildlife, forests, wetlands, grasslands, soil, air, and water with the provision of public recreation opportunities. The Corps conserves natural resources and provides public recreation opportunities that contribute to the quality of American life."

ER 1130-2-550, Chapter 2 Paragraph 2-2.a (1), November 1996.

and management of outdoor recreation and enhancement of fish and wildlife resources at Corps water resource development projects.

EP 1165-2-502, Ecosystem Restoration - Supporting Policy Information, 30 September 1999, provides policy information in support of ER 1165-2-501 to guide Corps of Engineers involvement in ecosystem restoration and protection through Civil Works programs and activities

1.5 Scope of the Report

This updated master plan is intended to be a working document containing guidelines for administration of all federally administered land and water areas of the Elk Creek project, including all lands, facilities, and resources within. All subsequent management and development actions undertaken at Elk Creek must be compatible with the land use zoning and resource use objectives presented herein.

This master plan revises and updates the previous Elk Creek Lake Master Plan for Resource Use (Design Memorandum No. 16, 1987). This document identifies the recreational, wildlife, and fisheries values of the project area, as well as resources including soils and geology, climate and air quality, vegetation, archeological and historical resources, cultural and interpretive resources, water quality, visual and aesthetic quality, and sustainability. It also includes a recreational analysis, review of the public outreach process, a presentation of constraints and special issues to development within the area, the suite of resource use objectives to guide the project, and a land classification plan to establish management requirements.

Management actions taken at Elk Creek are guided and regulated by this master plan and appendices, including the protection, conservation, restoration, and development of resources within the entire 3,502-acre project area (Plate 1).

This master plan should be utilized in conjunction with the Operational Management Plan (OMP), which is the document that provides detailed management and administration functions, essentially translating the concepts of the master plan into operational terms. The Natural Resources Management Plan (NRMP) provided in Appendix II is an essential component of the future OMP to be developed and will be inserted into the OMP when it is complete. It recommends detailed management and development techniques for implementation of resource objectives. However, those recommendations should be considered conceptual in nature. This document is not intended to provide feasibility reviews of any proposed developments.

1.6 Prior Elk Creek Project Design Memoranda (DM)

DM#	Supplement Number and Title	Submission Date
1	Site Selection	November 1966
2	Hydrology and Meteorology	February 1967
3	General Design	April 1968
	General Design Resubmitted	October 1968
	General Design Supplement No. 1 Concrete Dam	November 1984
4	Preliminary Master Plan	May 1968
5	Relocation of Roads	February 1968
	Relocation of Roads Supplement No. 1 Lower County and Bypass Roads	December 1971

	Relocation of Roads Supplement No. 2 Upper County Road	December 1973
6	Real Estate	March 1969
7	Relocation of Power and Telephone Lines	July 1972
	Relocation of Power and Telephone Lines Revised	November 1972
8	Concrete Investigations and RCC Construction Techniques, and Instrumentation for a Concrete Gravity Dam; Including Thermal and Cracking Studies	January 1986
9	Embankment	February 1973
10	Spillway and Outlet Works	November 1973
	Spillway and Outlet Works Supplement No. 1 Fish Facilities	November 1983
	Spillway and Outlet Works Supplement No. 2 Concrete Dam, Spillway, Outlet Works, and Fish Collection Facility	November 1983
	Spillway and Outlet Works Supplement No. 2 Concrete Dam, Spillway, Outlet Works, and Fish Collection Facility Revision	November 1983
	Spillway and Outlet Works Supplement No. 2 Concrete Dam, Spillway, Outlet Works, and Fish Collection Facility Revision	July 1985
	Spillway and Outlet Works Supplement No. 3 Fish Collection Facility	1987
	Spillway and Outlet Works Supplement No. 4 Elk Creek Lake Fish Passage Corridor Project Modifications	June 2000
11	Clearing	No date
12	Master Plan	September 1973
13	Relocation of Isolated Burial Sites	August 1973
14	Geology and Foundations	May 1974
	Geology and Foundations Supplement No. 1 Geology and Foundations	October 1982
15	Inspection, Instrumentation, and Evaluation	April 1974
	Inspection, Instrumentation, and Evaluation Revision	April 1985
16	Elk Creek Master Plan for Resource Use	December 1987

1.6.1 National Environmental Policy Act Compliance Documents

Previous NEPA compliance documents prepared for Elk Creek include the initial EIS prepared in 1971, supplemental report on turbidity and temperature completed in 1974, a supplemental report with additional water quality studies in 1979 and a new EIS, which incorporated all of these studies in 1980. Project design changes then required preparation of an EA and FONSI, completed in 1983. Supplements to the 1980 EIS were published in 1985 and 1986, and another EA and FONSI were completed in 1987 to address retention of trees in parts of the proposed reservoir. A Final EIS was prepared in 1991 and summarizes the entire project up to that date, which at that time recommended the completion of the dam. In 1994, the Corps was court ordered to initiate studies for cost effective and efficient fish passage through Elk Creek Dam. Cost analysis indicated that constructing a passive fish corridor would be the least expensive and most effective alternative. In 1997, an EA was prepared to assess impacts of a fish passage corridor and in 1998 a FONSI was signed, allowing the construction of a fish passage corridor to

move forward. An interim EA was prepared for the control of noxious weeds and grazing impacts in 2002.

As a component of the original authorized project, environmental effects from the preparation and adoption of this master plan are covered under the 1980 EIS. Therefore, no additional NEPA documentation is being prepared for this master plan. Project-specific NEPA documents may be prepared in the future as management actions are implemented.

2 PROJECT DESCRIPTION



2.1 Project History

The Elk Creek Lake Project, as it was originally named, was authorized by the 1962 Flood Control Act (P.L. 87-874) as one of three multiple-purpose dams in the Rogue River Basin (Figure 2.1). The dams were designed to operate as a system to reduce flooding in the Rogue River Basin and provide irrigation, recreation, fish and wildlife enhancement, and water quality. Two of the three projects, Lost Creek Dam on the Rogue River and Applegate Dam on the Applegate River were completed in 1977 and 1980, respectively.

The Supplemental Appropriations Act of 1985 provided the final direction to begin construction of the Elk Creek Lake Project. However, prior to construction, legal actions were filed by a number of plaintiffs claiming NEPA violations. Initially, the U.S. District Court denied the plaintiffs motion to enjoin the project in January 1986, and construction of the dam began later that month. At that time, a master plan was initiated and was completed under the assumption that the dam would be built as designed.

However, in 1987, the Ninth Circuit Court of Appeals overturned the District Court decision due to findings that the Corps' NEPA documentation for environmental impacts of constructing the dam was inadequate. In particular, impacts to fish species protected under NEPA and ESA had not been adequately described and therefore no determination of impact could be sufficiently made. The Ninth Circuit Court of Appeals further directed the District Court to place an injunction against completion of the project. Construction was suspended in 1988 with the dam built to 83 feet, or roughly one third of its design height.

From 1988 through 1995, the Corps focused its efforts on performing the additional NEPA studies required to remove the injunction. After completing the NEPA studies, the District Court issued a favorable ruling, only to be overturned once again by the Ninth Circuit Court, which again issued a decision requiring completion of a more comprehensive NEPA review before the injunction could be removed.

The Corps notified the Congressional Appropriations Committee in November 1995 that it would not perform the additional NEPA studies required to remove the injunction, and instead, would evaluate more cost effective and biologically sound methods for long-term management of the project in an uncompleted state. The Fiscal Year 1997 Appropriations Act allowed for the funds previously appropriated for completion of the dam, if it was in fact not to be completed, to be reallocated for long term management of the project in an uncompleted state. This included provisions for modifying the project to allow for fish passage, the primary driving force behind the injunction.

The injunction decision required the Corps to work with the Oregon Department of Fish and Wildlife (ODFW) to ensure that fish passage was provided to areas upstream of Elk Creek Dam. Originally, ODFW and the Corps believed that fish passage through the diversion tunnel was adequate. Instead, it was found that fish were being stranded below the dam under this configuration and unable to move upstream. Although weirs were added to the diversion tunnel to provide resting areas for migrating salmon and steelhead, there were continued concerns for passage through the diversion tunnel at low flows and a new solution was sought.

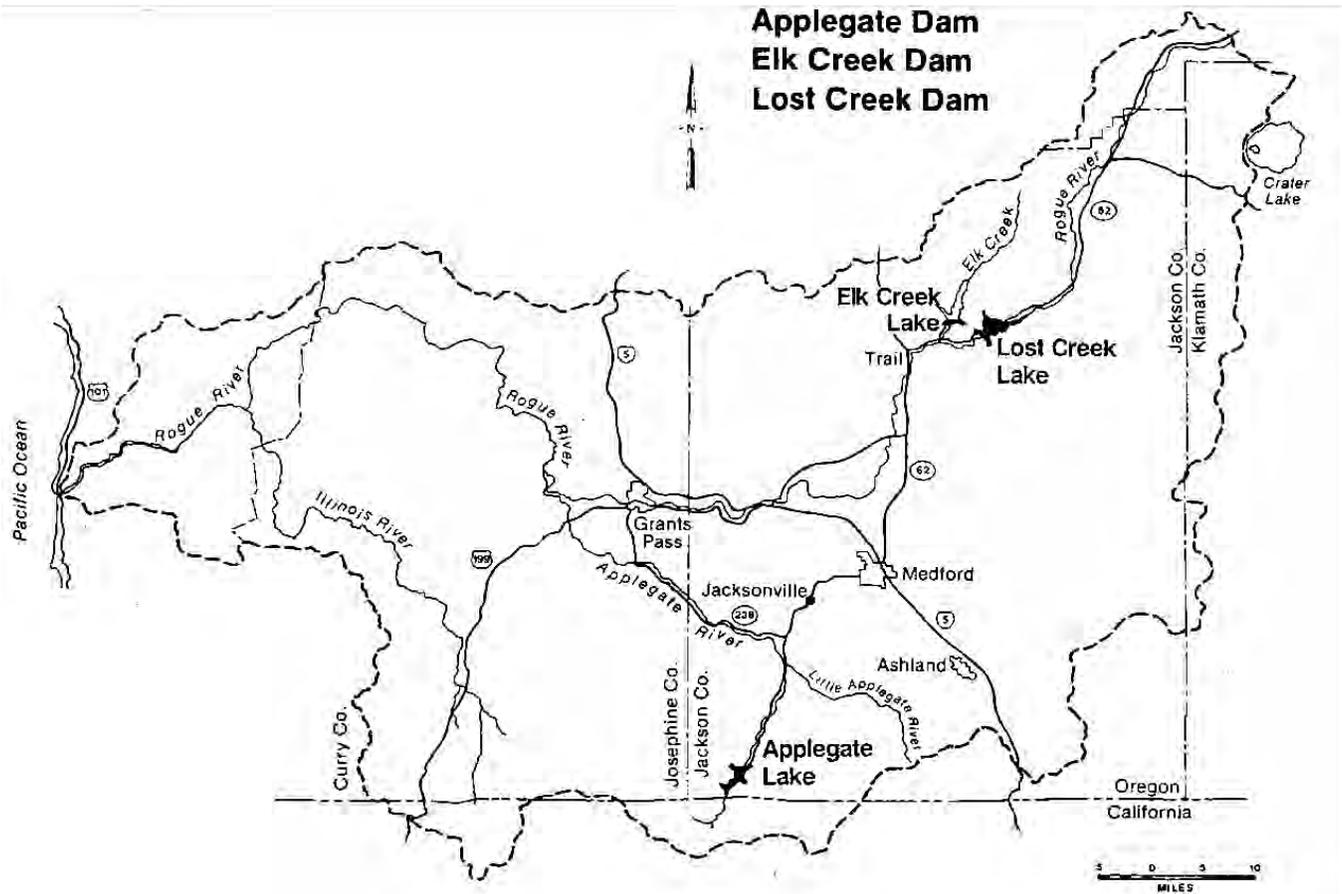


Figure 2.1 Rogue River Basin Project including Applegate, Elk Creek, and Lost Creek Dams.

In 1992 the Corps began funding ODFW to operate a temporary fish collection facility below the dam. The original purpose of this facility was to transfer fish, through a process called trap and haul, to the Cole Rivers Hatchery at Lost Creek Dam. This would occur until a more permanent solution could be found or the fish runs up the Elk Creek no longer occurred. However, without finalization of the dam, the facility became a permanent requirement under the injunction, and was the sole means of sustaining fish runs upstream of Elk Creek Dam.



Partially completed dam and fish trap facility in foreground.

The trap and haul facility was both expensive and inefficient. Complications with operating the trap and haul facility resulted in unacceptable fish mortality and the remaining dam structure severely restricted downstream fish passage. If trap and haul were to be implemented permanently, an upgraded facility would have been required and modifications to the dam would have been necessary to allow downstream fish passage. Because of the high costs of these modifications, estimated to reach \$8 million, it was determined that the Corps would investigate other options for maintaining fish passage.

In 1994, the Corps was court ordered to initiate studies for cost effective and efficient fish passage through Elk Creek Dam. The Corps compared the continued use of an upgraded trap and haul facility against the option of constructing a fish passage corridor (dismantling of a portion of the dam to allow Elk Creek to flow freely). Cost analysis indicated that constructing a passive fish corridor would be the least expensive and most effective alternative. In 1997, an EA was prepared to assess impacts of a fish passage corridor and in 1998 a FONSI was signed, allowing the construction of the corridor to move forward.

In 2000, the Corps prepared a document detailing the preferred alternative for the fish passage corridor. Detailed hydrology and hydraulic modeling, geomorphic assessment and incremental cost analysis indicated that the removal of a portion of the dam would provide the least costly and most efficient fish passage alternative. In 2008, the instream portion of the dam was removed and Elk Creek once again flowed freely. This was the Phase I effort for fish passage.

Phase II began after completion of the corridor and included further restoration of the Elk Creek streambed. Although the creek was free flowing once again, it needed to be realigned to occupy its historic channel in order to provide native instream habitats and ensure stability of the channel. At the same time, off-channel habitat for pond turtles and rearing and winter refugia for salmonids were created through realignment of tributaries entering the main channel of Elk Creek and the placement of large woody debris. These efforts were completed in 2010 and continue to be monitored for success.

Due to the significant changes in the configuration of the project area, and the resulting management needs, the previously completed master plan was deemed inadequate and an updated master plan was requisitioned. This updated Elk Creek Master Plan provides an overview of existing conditions, provides for input from interested stakeholders, and recommends means of managing the inventoried resources.

2.1.1 List of Historic Events

- 1962 Flood Control Act authorizes Rogue River Basin Project including construction of Elk Creek, Lost Creek, and Applegate Dams.
- 1971 Final Environmental Impact Statement (EIS) released.
- 1975 Draft Supplement EIS No. 1 released (includes temperature and turbidity analyses).
- 1975 Construction deferred due to water quality concerns by State of Oregon.
- 1980 Final Supplemental EIS No. 1 released addressing water quality issues.
- 1982 State support reestablished.
- 1982 Congress appropriates funds to continue.
- 1983 Corps recommends not proceeding with construction due to incremental cost to benefit ratio results.
- 1985 Congress directs and funds Corps to construct project.
- 1985 Oregon Natural Resources Council files suit alleging NEPA violations and District Court dismisses allegations.
- 1986 Dam construction is initiated.
- 1987 Ninth Circuit Court of Appeals reverses District Court decision and enjoins construction.
- 1988 Court injunction stops construction at one third its design height.
- 1989 U.S. Supreme Court reverses Appeals Court decision except for issue of cumulative impacts analysis of 3 dams in Rogue River Basin (not appealed).
- 1991 Final Supplemental EIS No. 2 released with cumulative impacts analysis and no-pool alternative identified as preferred alternative.
- 1991 Governor of Oregon opposes project and states preference for removal or abandonment with restoration and provisions for fish passage.
- 1992 Record of Decision selects the no-pool alternative if project is to be completed.

- 1992 Department of Justice petitions U.S. District Court for removal of injunction.
- 1992 Congress adds \$2.5 million and directs Corps to use funds on designs to complete project, pending removal of injunction.
- 1992 Forest Service (USFS) and Bureau of Land Management (BLM) determine that no-pool alternative will not diminish wild and scenic values of Rogue River if effective fish passage is provided.
- 1992 Additional suit filed against Corps, USFS, and BLM alleging violations of the Wild and Scenic River Act (WSRA) and NEPA.
- 1994 District Court finds Supplemental EIS No. 2 adequate, dismissing first case and orders Corps to study fish passage and review new information concerning status of fisheries in Rogue River.
- 1995 Ninth Circuit Court of Appeals reverses District Court ruling and awards attorney’s fees to plaintiffs.
- 1995 Congressional Appropriations Committee is notified that the Corps will not prepare NEPA reports required to remove injunction, instead will evaluate cost effective and biological methods for long term management of the dam in an uncompleted state.
- 1997 Corps releases Draft EA for a fish passage corridor.
- 2000 Corps prepares Design Memorandum No. 10, Supplement No. 4, to support fish passage corridor provisions.
- 2008 A portion of the dam is removed to allow unhindered flow of Elk Creek and therefore suitable fish passage.
- 2010 Completion of Phase II Restoration efforts, including realignment of the historic Elk Creek streambed and creation of off-channel habitat.



Top to bottom: Elk Creek Dam at one-third height in 1987, fish passage corridor demolition, recontouring streambed through corridor, current passage corridor and streambed configuration.

2.2 Project Location and Setting

The Elk Creek project area is in northern Jackson County, 26 miles northeast of Medford, Oregon. The area includes 3,502 acres of land that extends from areas west of Elk Creek Road to areas east of Elk Creek (Plate 1). The southern boundary is just downstream of Elk Creek Dam, which is at RM 1.7, and the northern boundary is just upstream of Flat Creek, near RM 9. The project area can be reached via Elk Creek Road, which can be accessed only from the Crater Lake Highway (State Highway 62).



Left to Right: Remaining dam, oak savanna vegetation community, Elk Creek Phase II Restoration.

Elk Creek is the principal headwater tributary to the Rogue River within the Cascade Mountain Range, and is a subwatershed of the much larger Upper Rogue River basin, which covers 1,615 square miles. The headwaters of Elk Creek are at 5,750 feet elevation and convey flows through narrow and steep canyons of the confined drainage area. Approximately 21 miles downstream from its headwaters, Elk Creek enters the Rogue River at an elevation of approximately 1,460 feet.

2.3 Project Lands

2.3.1 Allocations

Lands acquired by the Corps are given one of four specific allocations, (operations, recreation, fish and wildlife, mitigation) (EP 1130-2-550). At Elk Creek, a total of 3,290 acres of the Elk Creek project area were allocated as operations and 212 acres were allocated as recreation. Lands allocated for operations were necessary for the reservoir, dam, construction activities, and road relocations proposed under the Elk Creek Lake Project in order to provide flood risk management. Recreation lands were acquired where development of high intensity recreational facilities were proposed in association with the creation of the reservoir.

2.3.2 Authorized Purposes

Allocated lands are then given any number of specific authorized purposes that further indicate the types of uses that are allowed under the operations and recreation allocations. The Elk Creek project initially included flood control, irrigation, water supply, recreation, fish and wildlife enhancement, and water quality control. After dam construction was halted in 1987, operations of the project area transitioned to fish and wildlife enhancement, water quality control, and recreation. In 2008 the dam was further modified under NEPA/ESA requirements to allow unhindered fish passage. The section of the dam crossing Elk Creek was demolished and the streambed of Elk Creek was reconstructed to its historic alignment.

As a general rule, a reservoir is operated for its authorized purposes; however, there are exceptions (Corps 1992). In the absence of revisionary legislation, the originally designated authorized purposes for Elk Creek will remain in place, although they will not be operated. For example, the absence of the dam means that flood control, irrigation, and water supply are no longer achievable authorized purposes. However, authorization for each of these purposes will remain in place for the project area, in the event that future stakeholders agree on the need to reintroduce flood control operations into the project.

Given the current configuration of the project, the primary operating purposes of the area are now fish and wildlife enhancement, water quality control, and recreation. Environmental stewardship is of growing importance within Corps mandates. A unique federal land holding such as Elk Creek provides opportunities for the Corps to restore and enhance fish and wildlife habitats, while also providing a much needed natural area for recreational appreciation of the outdoors.

2.3.3 Land Management Status

The Corps acquired 2,662 acres of the project area in fee title and retains the primary management responsibility for administration of those lands. The remaining 840 acres are federally owned public domain, or divested, Oregon and California (O&C) Railroad lands administered by the Bureau of Land Management (BLM). According to Public Land Order Number 6373, these lands have been withdrawn from public use to support the project and while the Corps manages the withdrawn lands as part of the project, BLM retains control over the timber and mineral resources (Corps 1987). The Elk Creek watershed contains lands managed by the USFS Rogue River-Siskiyou National Forest (33%), BLM (27%), and those in private ownership (37%) (Figure 2.2). About 40% of the project boundary is contiguous to BLM lands.

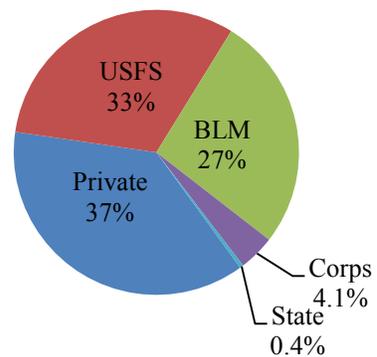


Figure 2.2 Land ownership throughout the Elk Creek watershed.

2.3.3.1 Natural Resource Management Plan

An important piece of this master plan update is the Natural Resource Management Plan (NRMP), which has been developed in cooperation between the Corps and surrounding ownership and management interests, including private landowners and state and federal agencies. The NRMP provides a review of resource management needs in the project area, based on the resource inventory completed in Chapter 3 below and the resulting resource use objectives outlines in Chapter 7. The NRMP is attached as Appendix II.

2.3.3.2 Corps Management Personnel

The project office for the Rogue River Basin Project, which includes Elk Creek, is located at William L. Jess Dam at Lost Creek Lake in Trail, Oregon. Day to day operations and maintenance needs in the project area are minimal since the decommissioning of the dam. The Rogue River Basin Project Resource Manager is responsible for all aspects of management and administration of natural and developed areas of this project. Management and administration responsibilities include effective implementation of such activities as forest management, fish and wildlife management, soil erosion control, visitor education and interpretive programs, law enforcement, vector and pest control, public use areas administration, daily inspection of the project area, and visitor and employee safety programs. Other specific duties required of the Resource Manager include supervision of employees, public relations, periodic compliance inspections of outgranted land, and providing input to the development of the master plan and its subsequent revisions and updates.

2.3.3.3 Real Estate

Engineers Easement No. DACW57-2-95-0001 A right of way has been granted for Elk Creek Road to Jackson County as a permanent easement. The county has primary responsibility for operating and maintaining roads and lands within that right of way. Under this easement, Boise Cascade Corporation has been permitted to install two gates to control access to areas under forest rehabilitation as a result of the 2002 Timbered Rock Fire. Gates are located at Alco and Middle Creeks and it is the sole responsibility of Boise Cascade Corporation to maintain these gates. Furthermore, in an amendment to this easement, Jackson County has been granted a license to operate and maintain a stockpile site for crushed aggregate used in the maintenance of county roads and temporary storage of uncontaminated spoil material, as an amendment to the original easement. This stockpile site is approximately 3.7 acres and is located at the north end of the project area near Flat Creek.

Deed Reservation An adjacent landowner who sold parcels of land to the government maintains a deed reservation that assures continued access through project lands to reach their property. The Corps may not take any management actions that foreclose on the adjacent landowner's right of entry. The Corps retains the primary responsibility for managing access roads through project lands.

Local Memorandum of Understanding or Agreement (MOU/MOA) Although there are no specific MOU/MOAs between the Corps and another agency, BLM does have a responsibility to provide generalized services under Land Order Number 6373 (covers timber cruise, appraisal, and/or administration of sales within the Elk Creek project area). In 1980, the Corps requested that the BLM provide specialized services for timber management above and beyond the typical BLM management covered under Public Land Order Number 6373. However, no MOU was formalized or adopted and it is unclear what additional specialized management the Corps hoped to obtain from the BLM. The Corps Real Estate Division has placed a recommendation on record which states that the Corps may elect to relinquish lands to the BLM. This would be one way to resolve the question of BLM's authority to provide specialized management above and beyond Land Order Number 6373 for said lands.

Agency Wide MOU/MOAs Several generalized, agency wide MOU/MOAs are in place between the Corps and other federal or state agencies or tribes, including those for forest management, pest and disease management, and fire protection. Additional information is provided in Chapter 5.

2.3.3.4 Elk Creek Dam Status

When construction was halted in 1988, the dam, intake structure, and outlet works were roughly one third complete, while the downstream energy dissipater and fish collection facility had been completed. Unused aggregate rock had been stockpiled in the right abutment work area along with a variety of dam components that had not yet been installed. Current operations in the area includes monitoring and maintenance of the fish passage corridor (Phase I), monitoring and maintenance of Elk Creek restoration work (Phase II), providing security, maintaining signs, fences, and gates, and removal of debris as necessary. There are no administration facilities located in the project area. Remaining operation and maintenance duties in the project area are administered by the Resource Manager of the Rogue River Project.

3 ENVIRONMENTAL RESOURCES OF THE PROJECT AREA



Inventory of existing conditions of the resources of the Elk Creek project area follows. This information was collected through physical site surveys, database review, literature review, and coordination with relevant agencies. Understanding the current site conditions is essential to properly managing and protecting the resources of the area. The following chapter provides the basis for development of the NRMP in Appendix II.

3.1 Physical Land Resources

3.1.1 Topography

The Elk Creek project area is located in the northwestern corner of the Upper Rogue River drainage basin in the southern extremities of the Western Cascades physiographic province (Plate 1). Topography in the Upper Rogue River basin is characterized by steep and deeply dissected mountainous terrain with east-west oriented ridges between valleys of the Rogue River and its upper tributaries. Elevations in this region range from 1,000 feet in the valleys to 5,000 feet along the ridge-tops (Corps 1987).

The Elk Creek project area lies within a steeply sloped mountainous area with moderate to high stream gradients. Elevations in the project area range from approximately 1,500 at the valley bottom to 2,600 feet above mean sea level at the highest peak located southeast of the dam site (Plate 2). Ancient alluvial terraces slope gently towards the Elk Creek floodplain and offer the most suitable areas for development. The two largest alluvial terraces in the project area are between West Branch and Flat Creek on the west side of Elk Creek. One smaller alluvial terrace is located downstream of the fish passage corridor. The remainder of the project area is too steep (greater than 12%) for intensive land uses (Corps 1987).

Slope limits land uses in the project area; slopes of 0 to 12% have a high potential for intensive land uses and slopes from 12 to 30% have a low potential for intensive land uses. In general, lands exceeding 12% slopes are only suitable for low intensity uses. At steeper slopes road construction and utilities become less feasible. Elk Creek project lands located in areas with more than 10% slope are unusually rocky, which adds further to the difficulty of construction and operation for more than minimum developments such as trails and picnic areas for recreational activities (Corps 1987).

3.1.2 Geology

Geology in the Elk Creek project area is represented by three distinct units common to the Western Cascades Physiographic province, characterized by volcanic activity that occurred during the Miocene/Oligocene period 5 to 34 million years ago. They include; (1) a thick unit of pyroclastic and

volcaniclastic rocks consisting of tuffs, breccias, and mixed lithologies, which were violently and explosively ejected from volcanic vents and fused together upon falling to earth; (2) a thick and massive unit of volcanic flows composed of andesite, dacite, and basalt flow breccias; and (3) a smaller area of overlying, thick unit of intermediate intrusive igneous rocks, containing andesite and dacite. Terrace deposits consisting of decomposed and weathered gravels dating back to the Pliocene/Pleistocene era 11,700 years and 5.3 million years before present can be found along the valley walls of the Elk Creek project area at the 1,700 foot elevation. In addition, mixed grain young alluvium sediments that have been carried from the hill slopes by erosional forces can be found in the Elk Creek floodplain.

Two large systems of Quaternary fault zones, which are faults that have been active in the past 1.6 million years with a magnitude of greater than 6 (USGS 2011a), lie approximately 20-30 miles east of the project. The Klamath-Graben fault zone is located approximately 27 miles to the east of the project area and is less than 130,000 years old. The Sky Lakes fault zone is 25 miles to the south-southeast of the project area and is less than 15,000 years old. These faults have produced several earthquakes of significant magnitude in Klamath County, east of Jackson County. Though some ground movement could be felt as far away as Medford during these earthquakes, there were no damages or casualties reported in Jackson County.

Based on the Oregon Department of Geology and Mineral Industries (ODGMI) 2008-2009 fault map, approximately 20 fault lines cross the Elk Creek project area (Plate 3). However, the fault map data contains little information in regard to the fault types, physical characteristics, and age of fault zones. Overall, seismic events in the area are slow-moving and of low intensity. The dam and other project structures have been engineered to minimize seismic impacts. However, minor rock falls or land slippage may occur as a result of nearby seismic activity.

The primary geologic hazard in the project area is the potential for landslides. Based on the Statewide Landslide Information Database for Oregon (SLIDO), 3 small landslides have occurred in the project area including two on the east slope of Elk Creek and one on the hill slope adjacent to West Branch Elk Creek (ODGMI 2011). Several larger landslides have occurred in the upper watershed along Elk Creek (SLIDO).

3.1.3 Soils

The 2006 NRCS Soil Survey Geographic database (SSURGO) provides the most extensive and recent data layer available for soils in the project area (NRCS 2006). According to this mapping, there are at least 21 separate soil types, which can be organized into soil management groups by their similar physical and engineering characteristics. Groups within Elk Creek project area include alluvial, bottom, foothill, hillside, and mountain slope soils (Corps 1987). These soil management groups are generalized for the purposes of guiding the use and development of project lands and should only be used for conceptual planning purposes (Corps 1987).

3.1.3.1 Alluvial Soils, 455 Acres (13% total area)

This group includes combinations of sands, gravels, cobbles, stones, and boulders formed from tuff, rhyolite, andesites, basalt, and alluvium mixed rock sources (NRCS 2006), formed by alluvial processes deposited in the flood plain of Elk Creek and its larger tributaries (Corps 1987). Types include Camas-Newberg-Evans, Sevenoaks loamy sand, and Riverwash (Plate 3). Slopes along these alluvial soil types generally range from less than 1-3%.

Alluvial soils are typically subject to seasonal flooding and have a water content that varies with instream water levels. Variable water conditions in the Elk Creek drainage basin cause alluvial soils to be less than

favorable for many plant species; consequently, these fluvial soils tend to have sparse vegetation coverage (Corps 1987). Native vegetation typical of these soil types includes (NRCS 2006) annual weeds, blackberries, grasses, Oregon ash, Oregon white oak, red alder, rose, serviceberry, snowberry, and willows. The location of these vegetation types in the floodplain makes them prone to periodic wash-out during high flows (Corps 1987).

Alluvial soils are best suited for habitat management, water supply, and recreational activities including fishing, waterfowl hunting, and swimming. The sparse vegetation furnishes little cover and food for wildlife. However, the gravel bars are important spawning grounds for anadromous fish, and riverine habitat for other important species including beaver and migratory waterfowl (Corps 1987).

3.1.3.2 Bottom Soils, 105 Acres (3%)

Bottom soils consist of lowland, cobbly, mixed alluvium deposited by recent floodplain activity found in creek terraces and alluvial fans. Soil types include Takilma Cobbly Loam and Medford Clay Loam-gravelly substratum, both of which are well drained and primarily formed in cobbly mixed alluvium (Plate 3). Bottom soil types typically have slopes from 0-7% and support well established and dense native vegetative layers including big leaf maple, blackberries, black cottonwood, Douglas fir, grasses, Oregon ash, Oregon white oak, and shrubs (NRCS 2006).

Past land use on these soil types were cultivation and grazing activities (Corps 1987). Bottom soils are best suited for wildlife habitat, recreation, and can be suitable for building site locations. However, a shallow water table can be problematic when excavating footings for foundations (NRCS 2006). Recreational development, such as camping sites and picnic areas are better suited for the soil types found in this management group (Corps 1987).

3.1.3.3 Foothill Soils, 2,102 Acres (60%)

Foothills soils are generally found in gradual to steep sloping areas. Foothill soils are the most extensive in the project area and include 13 different soil complexes (Plate 3). Soils in this group are primarily formed from weathered alluvium and colluvium tuffs, breccias, and andesite, volcanic bedrock, and numerous outcroppings (NRCS 2006). Foothills soils are relatively shallow, extending only 2 or 3 feet below the surface in most places (Corps 1987).

Foothill soils include an extremely wide variety of slopes, from 1 to 70% (Plate 3). Gently sloping areas include the meadows of the valley bottom, which give way to rolling hillsides of moderate slope, and broad crested ridgelines with slopes as steep as 70%. Soil types in this group include Freezener gravelly loam, Freezener-Geppert complex, Geppert very cobbly loam, McMullin gravelly loam, McMullin rock outcrop complex, McNull loam, McNull-McMullin complex, McNull-McMullin gravelly loam, McNull-Medco complex, Medco clay loam, Medco-McMullin complex, Medco-McNull Complex, and Straight extremely gravelly loam (Plate 3).

These soils support dense vegetation of Douglas fir, white fir, sugar pine, incense cedar, ponderosa pine, Pacific madrone, whiteleaf manzanita, California black oak, wild rose, Cascade Oregon grape, whipplevine, vanilla leaf, Idaho fescue, lemon needlegrass, and other shrubs (NRCS 2006). Much of the timber in the project area has been actively harvested in the past and generally supports a thick cover of mono-cultured second-growth Douglas fir on north-facing slopes and mixed stand conifer-hardwood and grassland openings on south-facing slopes (Corps 1987). This vegetation is well suited for wildlife habitat and forage production, timber production, and grazing. Due to high slopes and support of native vegetation communities, habitat management activities in these soils will be predominantly limited to woodland wildlife species (NRCS 2006).

Low density recreational uses may also be supported, though steep slopes and shallow soils are a limiting factor. Proper mitigation of erosion must be utilized in developing these areas. Excavation of material on steeper slopes can result in side-cast material extending far down-slope, which can be very difficult to re-vegetate and stabilize. Unstable slopes can also lead to water quality impairments in Elk Creek and tributaries as turbidity producing clays can be found throughout the area (Corps 1987).

3.1.3.4 Hillside Soils, 175 Acres (5%)

Hillside soils were formed in soft volcanic bedrock units consisting of colluvium from volcanic tuffs and breccias and extremely gravelly loam. These soils occur in lower and middle hillsides of the project area of 35-60% slopes (Plate 3). Soil types include Freezener gravelly loam, McNull-McMullin complex, McNull-McMullin gravelly loam, and Straight-Shippa extremely gravelly loam (NRCS 2006).

Native vegetation typical of hillside soils consists of California black oak, Douglas fir, grasses, Pacific madrone, ponderosa pine, whiteleaf manzanita, and wild rose (NRCS 2006). Grasses can be found on the southerly slopes, and Douglas fir on the northerly slopes. Douglas fir stands are scrubby and root growth is limited by dense clay subsoil and a seasonally high water table (Corps 1987). Land uses typical for hillside soil types are timber production, pasture, and wildlife habitat (NRCS 2006).

Dense clay subsoils can be problematic for anthropogenic uses involving land disturbances. In the wet season, clay subsoils covering slopes greater than 35% can restrict soil water movement to the upper soil layer and cause loss of stability through seepage and sloughing of soil into excavations. Water due to seepages can also come to the surface in shallow excavation areas such as when developing roads, trails, and other recreational features. On steeper slopes, sloughed soil masses and exposed clay sub-soils are a source of colloidal sediment. Hillside soils should be treated with special care; development that involves disturbing the soil mantle must be thoroughly investigated, taking soil limitations into account (Corps 1987).

3.1.3.5 Mountain Slope Soils, 665 Acres (19%)

Mountain slope soils are formed over volcanic rocks generally found at depths of more than 5 feet, with greater depths for benched and concave slopes, and occur on ridge crests and steep mountainous side slopes (NRCS 2006, Plate 3). Slopes range from 10-70%, with more gradual slopes found in concave areas located mid-slope along both sides of the Elk Creek project area.

Vegetation is moderately dense with mixed firs and pine dominating the northerly slopes and hardwoods dominating the southerly slopes. Old growth Douglas fir can be found on northerly facing steep concave slopes at the 2,000 foot range (Corps 1987). Other typical species include California black oak, Douglas fir, fescue, incense cedar, lemon needlegrass, Oregon-grape, Pacific madrone, poison oak, ponderosa pine, sugarpine, whipplevine, whiteleaf manzanita, wild rose, and vanilla leaf.

Overall, mountain slope soils are best suited for watershed and wildlife uses due to steep slopes. However, the few areas of lower slopes can provide the best opportunity for development. Benches found along the sides of the valley's steep slopes are typically less than 10% and are relatively stable and well-drained, making them suited for development of recreational uses. Picnicking areas, campsites, and trails may be located on these mountain slope benches.

Construction activities should minimize the amount of exposure to subsoil. Exposed colloidal sediments that make their way into Elk Creek or its tributaries would impact water quality. Construction activities on these soil types should only occur when dry as compaction of these soils when wet or saturated can result in surface erosion. Proper erosion mitigation should be employed during all development activities (Corps 1987).

3.1.4 Sedimentation

In Western Cascades watersheds, steep valley sidewalls and thin soil cover on upper slopes combine to promote runoff rather than absorption of precipitation and melt water. Runoff in the drainage from higher elevation steep slopes promotes erosion of soils, carrying high bed load downslope, and creating thick soil deposits at the base of slopes. As runoff reaches lower slopes and deeper soils, it can gain enough erosive power to cut large gullies, erode stream beds and banks, and transport relatively large volumes of soil to the downstream portions of the basins. As downstream gradients flatten out, water moves at lower velocity and deposits these sediments in the lower watershed. After the dam was notched, the Elk Creek streambed was reconstructed to facilitate the natural occurrence of deposition.

3.2 Climate

3.2.1 Regional and Local Climate

The climate of the Rogue River Basin is characterized by mild wet winters, and warm dry summers. The area is subject to frequent winter storms of varied intensities. Winter precipitation at higher elevations in the Elk Creek watershed generally occurs as snow, with rain predominating in the lower elevations. During the summer months, the area is dominated by the Pacific high pressure system, resulting in hot dry weather. Summer rainstorms occur occasionally and are usually of short duration and limited spatial coverage. Average annual precipitation within the watershed ranges from 35-60 inches.

Jackson County lies in the southwestern part of Oregon along the California border. It is wholly within Climate Division 3 (Southwestern Interior) established by the National Climatic Data Center. The southwestern interior of Oregon is one of the more rugged parts of the state. Deeply indented river valleys separate mountains and ridges, with most of the rivers flowing westward towards the Pacific Ocean. Although much of the area is partially sheltered from Pacific storms by the Coast Range to the west, many of the higher elevation sites receive abundant precipitation with some locations receiving in excess of 120 inches per year. As in the case of the rest of western Oregon, most precipitation in Zone 3 falls during the months of November through March (OCS 2011).

Due to its separation from the coast, Zone 3 has greater temperature extremes than the remainder of western Oregon. During summer, it is generally the warmest part of the state. Medford, for example, averages about 55 days per year with maximum temperatures of 90° Fahrenheit (F) or above; in fact, the average daily maximum for July is above 90° F. Winter temperatures can be quite cold. The average extreme low temperature in Medford during December and January is about 18° F, and a 20-day average for January is 32° F or below. Medford's monthly mean temperature ranges from 72.5° F to 37.7° F, a range greater than most other stations west of the Cascades (OCS 2011).

3.2.2 Greenhouse Gas Emissions

The sources of Oregon's greenhouse gas (GHG) emissions can be broadly listed as energy, agriculture, industrial processes, and waste management. Energy, particularly electricity consumption and transportation, is the largest source of greenhouse gas emissions in the state. Emissions associated with the consumption of electricity have been between 20-24 million metric tons of CO₂ equivalent (MMTCO₂e) per year in the last decade, representing about 33% of Oregon's total emissions. The transportation sector represents about 37% of greenhouse gas emissions in Oregon, ranging from about 21 to 25 MMTCO₂e over the last twenty years (OCCRI 2010).

In light of Oregon's relatively small population, metrics other than total emissions should be used to assess Oregon's contribution to climate change. The simplest of these is per capita emissions, which

provides a method to compare the carbon footprint of Oregonians to national and international norms. Oregon's per capita emissions of 18 MTCO₂e in 2005 was the eleventh lowest of all U.S. states, or about 20% lower than the national average (24 MTCO₂e) (OCCRI 2010). However, compared to developed countries, Oregon's per capita emissions rank quite high. Compared to the 39 industrialized countries with reported inventories in 2005, the state of Oregon alone produces emissions that rank fifth highest, nearly double the European Community average.

3.2.3 Federal Policies and Measures

Through the American Recovery and Reinvestment Act (ARRA), signed into law in February 2009, the United States allocated over \$90 billion for investments in clean energy technologies to create green jobs, speed the transformation to clean, diverse, and energy-independent economy, and help combat climate change. In June 2009, the U.S. House of Representatives passed the landmark American Clean Energy and Security Act, which includes economy-wide GHG reduction goals of 3% below 2005 levels in 2012, 17% below 2005 levels in 2020, and 83% below 2005 levels in 2050. In September 2009, the EPA announced its plan to collect GHG emission estimates from facilities responsible for 82.5% of the GHG emissions across diverse sectors of the economy, including power generation and manufacturing. In October 2009, the President issued an Executive Order requiring federal agencies to set and meet strict GHG reduction targets by 2020. In December 2009, following an extensive comment and review period, the EPA Administrator issued a finding under the Clean Air Act that the current and projected GHG concentrations in the atmosphere threaten the health and welfare of current and future generations (U.S. Department of State 2010).

In addition to the major new 2009 initiatives highlighted above, the government is making important progress toward reducing GHG emission through some 80 energy policies and measures that promote increased investment in end-use efficiency, clean energy development, and reductions in agricultural GHG emissions (U.S. Department of State 2010). The government is also committed to reducing emission from the most potent GHGs; more than a dozen initiatives across five executive agencies target these potent gases (U.S. Department of State 2010).

In 2004, Oregon's governor convened the Governor's Advisory Group on Global Warming to make recommendations on reducing greenhouse gas emissions in Oregon. Their final report, the Oregon Strategy for Greenhouse Gas Reductions, has served as the cornerstone for the State's greenhouse gas policy since its adoption. One of the key recommendations from that report, which the Governor endorsed, was a set of greenhouse gas reduction goals for Oregon. Those goals are to arrest the growth of Oregon's greenhouse gas emissions and begin to reduce current greenhouse gas emissions by 2010, to achieve greenhouse gas levels that are 10% below 1990 levels by 2020, and by 2050, to achieve greenhouse gas levels that are at least 75% below 1990 levels. These targets were later put into statute by the 2007 legislature at the same time the Global Warming Commission was established.

3.2.4 Global Climate Change

Global climate change is an increase in the overall average atmospheric temperature of the earth. The 2007 Intergovernmental Panel on Climate Change (IPCC) stated that "Most of the observed increase in global average temperatures since the mid-twentieth century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations." In the coming decades, scientists anticipate that as atmospheric concentrations of greenhouse gases continue to rise, average global temperatures and sea levels will continue to rise as a result, in turn changing global weather patterns.

According to the United States Global Change Research Program (USGCRP), the Northwest region's average temperature is projected to rise 3 to 10° F in this century, with higher emissions scenarios

resulting in warming in the upper end of this range (USGCRP 2011). Increases in winter precipitation and decreases in summer precipitation are projected by many climate models, although these projections are less certain than those for temperature.

As global climate change occurs, the predicted changes in precipitation and temperatures may alter habitat conditions including changes in river hydrology and suitability for the current plant community. A drier, warmer summer may shift habitat conditions to favor more drought tolerant plant species.

3.3 Water Resources

3.3.1 Watershed

The Elk Creek drainage basin is located in the southwestern corner of the Western Cascades physiographic province and covers an area of 134 square miles. Elk Creek is the principal headwater tributary to the Rogue River within the Cascade Mountain Range, and is a subwatershed of the much larger Upper Rogue River basin (1,615 square miles). The headwaters of Elk Creek begin at elevation 5,750 feet, flow through the narrow and steep canyon dendritic drainage system along confined alluvial plains and gently rounded intermediate foothill benches, and flatten out within the valley of the project area. Canyon ridges on either side of the confined drainage area are rounded with rhyolitic rock outcroppings such as Yellow Rock and Berry Rock. Approximately 21 miles downstream from its headwaters, and one mile downstream of the project area, Elk Creek coalesces with the Rogue River at an elevation of approximately 1,460 feet. The Rogue River continues downstream to the south and west until it reaches the Pacific Ocean at Gold Beach, Oregon (Corps 1987).

Major tributaries to Elk Creek in the project area drain the western half of the basin and include Flat Creek, Alco Creek, Middle Creek, West Branch Elk Creek, and Berry Creek (Plate 4). Though these streams are deeply incised within their drainage boundaries, they have uniquely low gradient streambeds adjacent to Elk Creek and many are known to be fish bearing. Studies conducted by Tehama Environmental Solutions (TES 2011) provided an inventory and characterization of Elk Creek tributaries, each of which have been designated by letters B through J. Tributaries B, C, D, E, F, G, I, and J are of significant importance to ODFW as fish bearing streams (Plate 4).

3.3.2 Hydrology

Elk Creek Basin lies in the western portion of the Upper Rogue River Basin, located in a transitional area between 4 different climate zones. These zones are the Pacific Maritime on the Coast to the west, Oregon High Desert to the east, California Mediterranean to the south, and Northern Temperate to the north. The convergence of these zones creates highly unpredictable weather, with large fluctuations in annual precipitation and temperatures within longer climatic cycles. Rainfall in the Elk Creek project area ranges from 30 inches in the lower basin to 55 inches the headwaters area (ODEQ 2008). Approximately 80% of precipitation in the basin falls as rain and the remainder as snow in the winter months (Corps 1987).

Hydrology within the basin is strongly influenced by climate and soil conditions. At higher elevations on the slopes of the cascades, much of the precipitation falls as snowfall and a significant portion infiltrates into the highly permeable volcanic soil and rock. This leads to high instream flows through May due to snow melt and summer flows supported by significant spring flow (ODEQ 2008).

Elk Creek's monthly mean discharge above the confluence of the Rogue River is significant from October through May, with January having the highest monthly mean discharge of 520 cubic feet per second (cfs)

Figure 3.1 Elk Creek Mean Monthly Discharge for 1947-2010 (cfs) (Gage 143380)

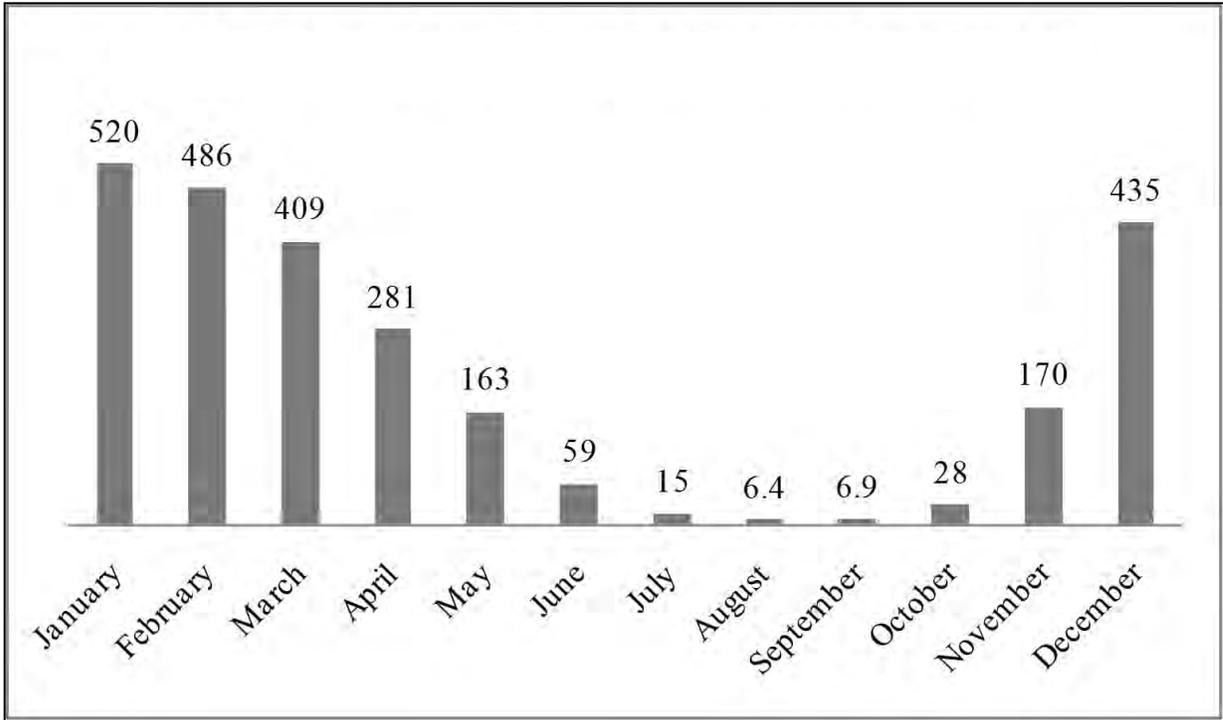


Figure 3.2 Elk Creek Peak Discharges for 1947-2010 (cfs) (Gage 143380)

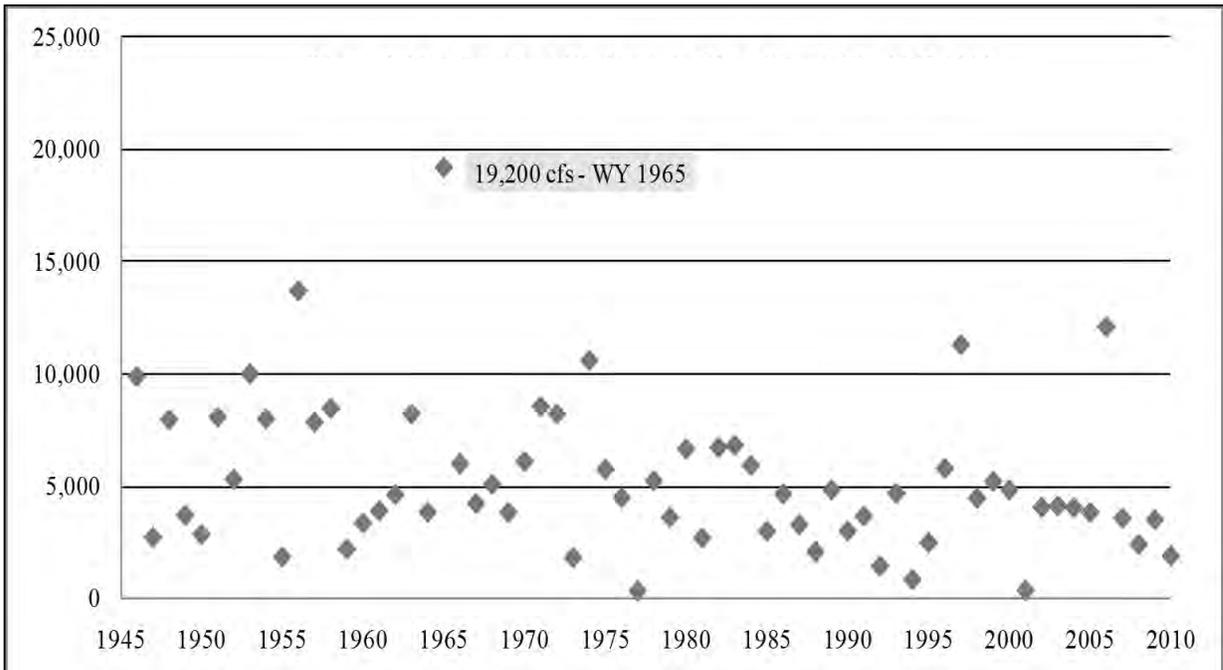


Figure 3.3 Elk Creek Lowest Monthly Discharges for 1947-2010 (cfs) (Gage 143380)

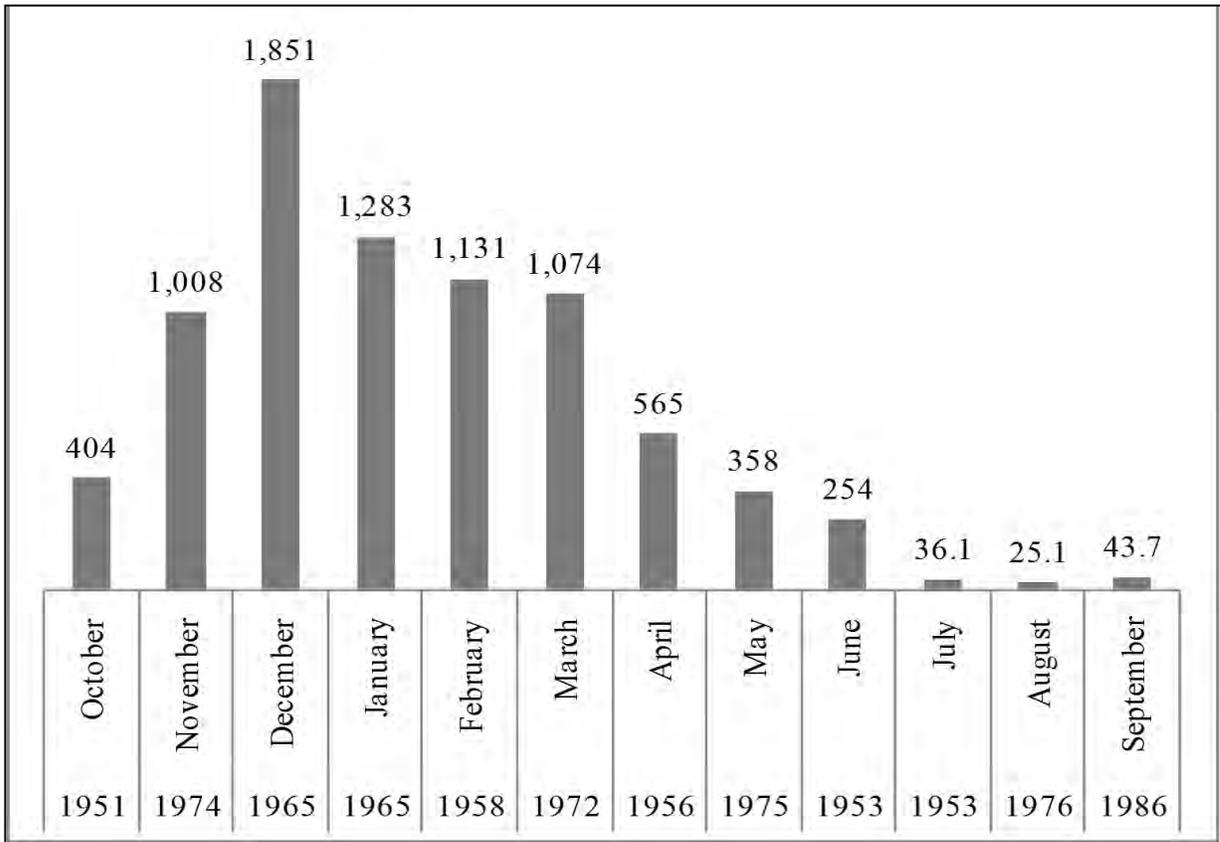
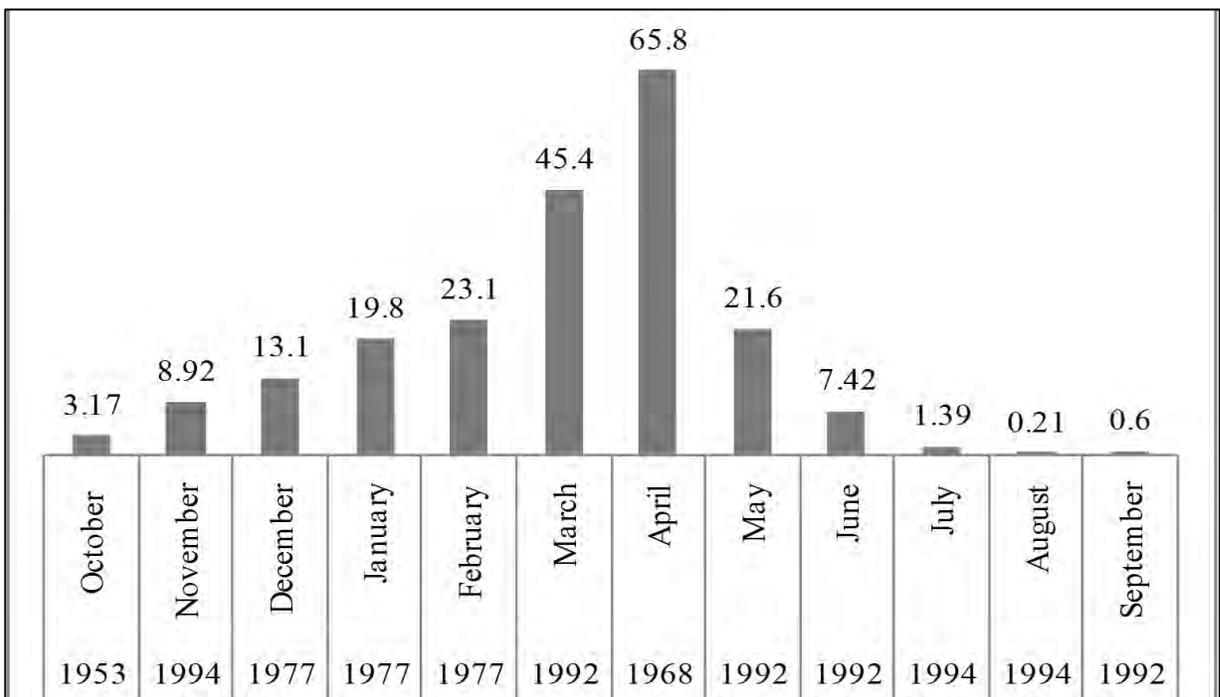


Figure 3.4 Elk Creek Record Minimum Discharges for 1947-2010 (cfs) (Gage 143380)



(Figure 3.1). Dry weather discharge months occur from July to September (USGS Monitoring Gage 143380, USGS 2011b). The Elk Creek main stem during the dry season can become low and stagnant with flows around 5 cfs. Summer flows in Elk Creek's major tributaries on the west side and smaller intermittent tributaries on the east side can become scarce or nonexistent. West Branch Elk Creek, one of the basin's larger tributaries, tends to have water year round (Corps 1987).

Highest peak flow on gage record for the past 100 years was set during the 1965 storm event at 19,200 cfs (Figure 3.2). In December 1996 and early 1997, Jackson County experienced another destructive flood at approximately 11,000 cfs, known as the New Year's Day Flood. Flood events were caused by weeks of heavy snowfall and subsequent warm rain. Warm rain caused increased snow pack melt and streams and rivers of the county rapidly filled to channel capacity (Jackson County 2002).

Years with the lowest monthly minimum discharges include 1953, 1968, 1977, 1992, and 1994 (Figure 3.3). Flows in Elk Creek can fall below 1 cfs in the dry season, as recorded in September 1992 and August 1994 (Figure 3.4).

3.3.3 Groundwater Quality

Groundwater Management Areas (GWMAs) in the state of Oregon are established for groundwater basins that have elevated levels of contaminants from point and non-point sources of pollution. ODEQ is responsible for the implementation of GWMA programs statewide. These programs include assessment, monitoring, restoration, and protection implementation actions. The ODEQ uses an approach that combines water quality and land quality programs to better prevent groundwater contamination from point and non-point sources of pollution. Based on ODEQ groundwater information, the Upper Rogue River Basin and the Elk Creek Project area are not within a GWMA. Currently, groundwater in the Upper Rogue River Basin and Elk Creek Project is not impaired, or listed on the ODEQ's 303(d) list (ODEQ 2011a).

3.3.4 Basin Filling Frequency

The original intent of the Elk Creek dam was to provide downstream flood protection to protect property and human life in the Upper Rogue River floodplain. Following decommissioning of the dam, flows through the fish passage corridor do not pool behind the remaining dam structure. Flood flows have not been further analyzed under the current configuration.

3.4 Surface and Ground Water Quality

3.4.1 Applicable Water Quality Standards

The Clean Water Act of 1972 requires states to develop and adopt water quality standards in their jurisdiction. Water quality standards define the goals of a water body by designating beneficial uses, establishing criteria to protect those uses, and sets in place policies to protect water bodies from pollutants (EPA 2011a).

Water quality criteria are developed to protect the most sensitive beneficial uses of a water body. Parameters for the criteria include physical, chemical, and biological measurements of both numerical and narrative criteria. Numerical criteria are set when this data can reasonably be obtained. Narrative criteria are used when numerical values are not feasible to obtain and describe the water quality conditions that must be attained, maintained, or avoided (EPA 2011a).

Beneficial uses for Elk Creek watershed are set by ODEQ and are protective of the most sensitive watershed uses. Sensitive beneficial uses in Elk Creek watershed include cold water fish rearing and spawning (ODEQ 2011b). Additional beneficial uses that must be considered and protected include anadromous fish passage, public and private domestic water supply, industrial water supply, irrigation, resident fish and aquatic life, livestock watering, wildlife and hunting, boating, fishing, aesthetic quality, water contact recreation, and hydroelectric power (ODEQ 2011b).

When a water body does not meet water quality standards based on established criteria, the water body is considered impaired because it is unable to support beneficial uses. As required under Section 303(d) of the Clean Water Act, states, territories, and tribes are required to develop a list of impaired water bodies that do not meet EPA approved water quality standards, using the best available data. This list is reported to the EPA every two years in a 305(b) assessment report. All 303(d) listed waters are required to develop a Total Maximum Daily Load, or TMDL, which calculates the maximum amount of pollutant sources that a water body can receive and still safely meet water quality standards.

The EPA has established water body impairment categories in order to rank and assess actions needed to address water quality impairments and conditions (EPA 2011b) (Table 3.1)

Category 1	Meets standards for which testing has been completed. May not meet standards for pollutants that have not been tested.
Category 2	Water quality problem exists, but does not warrant implementation of a TMDL.
Category 3	Insufficient testing data to meet minimum requirements.
Category 4	Polluted waters that do not require a TMDL because one is already in place (Category 4a), another pollution control program is in place (Category 4b), or the pollutant cannot be adequately addressed with a TMDL (Category 4c).
Category 5	Placed on the 303(d) list but no TMDL in place.

3.4.2 Water Quality Criteria

Water quality conditions for four reaches of the Elk Creek drainage basin have been characterized in the Integrated Report Water Quality Assessment Database (ODEQ 2010). Water quality parameters monitored for the assessment and listed in the database include alkalinity, ammonia, biological criteria, dissolved oxygen, fecal coliform, acidity, phosphates, and sedimentation. Following is a brief description of each parameter, associated health effects on aquatic life and humans, and the ODEQ’s water quality criteria for exceedance, set by the ODEQ Toxic Standards Rule (ODEQ 2004).

Alkalinity in stream systems is influenced by rocks and soils, salts, and certain plant processes. Alkalinity is the ability of a water body to neutralize acids, and has a direct effect on instream pH levels (EPA 2011c). Exceedance criteria state that alkalinity concentrations are not to exceed 20,000 micrograms per liter (ODEQ 2010).

Ammonia may be introduced into a water body from improperly managed livestock manure and industrial waste. High ammonia concentrations can cause a reduction in available oxygen, which is associated with a reduction of aquatic species diversity, and fish kills in more extreme cases. Excessive ammonia can also lead to an overabundance of nutrients, resulting in nuisance algal blooms (EPA 2009). Ammonia

conditions are dependent on pH and temperature and must use exceedance guidelines from ODEQ standards set in 1985 (ODEQ 2010).

Biological Criteria are used to rate the health of aquatic ecosystems based on the diversity and abundance of aquatic communities of a particular designated aquatic life use (EPA 2011d). Qualitative and quantitative criteria may be used. According to ODEQ biocriteria, waters of the state must have sufficient quality in order to protect and prevent detrimental changes in resident biological communities (ODEQ 2010).

Chloride in surface water may come from a number of sources, such as wintertime deicing of roads, illicit discharges from wastewater and septic systems, recycling of chloride from drinking water, and leachate from landfills and salt storage areas. Chloride degrades both surface water and groundwater quality and can negatively impact the health of aquatic species and the quality of drinking water (Mullaney *et al.* 2009). Chloride has two different exceedance criteria based on the exposure levels of aquatic organisms. Acute criteria are set for short term exposures and chronic criteria address long term exposures. Both acute and chronic criteria tests are conducted in laboratories using indicator species of fish. Freshwater criteria for chloride concentrations should not exceed the acute 860 mg/l criteria, or the chronic 230 mg/l criteria (ODEQ 2010).

Dissolved Oxygen is a measurement of the available oxygen in a water body needed to sustain aquatic life. Low dissolved oxygen levels in a stream can be caused by a number of factors including high temperature, high nutrients, algal blooms, and high bacteria concentrations (ODEQ 2010). According to ODEQ, dissolved oxygen must have a concentration of greater than 8 mg/l to support cold water aquatic species beneficial uses; this includes salmonid rearing and spawning and resident fish and aquatic life uses (ODEQ 2010).

Fecal Coliform is found in the intestines of warm blooded animals and measured using *Enterococcus coli* (*E. coli*) counts. High concentrations of *E. coli* in a water body can usually be traced back to improper management of livestock or human sources of sewage. High concentrations of *E. coli* create unsafe conditions for water contact recreational beneficial uses and may indicate that other more harmful pathogens are present (ODEQ 2010). *E. coli* concentrations should not exceed 126 organisms per 100 ml of water based on a 30 day log-mean, or 406 organisms per 100 ml of water based on a single sample (ODEQ 2010).

Potential Hydrogen is defined by extra hydrogen ions (H⁺) and reported as pH. Acidic waters are those of low pH, or less than 6.5. Basic environments occur at pH >8.0. Aquatic organisms prefer a balanced acidity and ODEQ sets acceptable levels between pH 6.5 and 8.0 (ODEQ 2010).

Phosphate/Phosphorous is an essential nutrient for the plant and animal aquatic food web, and is in limited demand in natural aquatic systems. Phosphorous is derived from both natural and human sources. Soils and rocks, wastewater discharge, fertilizer runoff, faulty septic tanks, improper manure management, disturbed land areas, drained wetlands, water treatment, and commercial cleaning preparations are all potential sources of phosphorous. An increase in phosphorous can set off a chain reaction of harmful instream conditions, detrimental to the health of aquatic organisms (EPA 1998). According to ODEQ, total phosphates may not exceed the 50 ug/l benchmark in order to control excessive algal blooms (ODEQ 2010).

Sedimentation is a natural function of healthy river ecosystems and contributes to channel forming processes vital to the health of all riverine aquatic and riparian species of flora and fauna. However, the acceleration of sedimentation due to anthropogenic activities can have an adverse effect on these processes by changing water chemistry and degrading in channel and riparian physical habitat. Accelerated sedimentation is generally caused by the destabilization and mobilization of sediment in a

stream system due to human activities. Qualitative criteria have been set by ODEQ, and require that appreciable bottom sludge deposits or the formation of organic or inorganic deposits deleterious to beneficial uses must not be allowed (ODEQ 2010).

Temperature governs the diversity and abundance of aquatic life that can survive in a stream and is typically impaired as a result of an increase in temperature. Instream temperatures also influence water chemistry; increasing temperatures result in increased chemical reactions, which in turn affect biological activity. A number of factors can cause an increase in stream temperatures. Lack of riparian shading, sedimentation, and streambed alterations may all result in increased temperatures. Support for sensitive beneficial uses, such as salmonid rearing and fish passage, requires that seven-day average instream temperatures remain below 17.8°C (ODEQ 2010).

3.4.3 Water Quality Monitoring

Water monitoring has been underway throughout Elk Creek since a flow gage was installed in 1946. Water quality monitoring began in the early 1970s for Elk Creek and its tributaries. Table 3.2 describes watershed monitoring efforts at Elk Creek project area including the entity providing monitoring, locations of sampling, parameters sampling, and timeframe of sampling (ODEQ 2010).

Monitor	Locations	Parameters	Year(s)	Season
Oregon Department of Environmental Quality (ODEQ)	West Branch Elk Creek (RM 7.2)	Alkalinity	1998	Year Round
	West Branch Elk Creek (RM 7.2)	Ammonia	1998	
	Entire Main Stem	Biocriteria	2004	
	West Branch Elk Creek (RM 7.2)	Chloride	1998	
	West Branch Elk Creek (RM 7.2)	Dissolved Oxygen	1998	Summer
	West Branch Elk Creek (RM 7.2)	pH	1998	
	West Branch Elk Creek (RM 7.2)	Phosphorous	1998	
	Entire Watershed	Sedimentation	1998	Undefined
U.S. Geological Survey (USGS)	Below Alco Creek	Discharge	1986-2004	Year Round
	Near Cascade Gorge	Discharge	1973-2000	
	Downstream of notched dam	Flow	1946-2010	
	Lower/Middle Watershed	Temperature	1973-2011	
	West Branch Elk Creek (RM 7.2)	Temperature	1990-1994	
	Downstream of notched dam	Turbidity	1990-2011	
	Below Alco Creek	Turbidity	1990-2004	
Lower Butte Watershed Council (LBWC)	Lower/Middle Watershed	Dissolved Oxygen	2002	Summer
	Middle/Upper Watershed	pH	2002	
Rogue River Watershed Council (RRWC)	Entire Main Stem	Fecal Coliform	1998	Summer
	Entire Main Stem	pH	1998-2000	Year Round
Lower Butte - Upper Rogue Watershed Council (LBUR)	Entire Main Stem	Fecal Coliform	1998-2000	Summer
USFS	Upper Watershed	Temperature	1993-1994	Summer

3.4.4 Water Quality Conditions

Water quality monitoring results are reported by stream reach. A total of four reaches are monitored, including the Lower, Middle, and Upper Reaches of Elk Creek, as well as the West Branch Elk Creek Reach. Only the Lower Reach Main Stem is within the project area. However, data from upstream reaches is reported in order to characterize upstream conditions. The lower reach mainstem of the Elk Creek starts at the confluence with the Rogue River (RM 0) and ends just upstream of the Elk Creek project area (RM 9.5) (ODEQ 2010). The middle reach continues upstream to RM 13.3 and the upper reach continues to RM 20.7. The West Branch Elk Creek reach includes the entire length of the creek within the project area.

Table 3.3 shows results of monitoring within Elk Creek from RM 0 to RM 20.7. Six water pollutants are monitored in this reach, either during the summer period or throughout the entire year. TMDLs have been put in place for this stream reach, including those for *E. coli* and temperature during the summer. Additional issues include the year round condition of biological parameters and pH. Both have been categorized as waters of concern. Sedimentation conditions have not been adequately assessed and are categorized as having insufficient data. Dissolved oxygen levels are satisfactory in the project area, but have been 303(d) listed in the reaches upstream of the project area.

Reach (River Mile)	Pollutant	Season	Beneficial Uses Supported/Not Supported	Status Category
Lower (0 to 9.5)	Dissolved Oxygen	Summer	Aquatic life	Attaining
Middle and Upper (9.5 to 20.7)	Dissolved Oxygen	Summer	Aquatic life	303(d) Listed
Lower (0 to 9.5)	pH	Year Round	Water contact recreation; Resident fish and aquatic life	Water of Concern
Middle and Upper (9.5 to 20.7)	pH	July 1 - September 30	Water contact recreation; Resident fish and aquatic life	Attaining
Lower and Middle (0 to 13.3)	Temperature	Summer	Salmonid fish rearing; fish passage	TMDL Implementation
Lower and Middle (0 to 13.3)	Sedimentation	Undefined	Salmonid fish rearing; Salmonid fish spawning; Resident fish and aquatic life	Insufficient Data
All (0 to 20.7)	Biological Criteria	Year Round	Aquatic life	Water of Concern
All (0 to 20.7)	E. Coli	Summer	Water contact recreation	TMDL Implementation

As shown in Table 3.4, temperatures in the West Branch Elk Creek do not meet ODEQ criteria protective of salmonid fish rearing and anadromous fish passage beneficial uses (ODEQ 2010). For remaining pollutants, insufficient data are available.

Pollutant	Season	Beneficial Uses	Category
Alkalinity	Year Round	Aquatic life	Insufficient Data
Ammonia	Year Round	Aquatic life	Insufficient Data
Chloride	Year Round	Aquatic life	Insufficient Data
Dissolved Oxygen	Year Round (Non-Spawning)	Cold-water aquatic life	Insufficient Data
pH	Summer	Resident fish and Aquatic life; Water contact recreation	Insufficient Data
Phosphorous	Summer	Aquatic life	Insufficient Data
Temperature	Summer	Anadromous fish passage; salmonid fish rearing	303(d) managed under Rogue River TMDL (2008)

3.4.4.1 Water Quality Management

Land owners in the watershed are responsible for meeting water quality standards. Land ownership in the Elk Creek watershed is 63% federal and 37% privately owned lands. As part of the TMDL process, the ODEQ in coordination with the BLM, USFS, and other responsible watershed stakeholders have developed water quality management plans, which establish detailed strategies needed to meet ODEQ water quality criteria and TMDL compliance.

The Rogue River Basin TMDL specifies the Corps as a Designated Management Agency (DMA) for the Elk Creek watershed water quality TMDLs, and therefore requires the Corps to prepare a TMDL implementation plan (ODEQ 2008). In 2009, the BLM, also listed as a DMA, developed the Elk Creek Restoration Plan for their portions of the watershed, which includes the reaches passing through the Elk Creek project area (BLM 2009). This restoration plan is implemented for the lower and middle reaches of the Elk Creek main stem and West Branch Elk Creek tributary and addresses the sources of *E. coli*, temperature, and dissolved oxygen impairments, by developing mitigation strategies to help meet TMDL compliance in the future. The Corps has not developed a separate TMDL implementation plan.

3.4.5 Floodplain

The Federal Emergency Management Agency (FEMA) currently utilizes Flood Insurance Rate Map (FIRM), number 415589 0138 B for Jackson County, Oregon (Unincorporated Areas), which shows an estimated 100-year floodplain width of roughly 500 feet over most of the portion of Elk Creek. In addition, Jackson County has also prepared a floodplain map for the project area, which generally concurs with the 500 foot width, except for a few areas that are wider. For the purposes of this master plan, the

floodplain area has been established as a minimum total width of 500 feet, extending beyond that width where the Jackson County mapping indicates a wider floodplain. This floodplain area has been shown in Plate 4.

3.5 Wetlands

Wetlands were inventoried during field data collection efforts conducted in summer of 2011 (TES 2011). A total of nine discreet wetland habitat types were identified.

Conifer Riparian/Wetland Woodland (CR) Woodlands are defined as having between 30% and 70% aerial tree cover. Conifer woodlands have 60% or more of this tree layer covered by conifers (such as Douglas fir or Ponderosa pine) and up to 40% covered by hardwoods (such as Pacific madrone or Oregon white oak). The Riparian/Wetland qualifier indicates that a significant riparian and/or wetland vegetation component is present.

Hardwood Riparian/Wetland Forest (HRF) Forests are defined as having more than 70% aerial tree cover. Hardwood forests have 60% or more of this tree layer covered by hardwoods (such as Pacific madrone or Oregon white oak) and up to 40% covered by conifers (such as Douglas fir or Ponderosa pine). The Riparian/Wetland qualifier indicates that a significant riparian and/or wetland vegetation component is present.



Permanent wetlands near Alco Creek.

Hardwood Riparian/Wetland Woodland (HRW) Woodlands are defined as having between 30% and 70% aerial tree cover. Hardwood woodlands have 60% or more of this tree layer covered by hardwoods (such as Pacific madrone or Oregon white oak) and up to 40% covered by conifers (such as Douglas fir or Ponderosa pine). The Riparian/Wetland qualifier indicates that a significant riparian and/or wetland vegetation component is present.

Mixed Riparian/Wetland Forest (MRF) Forests are defined as having more than 70% aerial tree cover. Mixed forests have less than 60% of this tree layer covered by hardwoods (such as Pacific madrone or Oregon white oak) and less than 60% covered by conifers (such as Douglas fir or Ponderosa pine). The

Riparian/Wetland qualifier indicates that a significant riparian and/or wetland vegetation component is present.

Mixed Riparian/Wetland Woodland (MRW) Woodlands are defined as having between 30% and 70% aerial tree cover. Mixed woodlands have less than 60% of this tree layer covered by hardwoods (such as Pacific madrone or Oregon white oak) and less than 60% covered by conifers (such as Douglas fir or Ponderosa pine). The Riparian/Wetland qualifier indicates that a significant riparian and/or wetland vegetation component is present.

Permanent Water/Wetlands (PW) Permanent water areas retain at least some ponded or flowing water throughout all, or most of the year. This habitat type includes perennial and semi-perennial streams, ponds and wetlands.

Seasonal Wetlands (SW) Seasonal wetlands are areas that are inundated, or the soil is saturated during the winter and spring seasons, but become dry in the summer. They are dominated by annual and perennial herbaceous plants species and may support riparian shrubs such as willows, along the edge of the wetland.

Wetland Shrubland (WS) Shrublands are defined as having less than 30% aerial tree cover and greater than 30% aerial shrub cover. Wetland shrublands are dominated by wetland and riparian shrub and vine species such as willows, young black cottonwoods and the non-native Himalayan blackberry.

Wetland Shrubland-Burned (WS-B) Shrublands are defined as having less than 30% aerial tree cover and greater than 30% aerial shrub cover. Wetland shrublands are dominated by wetland and riparian shrub and vine species such as willows, young black cottonwoods and the non-native Himalayan blackberry. These areas were burned in 2002 as a result of the Timbered Rock wildfire.

3.6 Air Quality

The air quality at a location is typically described in terms of the concentrations of various pollutants in the atmosphere. The ODEQ Air Quality Division is responsible for protecting Oregon's air quality. ODEQ monitors air pollution to ensure that communities meet the national ambient air quality health standards, to report hourly health levels to the public, and to protect Oregon's pristine views (ODEQ 2011c).

The EPA has established health-based National Ambient Air Quality Standards (NAAQS) for six criteria pollutants, including particulate matter (PM₁₀ and PM_{2.5}), ozone (O₃), carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂) and lead (Pb). The nearest air quality monitoring station to the Elk Creek project site is located in Shady Cove, where PM_{2.5} is monitored (ODEQ 2011c). Figure 3.5 shows that the Air Quality Index (AQI) for this station was rated as good for 362 days and moderate for 2 days in 2010 (ODEQ 2011c). For this region of Oregon, including Jackson County within which the Elk Creek project area is located, all parameters are in attainment of the NAAQS (ODEQ 2011c).

3.7 Noise

Noise levels within the state are governed by Oregon Administrative Rules, Division 35, Noise Control Regulations (ORS 467.010 – 467.990). In general, noise regulation is applied to specific types of noise generators, such as vehicles or facilities. Jackson County has not developed a specific noise ordinance for the unincorporated areas of the county (Jackson County Code Enforcement 2011).

Noise concerns within the project area include; (1) those that may affect the enjoyment of the area for recreational use, (2) those that may be generated by recreationists and affect adjacent landowners, and (3) those that may impact sensitive species in the project area.

Noise can be one of the most widespread environmental pollutants affecting communities. “Community noise” or environmental noise in any given area varies continuously over a period of time depending on the contributing sound sources within and surrounding the area. This community noise is typically made up of a combination of relatively stable background noise, where individual contributors are not identifiable, and the periodic addition of short duration noise sources such as aircraft flyovers, motor vehicles, sirens, etc.

Some land uses can be considered more sensitive to community noise levels than others, and are often referred to as sensitive receptors. These include residences, schools, hotels, hospitals, nursing homes, churches, libraries, and cemeteries. As a potentially important area for enjoyment of peaceful outdoor activities such as nature appreciation and wildlife viewing, the project area may be considered a sensitive noise receptor. In this case, noises generated aircraft flyovers, vehicles, sirens, or construction work, may impact recreation.

Sources of noise pollution within the project area are minimal and primarily include traffic noise along Elk Creek Road. Additional sources may come from recreating visitors, though the noise level generated by visitors is not anticipated to be a significant source of noise in the area. Illicit recreation, such as target shooting and off-road vehicle use, may generate nuisance noise levels.

In addition, wildlife may be sensitive receptors to noise and vibrations. Animals rely on meaningful sounds for communication, navigation, avoiding danger and finding food. Noise may be defined for wildlife as “any human sound that alters the behavior of animals or interferes with their functioning” (Bowles 1995). The level of disturbance may be qualified as damage, which may harm health, reproduction, survivorship, habitat use, distribution, abundance or genetic distribution, or disturbance which causes a detectable change in behavior. Behavioral and physiological responses of wildlife to noise have the potential to cause injury, energy loss, decrease in food intake, habitat avoidance and abandonment, and reproductive losses (National Park Service 1994).

Noise restrictions in the project area follow the ORS noted above, but should additional noise ordinances be developed in the future, careful consideration should be made of the sensitivity of the area, the typical expected ambient noise levels of an Oregon wildland, and the value of the area as a peaceful place of outdoor nature appreciation.

3.8 Biological Resources

Biological resources of the project area were surveyed by Tehama Environmental Solutions, Inc. (TES) in 2011. Data were compiled by TES from several sources, including previously published reports, Corps data, and from onsite field visits. Findings from the report regarding vegetation, wildlife, and special status listed species are provided below and reported by Management Unit (MU). Appendix II provides additional information regarding the relationship of the MUs used by TES and the MUs identified in this master plan (Figure IIA). Detailed plant and wildlife information can be found within the TES report (2011).

3.8.1 Vegetation Communities

Dry Conifer Forest Conifer stands occur in all MUs, and are dominated by Douglas-fir, or a mix of Douglas-fir and Ponderosa pine. The typical conifer stand has an even-sized overstory of midseral trees, and an understory layer that ranges from depauperate (where overstories are dense) to more moderate, where the overstory layer is more open. Understory trees include Douglas-fir, Ponderosa pine, California black oak (*Quercus kelloggii*), and Pacific madrone (*Arbutus menziesii*). Fire suppression in the region has created many dense overstocked stands with unnaturally high fuel levels. Conifer forests in the project area are susceptible to the risk of large and destructive wildfire. As an example, the Timbered Rock fire of

July 2002, spread from adjacent BLM and private timberlands to approximately 600 acres of conifer forests and mixed hardwood conifer woodlands in the far north of the project area (in the Spur Peninsula, North Slope, Persist, Flat Creek and Middle Creek MUs). The result was a stand-replacing fire, followed by a dense cover of sprouting hardwoods and shrubs, non-native annual grasses, and weeds.

Oak Savanna/Hardwood Woodland/Mixed Conifer-Hardwood Woodland Hardwood woodlands of some type occur in all MUs, and are dominated by an overstory of Oregon white oak, with California black oak, Pacific madrone, Douglas-fir and Ponderosa pine all common codominants. Common shrubs include poison oak (*Toxicodendron diversilobum*), whiteleaf manzanita (*Arctostaphylos viscida*) and buckbrush (*Ceanothus cuneatus*), with birchleaf mountain mahogany (*Cercocarpus montanus* var. *glaber*) common on moister sites. Like the dry conifer forest habitat, woodland habitats in the project area are also typically overstocked, have more closed canopies, and higher understory cover of shrubs and trees than in the past. The fuel levels are outside of the natural range and are susceptible to the risk of large and destructive wildfires. A stand-replacing fire is likely in these habitats, soon followed by a dense cover of re-sprouting hardwood shrubs and trees, annual non-native grasses and weeds.

Chaparral Dry and moist chaparral habitat occurs in many of the MUs. Dry chaparral is the more common habitat, and includes buckbrush and occasional whiteleaf manzanita, with nonnative annual grasses, patches of native grass (California oatgrass), forbs, and occasional to scattered weeds. Douglas-fir or Ponderosa pine may also occur as single trees. The non-native annual grasses and weeds, and the reduced cover (or elimination) of native perennial grasses are considered to be a result of historic livestock grazing. Non-native annual grasses are expected to continue to dominate chaparral understory habitats. While shrub cover is often dense, it is not considered to be outside of the normal range. High intensity wildfires in chaparral are considered a natural occurrence, typically occurring every 60 to 100 years. Conversely, more frequent fires are expected to compromise or even kill off chaparral vegetation, as species are unable to regenerate and non-native species take over. The increased invasive weeds and grasses in turn can create an increased risk of fire. While lightning was historically the dominant fire ignition source, humans are the current common source, due to increased recreation and increased populations in the rural-wildland interface.

Grassland Grasslands occur within the project site in moist soils in the Elk Creek floodplain and on shallow soils in the uplands. The moist soils of the floodplains were *not* likely dominated by grasslands historically, but instead were a mix of herbaceous, shrub and tree wetland species, maintained by periodic Elk Creek floods. More recently, these areas were converted to hay and pasture grasses by local farmers and ranchers. Vegetation in this area is now a high cover and low diversity of annual non-native grasses, including ripgut brome (*Bromus diandrus*), soft brome (*Bromus hordeaceus*), medusahead grass (*Taeniatherum caput-medusae*), and occasional sedge (*Carex* sp.) and rush (*Juncus* sp.) species. Occasional patches of California oatgrass also occur. The floodplain grassland areas are expected to continue being dominated by the non-native bromes, medusahead is likely to increase, and the California oatgrass stands may increase and continue to persist. The dry upland grasslands are currently a mix of non-native annual bromes including ripgut brome, soft brome, cheat grass (*Bromus tectorum*), poverty brome (*Bromus sterilis*), medusahead, and native and weedy forbs. Less commonly, native perennial grasses do occur, but are never dominant. With fire as the primary disturbance regime, annual non-native grasses and weeds are expected to dominate and possibly increase. Cover of native perennial grasses is expected to decrease.

Riparian Areas Riparian habitats occur along the main stem of Elk Creek and along smaller intermittent and perennial creeks (e.g. Middle Creek and Alco Creek). Vegetation along Elk Creek is a mix of grasslands (dominated by non-native annuals), Mixed Riparian Hardwoods, and Mixed Riparian Forest vegetation types. Each of these habitats is typically disturbed, and includes a high cover of non-native species and scattered noxious weed species. Similarly, ruderal disturbed habitat dominates the Dam

Abutment MU. Species diversity along Elk Creek is notably low, with little wetland habitat. With the loss of natural flood cycles and the presence of weed species, the future vegetation is expected to experience an increase in non-native and noxious weed cover and a decrease in species diversity. Along the intermittent and perennial tributary creeks, vegetation is a mix of conifer forest and moist riparian species, including Douglas-fir, white alder, big leaf maple, and Oregon ash. Understories often include dense patches of the noxious weed Himalayan blackberry (*Rubus armeniacus*). With the suppression of natural flood cycles and fire regimes, these increasingly upland riparian corridors are expected to be at risk of wildfire and stand-replacing fires, and the understories are expected to increase in weedy and/or non-native species.

Noxious Weed Species Four Oregon Department of Agriculture (ODA) designated noxious weeds are present throughout the project area, including yellow starthistle (*Centaurea solstitialis*), Scotch broom (*Cytisus scoparius*), Himalayan blackberry (*Rubus americanus*), and medusahead rye (*Taeniatherum caputmedusae*). One additional weed documented within the project site (periwinkle) is not an ODA-designated noxious weed, but is worthy of control, and possibly eradication efforts, due to its tendency to be invasive in riparian habitats. Noxious weed species are a common threat in the project area, occurring in many vegetation cover types, and in most areas. Of the four, only medusahead rye was observed consistently dominating large scale habitats. Himalayan blackberry was second most common, while Scotch broom and starthistle were the least common.

3.8.2 Special Status Species

3.8.2.1 Plants

After an initial field reconnaissance visit, an annotated list was developed of significant botanical species with potential to occur in the study area (TES 2011). Special status vascular and non-vascular plant (lichens, bryophytes and fungi) species were included if potential habitat occurs in the project area and/or the species is known to occur in the project area, including on adjacent federal lands (Medford BLM, Rogue River-Siskiyou and Umpqua National Forests). Professional judgment and local botanical experience was used to assess species to be included.

A total of 108 significant botanical species with potential to occur within the project site were identified, including nine species that are known to occur in, or within two miles of the project site. The list includes 29 vascular plants, 8 lichen, 16 mosses (no liverwort species), and 55 fungi. Ecological and biological data for fungi is not as complete as the other groups of species. As a result, many species remain on the ORBIC List 3 (Review List), and a wider filter was used for potential fungi species.

Of the 108 total significant species with *potential* to occur, five species have designated state or federal status, including clustered lady's slipper (*Cypripedium fasciculatum*), wayside aster (*Eucephalis vialis*), Gentner's fritillary, wooly meadowfoam (*Limnanthes floccosa* ssp. *bellingermana*) and white meconella (*Meconella oregana*). Two of these species, clustered lady's slipper and wooly meadowfoam, are known to occur within two miles of the project site.

A total of nine significant species are known to occur in, or within two miles of the project site. Seven of the nine are ORBIC Lists 2, 3, or 4 species (*Carex serratodens*, *Cheilanthes intertexta*, *Cirsium ciliolatum*, *Cypripedium montanum*, *Iliamna latibracteata*, *Scirpus pendulus* and *Solanum parishii*). The two additional species also have designated federal or state status include clustered lady's slipper (ORBIC List 2) and wooly meadowfoam (ORBIC List 1), and are both USFWS species of concern and Oregon Department of Agriculture candidate species for listing.

3.8.2.2 *Wildlife*

Based on the results of the current field studies, the ORBIC and BLM database searches, a review of previous field study reports, and interviews with natural resource managers from the ODFW, USFS, BLM, the Corps and other personnel familiar with the site and local area, lists of potentially occurring significant species were developed for the project site (TES 2011). For the purposes of this assessment, significant species and habitats are defined as the species listed as such in:

1. *Rare, Threatened and Endangered Species of Oregon* (ORBIC 2010), and
2. *The Oregon Conservation Strategy* (ODFW 2006) as Strategy Species for the Klamath Mountains and West Cascades Ecoregions

Based on the current field surveys, a review of relevant documentation and discussions with known experts, 83 significant wildlife species were analyzed for potential to occur on the project site. Two federal/ state listed species or fully protected species were reported on the project site including the northern spotted owl (*Strix occidentalis caurina*) and bald eagle (*Haliaeetus leucocephalus*). In addition, a pair of protected golden eagles was reported to have successfully nested within the project site in the area east of Elk Creek, where two fledglings were repeatedly observed.

When considering the known habitat conditions on the project site, and reported species habitat preferences, an additional five federally and/or state listed species were determined to have the potential to occur in the area and an additional 39 species considered sensitive by the ODFW, including 22 that were known to occur and 17 that had a moderate to high potential to occur, may be on the project site.

Foothill yellow-legged frogs and western pond turtles were both observed in several locations in aquatic habitats within the project site. Western pond turtles are presumed to be breeding onsite and evidence of foothill yellow-legged frog egg masses were documented onsite (TES 2011).

The summary of all species potentially present, their preferred habitat, and their federal and state listing status is provided in the appendices of the TES report (2011).

3.8.2.3 *Fish*

Southern Oregon/Northern California Coasts (SONCC) Coho salmon are federally listed as threatened and several streams within the project site are designated as critical habitat for this species, including Elk Creek, West Branch, Flat Creek and Alco Creek (NOAA 2003). SONCC Coho salmon are also listed by the state as Sensitive Critical. SONCC Coho salmon populations in the Upper Rogue watershed are a core, functionally independent population and should therefore be the subject of recovery efforts to stop its trend toward extinction (NMFS 2012). However, Elk Creek watershed populations of SONCC Coho salmon are reported to be so low that they have lost their resiliency to overcome natural or man-made disturbances that have led to significant population losses. The fish passage corridor and other restoration efforts in the area have contributed toward improved resiliency of the Elk Creek SONCC Coho salmon populations, and additional protections identified in this master plan will continue to improve the overall Upper Rogue SONCC Coho salmon populations.

Winter steelhead, summer steelhead and Southern Oregon spring-run Chinook, while not listed under the ESA, are considered Sensitive Vulnerable by the state of Oregon. These designations indicate that populations of both forms of steelhead may soon be at a similar level of lost population resiliency as with Coho (TES 2011).

The persistence of a population of spring-run Chinook in Elk Creek is uncertain at this time (ODFW 2005, USFS and BLM 1996). However, Elk Creek could play an important role within the Rogue River watershed. Population levels of Rogue River wild spring Chinook have declined during the last 20 years and in 2011 the Oregon Fish and Wildlife Commission adopted a conservation plan (ODFW 2007) for these fish. The adopted alternative (Number 9; ODFW 2011b) includes a measure to expand natural spawning habitat for naturally produced spring-run Chinook.

Cutthroat trout in the Klamath Ecoregion are considered a Species of Concern by the USFWS however, the final assessment finding for the Southern Oregon coastal cutthroat trout species management unit is “Not at Risk”. The determination was based on quantitative and qualitative data that indicate that this species appears to be able to quickly respond to changes in habitat quality or quantity and to populate those habitats to capacity (ODFW 2005).

Lamprey, a federal species of concern, occurring within the management units of Elk Creek would benefit from certain types of restoration actions directed toward salmon and steelhead recovery. Specifically, spawning lamprey use gravel riffle habitat similar to that preferred by salmonids.

Additional information is available regarding special status fish species and their presence and timing at Elk Creek in the appendices of the TES report (2011).

3.9 Cultural Resources

A Historic Properties Management Plan (HPMP) has been developed for the Elk Creek project area by Heritage Research Associated, Inc. (HRA 2011). This document is being kept on file by the USACE for reference but will not be released to the public due to the sensitive material it contains. The following section summarizes the historic occupation of the area, what archeologically significant remains are present, and the modern day implications.

The earliest suggestions of activity by prehistoric peoples in the Elk Creek Valley likely occurred within the time frame of 6,500 to 2,500 B.C. However, most evidence of prehistoric activities come from a phase dating from approximately 250 B.C. to post-contact. Occupation and/or use of the Elk Creek drainage is generally attributed to two native peoples, the Takelma, who occupied the bottomlands of the Rogue River Valley, and the southern Molala, who lived in the higher elevations of the Cascade Range.

More recent occupation of the site occurred during the historic period, estimated to date from the last decades of the nineteenth century and first two decades of the twentieth century. Collapsing log cabins and a trash dump were the primary indicators of a historic period presence. From the 1930s on, further homesteading settlements resulted in the most visible remains at the project area. Overall, there are 20 archaeological sites assessed as National Register eligible within the area.

HRA reports that the recording of archaeological sites in the project area began in the 1960s, and survey, testing, and data recovery projects took place in the 1970s and 1980s, with the last field investigations occurring in 1989. At the conclusion of each field investigation, the excavated units at each site were backfilled. Over the ensuing decades, the natural vegetation has grown back and covered the excavations. As a result, little evidence of the archaeological sites, and even of the test units and trenches excavated, is apparent on the ground surface today.

At the time of project authorization, approximately 10-15 families were living within the Elk Creek project area. Land owners ranched or farmed the area, using water from the creek for irrigation. These owners were bought out prior to project construction.

The natural environment of the Elk Creek Valley has undergone significant changes in the historic period as a result of clear-cutting, grazing, plowing, and channelization. Some of the alluvial terraces bordering the creek were modified for homesteads, agricultural irrigation, and cattle grazing. Ditches constructed to implement flood irrigation for the growth of grasslands, grain, and specialty crops are still visible. Stream diversion is apparent in the remnant of an irrigation ditch.

Looting and vandalism were serious problems in the 1970s and 1980s. Evidence of illicit digging was widely observed during the archaeological investigations, and was particularly destructive at sites where housepits were visible on the surface. Following the notching of the dam, restoration of disturbed access areas, and closure of the area to vehicular access due to an unsafe bridge over Alco Creek (in 2010), the forest vegetation has naturally regenerated and the ground surface is covered by a thick layer of leaf litter and moss. No clear evidence of continued looting and vandalism was observed during the field check of archaeological sites in 2011.

HRA notes that an important conclusion drawn from the experience of conducting the field check of archaeological sites in 2011 is that, despite the substantial efforts made during the surveys in 1979 and 1989, additional prehistoric and historic sites almost certainly remain to be discovered in the area. Guidance has been developed in the HPMP in the event that unanticipated discoveries are made of culturally significant sites in the future at Elk Creek.

With the last property acquisitions in 1971, it has been at least four decades since the lands in the Elk Creek Project were inhabited. As a result, almost all of the artifacts and structural remains associated with the former Euro-American inhabitants are now greater than 50 years of age, the minimum required for cultural resources on federal lands to be considered historic. As time passes, the historical archaeological remains in the Elk Creek area will take on increasing significance, and if threatened by impacts from future developments, their potential National Register eligibility will need to be assessed.

3.10 Hazardous Materials and Wastes

A preliminary Hazardous and Toxic Waste and Materials (HTWM) investigation was conducted to assess the presence of contamination within the Elk Creek project area. The investigation included review of the Preliminary Assessment (PA) conducted by the Corps in 1999 (Corps 1999), database review of relevant environmental information maintained by Environmental Data Resources, Inc. (EDR 2011), and inclusion of findings from Corps documentation (Corps 2009a).

3.10.1 Preliminary Assessment 1999

The PA report describes the waste disposal history in and around the Elk Creek project area. During construction of the dam between 1985 and 1988, construction debris was disposed onsite via stockpiling and burning. The PA identified three areas that are potential sources of contamination and described their condition in 1999. These areas included the settling ponds, left upstream abutment, and sand stockpile. The PA concluded that all known soil contamination above state maximum levels had been adequately removed from the site at the time of the report (Corps 1999). Furthermore, pathways of exposure from remaining contamination, including through surface water, groundwater, air and soil, have been determined to pose a low risk.

3.10.2 Database Search 2011

A database search of an HTWM clearinghouse was conducted in August 2011 (EDR 2011). The database searches through lists compiled by the EPA and the state of Oregon that inventory sites within or near the project area that; (1) have had recent or historical unauthorized releases of hazardous materials or

hazardous waste, (2) may store and use hazardous materials, or (3) which might be generators and/or transporters of hazardous wastes. The following government databases were included in the EDR search in accordance with ASTM Standard E 1527-05 search distances:

- Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). This is a nationwide database of sites identified by EPA as abandoned, inactive, or uncontrolled hazardous waste sites that may require cleanup.
- National Priorities List (NPL). This is a database maintained by EPA under the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA). Those CERCLIS sites that contain the greatest potential risk to human health and the environment become part of the NPL.
- Resource Conservation and Recovery Information System (RCRIS). In this database, EPA maintains information on those sites across the Country that may generate, transport, store, treat, and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).
- Emergency Response Notification System (ERNS). This database is maintained by EPA that covers reported unauthorized releases of oil and hazardous substances.
- Oregon Hazardous Materials (OR HAZMAT). These are records of hazardous material incidents reported to the State Fire Marshal by emergency responders. The hazardous material may or may not have been released.
- Hazardous Substance Information Survey (HSIS). This database is based on information supplied by companies in Oregon that may handle hazardous substances.
- FIFRA/TSCA Tracking System (FTTS). These are recent cases tracked by EPA that involve pesticide enforcement actions and compliance activities related to the Federal Insecticide, Fungicide, and Rodenticide Act, the Toxic Substance Control Act, and the Emergency Planning and Community Right-to-Know Act.
- Toxic Chemical Release Inventory System (TRIS). The U.S. EPA maintains a list and monitors facilities that release reportable quantities of toxic chemicals to the air, water, or land.
- Brownfields Investigations and Cleanup (Brownfields). The EPA maintains and monitors all properties subject to BROWNFIELDS investigation and cleanup under cooperative agreements that may involve federal and state agencies and responsible parties.
- Environmental Cleanup Site Information System (ECSI). The Oregon Department of Environmental Quality (ODEQ) manages information on this list of sites throughout Oregon that are or may be contaminated and require cleanup.
- Oregon Confirmed Release List and Inventory (OR CRL). This list of sites, maintained and monitored by ODEQ, contains those sites in Oregon that have confirmed releases of contamination. This is the state's version of CERCLIS.
- National Pollutant Discharge Elimination System (NPDES). This is a list of waste discharge systems (including stormwater) maintained and monitored by ODEQ.
- Leaking Underground Storage Tanks (LUST). Information is maintained at ODEQ on reported leaking underground storage tank incidents.
- Solid Waste Facility / Landfill (SWF/LF). The ODEQ maintains a list of, and information on solid waste facilities and landfills (SWF/LF) in the state. Data maintained include location, type and age of landfill, if it is a permitted facility, and the status of its permit.

- Oregon Spills (SPILLS). This is a database tracking system used by the ODEQ to inventory and track oil and hazardous materials spills in the state that have been reported through the Environmental Response Program.
- Oregon Voluntary Cleanup Program (VCP). These are sites listed by ODEQ that have confirmed or unconfirmed releases where a project proponent has requested the state to oversee investigation and/or cleanup activities at the proponent's expense.
- AIRS. This is a database maintained by ODEQ regarding all Title V permitted facilities in Oregon that release regulated contaminants to the air.
- Underground Injection Control Program (UIC). This database is maintained by ODEQ which has been delegated by EPA to regulate all underground injection programs to remediate hazardous materials migration to protect groundwater resources.

No mapped sites were found in EDR's search of available government records for the Elk Creek project area. However, a total of 4 sites that are defined as "unmappable" were identified within one or more databases. These sites included, (1) USACE TP6 Area 5 Elk Creek Project, (2) USACE Elk Creek Dam, (3) U.S. Army Corps of Engineers (Owner), and (4) COE Civil Elk Creek Dam Project. It is likely that these reported sites are the same sites or overlap with the sites that were identified in the 1999 PA.

3.10.3 Current Conditions

During construction of the fish passage corridor in 2008, the known sites of contamination were further investigated. At that time, a large volume of construction debris was removed from the settling ponds and upstream dam abutment (Gross 2012). Field sampling data since completion of the fish passage corridor indicates that there are no remaining contaminants in the area (Gross 2012). However, the last area of potential contamination, which occurs beneath existing aggregate stockpiles, has not been accessed or sampled since those stockpiles have remained in place since 1988. If stockpiles are removed at some time in the future, it may be necessary to conduct additional contaminant sampling in the area.

3.11 Demographics

Demographics in the vicinity of the project area were assessed using U.S. Census Bureau data (2010). Communities included in the assessment include Trail, Shady Cove, Medford, Central Point, Butte Falls, White City, and Eagle Point. In addition, Census Tract 27, which is the tract that includes the unincorporated Jackson County areas within and immediately surrounding the project, was also assessed. Results are shown in Table 3.5 below. Demographics data for the larger Jackson County market area are provided in Chapter 4.

3.11.1 Socioeconomics and Environmental Justice

Federal agencies are required by Executive Order 12898 (Environmental Justice, 59 FR 7629, 1994) to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations." Providing environmental justice means ensuring that existing local and market area minority and low income populations must be actively protected from adverse human health or environmental effects of any management strategy undertaken or authorized within the project area.

The Council on Environmental Quality (CEQ), identifies minority groups as Asian, American Indian or Alaskan Native, Pacific Islander, Black not of Hispanic origin, and Latino (CEQ 1997). It defines a minority population as any group of minorities that exceed 50% of the existing population within the

Table 3.5 Demographics from Communities Surrounding the Project Area.

Community	Eagle Point	White City	Butte Falls	Central Point	Medford	Shady Cove	Trail	Census Tract 27
2010 Census Population	8,469	7,975	423	17,169	74,907	2,904	702	6,921
Age Distribution								
≤ 10 yrs	14.6%	17.7%	8.5%	14.4%	8.5%	8.5%	7.9%	8.0%
11-18	14.8%	15.1%	18.9%	14.7%	10.4%	10.4%	11.6%	13.3%
19-49	37.3%	41.4%	32.4%	38.9%	36.9%	36.9%	39.5%	37.8%
≥ 50	33.2%	25.6%	40.2%	32%	44.2%	44.2%	40.8%	41.1%
Ethnicity								
Asian	1.0%	0.8%	0.5%	1.0%	0.3%	0.3%	0.0%	0.4%
Black	0.2%	1.1%	0.0%	0.3%	0.3%	0.3%	0.0%	0.3%
Latino	6.8%	28.8%	2.4%	9.0%	4.7%	4.7%	3.4%	4.2%
Native American	1.1%	1.0%	0.7%	0.9%	0.5%	0.5%	2.3%	1.0%
Pacific Islander	0.1%	0.1%	0.2%	0.4%	0.0%	0.0%	0.6%	0.1%
White	88.3%	66.2%	93.4%	86.0%	91.8%	91.8%	91.2%	91.6%
Other	2.5%	1.9%	2.8%	2.4%	2.3%	2.3%	2.5%	2.5%
Individuals Living Below Poverty Level ²	14.0%	29.1%	13.9%	7.6%	14.0%	15.9%	11.9%	10.9%
Data taken from 2010 Census Data, American FactFinder or 2005-2009 American Community Survey, Census Data. Mixed-race ethnicities reported resulting in a total greater than 100%.								

market area or where a minority group comprises a meaningfully greater percentage of the local population than in the general population. Additionally, the CEQ (CEQ 1997) identifies low income using 2010 census data for “individuals living below the poverty level.” For the purposes of this study, a low income population will be defined similarly as a local or market area population with more than 50% of people living below the poverty level.

According to the data assembled in Table 3.5, there are no communities surrounding the project area which would qualify as a minority or low income populations as defined by the CEQ (1997) or for the purposes of this report.

3.12 Traffic and Transportation

Vehicular access to the project area is provided from the west side via Elk Creek Road. This new two lane road was constructed in anticipation of dam completion and subsequent submerging of Old Elk Creek Road, which was historically the main access road directly into the project area. However, as the dam was not completed, Old Elk Creek Road is still present and used primarily for project operations access, but also provides the main railway within the project area. Plate 5 shows the roads and trails that provide transport in and throughout the project area.

Reaching Elk Creek begins with a flight into the Rogue Valley International Medford Airport approximately 25 miles south, or by driving north or south on Interstate 5 through western Oregon. From the airport, Crater Lake State Highway 62 offers the most direct access north to the project area, leading to a northbound turn onto Elk Creek Road. Just less than 2 miles after this turn, visitors will see the remaining dam structure to the right. Drivers originating south of Medford may travel on Interstate 5 to

the Medford exit and take this same route north via Highway 62. Visitors coming from the north have the option of taking Tiller Trail State Highway 227 by exiting in Canyonville and heading east. Highway 227 then joins Highway 62. Finally, visitors coming from eastern Oregon will first arrive at The Dalles-California Highway 97 and then have the choice of using Highway 62 south of Crater Lake or the East Diamond Lake Highway 138 and West Diamond Lake Highway 230 to reach Highway 62 to the north of Crater Lake.

Access roads into the project area are gated and open to public access only between May 1 and November 15. Vehicles were previously allowed to drive through the entire project area, but are now prohibited from passing over the bridges spanning West Branch Elk Creek and Alco Creek. The Corps has deemed the bridges unsafe for vehicular use, and as a result, off-road vehicle use is also prohibited within the project area.

Public parking is available to a limited number of vehicles at several turn-off points along Elk Creek Road. A parking lot overlook had previously been constructed to allow viewing of the dam, but has been closed due to safety considerations and inadequate funding to operate and maintain the area. Once parked, Old Elk Creek Road is the primary pathway through the project area, beginning at the southern end near the dam, following the west bank of Elk Creek, and reconnecting to the new Elk Creek Road at the northern end. Visitors are welcome to walk, run, bicycle, or horseback ride along Old Elk Creek Road to access the area, except where signage prohibits public access.

A number of small projects are under consideration for improvement of public access and use of the trails within the project area. Options include development of public parking areas near mile marker 7 on Elk Creek Road, as well as improvements of existing trails, addition of wayfinding signage, and clear demarcation of trailheads. These measures, along with additional potential recreational improvements, have been provided and described in Appendix II.

3.13 Utilities

Electric utilities are available at the project in the downstream area near the gate house. A power transformer is found in close proximity. Larger power lines pass to the south of the area, but do not go through the project boundaries. Telephone utilities also exist at the project and buried lines run along Elk Creek Road (Plate 5). Two septic/drain field systems exist at the project; one near the previous location of the project office and one near the old Contractor's construction office. The condition of these utilities is not known. A water well exists at the old project office and there is also one near the old Contractor's construction office. The condition of these wells is not known.

3.14 Public Health and Safety

Public health and safety focuses on the potential risks to the public and personnel from hazards that may occur within the project area itself, or which may impact public services adjacent to the area. Health and safety hazards to the public can arise from recreation uses, plants and wildlife, flooding, hazardous materials, and criminal activity. Nearby public services, such as law enforcement, fire protection, hospitals and schools, may be designated as respondents to health and safety issues at Elk Creek, may be impacted by activities in the project area, or may depend on access through the area. Public health and safety measures are intended to protect the public, to maintain public services, to ensure compliance with applicable federal and state laws, to prevent waste contamination, and to minimize hazards resulting from actions on Corps-managed lands and amenities.

Table 3.6 Public Services for Elk Creek Project Area			
Service	Name and Address		
Police	Shady Cove Police Department 22451 Highway 62 Shady Cove, OR 97539 http://www.shadycove.net/sheriff's.htm (541) 878-3200	Sheriff	Jackson County Sheriff 787 West 8th Street Medford, OR 97501 http://www.jacksoncounty.org/sheriff (541) 774-6818
Game Warden	Oregon State Police – Fish and Wildlife Central Point Area Command 4500 Rogue Valley Highway, Suite A Central Point, OR 97502 http://www.oregon.gov/OSP/FW/index.shtml (541) 776-6114	Jackson County Code Enforcement	Code Enforcement Office 10 South Oakdale Ave., Room 100 Medford, Oregon 97501 http://www.co.jackson.or.us/ (541) 774-6900
Fire Protection	Jackson County Fire District #4 21200 Highway 62, P.O. Box 1400 Shady Cove, OR 97539 http://www.shadycovefire.com/ (541) 776-7007	Emergency Medical Services	Jackson County EMS Office 1005 East Main Medford, OR 97504 http://www.jcems.net/ (541) 774-8223
Hospital	Providence Medford Medical Center 1111 Crater Lake Ave. Medford, OR 97504 Heliport Available (541) 732-5000	Hospital	Rogue Valley Medical Hospital 2825 East Barnett Rd. Medford, OR 97504 Heliport Available (541) 789-7000
Additional Emergency Air Transport	Angel MedFlight Worldwide Air Ambulance Services 8014 East McClain, Suite 220, Scottsdale, Arizona 85260-1329 (877) 264-3570	Nearest Airport	Rogue Valley International-Medford Airport 1000 Terminal Loop Parkway Medford, Oregon 97504 (541) 776-7222

Corps safety and health requirements are detailed in EM 385-1-1 (Corps 2008). This manual prescribes the safety and health requirements for all Corps activities and operations. The Strategic Recreation plan provides guidance for public health and safety at water resources development projects, such as Elk Creek (Corps 2010). The plan states that recreation amenities will be managed in a way that protects the safety of the visitor and allows access by all, regardless of ability. It further states that the Corps has a responsibility to educate the public on how to access and play in, on, and around the water safely, as well as promote and enforce safe behavior. Facility design, operation, and maintenance will ensure that recreation amenities are safe and in good condition for use by visitors. Safety guidance is based on the Code of Federal Regulations (CFR) Title 36 (CFR327), ER 1130-2-550 (Corps 2008), ADA Regulations (U.S. Department of Justice 2008), and the National Water Safety Program (NWSP 2011).

Table 3.6 lists the primary service providers for the project area, including law enforcement, game protection, fire protection, emergency medical services, the nearest hospital, nearest emergency air transport, and the nearest public school. Service providers may access the project area by vehicle from Elk Creek Road. Old Elk Creek Road is no longer accessible to vehicles without assistance from Corps personnel. Lock gates prevent access to Old Elk Creek Road; a measure which was recently introduced due to concerns regarding the safety of bridges along the road.

3.15 Aesthetics

Jackson County has a unique physiography and climate resulting in a remarkable array of ecosystems and diversity. It is the meeting ground of the chaparral ecosystems of northern California, the Douglas fir/western hemlock forests of the Pacific Northwest, and the sagebrush and grasslands of the arid Central Oregon Great Basin (Jackson County Planning Commission 1990).

Elk Creek flows through a natural valley bounded by the Cascade Gorge and Willitz Ridge on the east and the Trail Creek/Rogue River divide on the west. These steep divides provide the visual boundaries of the area. The wide range of elevations results in a variety of habitat types and aesthetic qualities from the valley floor along Elk Creek to the ridgetops undulating along the visual periphery.

Dominant habitat types along the valley include the riparian areas adjacent to Elk Creek, where trees and shrubs grow in a narrow and sparse band. Shading varies in abundance along the creek, providing almost complete cover in some areas, and being completely absent along many reaches of the creek.



Left: Elk Creek looking downstream toward the aggregate rock. Right: View across valley floor toward east.

Moving up from the creek to higher elevations along the valley floor, floodplain areas are dominated by oak savannah habitats. These areas are pastoral and green, covered by a lush layer of meadow and dotted with stately and shade-providing oak trees. Wetlands and abandoned foundations of old homesteads are common features within these meadows, along with migrating and resident elk, songbirds, raptors, and the occasional small mammal. Old Elk Creek Road varies from paved and maintained, to paved but unmaintained, to completely unpaved, as it follows the course of Elk Creek. It is the primary trailway within the project area.

Moving up the valley walls, conifer forests are interspersed with steep rocky slopes, creating a mottled green and brown landscape. Basalt rock formations occur along both ridges; these are the sculptures of volcanic and erosive forces. The barren and burn-scarred snag forests at the north end of the project area remind visitors of the 2002 Timbered Rock Fire.



Left: Looking northwest at the area burned in the 2002 Timbered Rock Fire, Elk Creek Road in foreground. Right: Close view of burned timber.

Visual blemishes to the project site include the one third height dam, the construction areas surrounding the dam, the remaining construction materials, and the sizeable aggregate piles adjacent to the dam. These areas stand out in stark contrast to the natural wildland beauty of the rest of the project area. Gates and official Corps signage have been selected that fulfill regulations, stand out clearly, and are economically feasible. Signage for visitors has been constructed out of natural wood and shake, in a manner intended to allow smooth blending into their surroundings. Future signage, wayfinding, or interpretive displays will be designed to augment the natural beauty of the area.



Left to right: Dumping and firepit, aggregate piles and construction materials, dam intake structure, noxious starthistle and medusahead.

Additional aesthetic challenges are posed by prohibited uses of the area, such as dumping which results in debris piles, camping that tramples the ground and results in prohibited fire pits, target shooting that leaves behind spent ammunition shells, and off-roading with motorized vehicles that damages vegetation and trails. Trash and debris tends to accumulate near the popular 7-mile swim area (described further in Chapter 4).

Overall, Elk Creek offers a diverse and pleasing aesthetic experience to visitors, particularly in areas where there has been little or no development. Protection and conservation of these qualities is essential in maintaining a pleasing experience for visitors, which will also aid in preserving the natural and native habitats of the valley.

3.16 Sustainability

The Corps is mandated to consider sustainability in all aspects of its operations, which is guided by Executive Order (EO) 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*. This order defines sustainability as the "...conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations." As a steward for some of the nation's most valuable natural resources, the Corps must ensure our customers receive products and services that provide for sustainable solutions that address short and long-term environmental, social, and economic considerations.

In 2002, the Corps adopted a suite of environmental operating principles, intended to increase the focus on continuing sustainability in Corps projects (Corps 2002). Those principles are as follows:

- Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse and sustainable condition is necessary to support life.
- Recognize the interdependence of life and the physical environment. Proactively consider environmental consequences of Corps programs and act accordingly in all appropriate circumstances.
- Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
- Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.
- Seek ways and means to assess and mitigate cumulative impacts to the environment; bring systems approaches to the full life cycle of our processes and work.
- Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work.
- Respect the views of individuals and groups interested in Corps activities, listen to them actively, and learn from their perspective in the search to find innovative win-win solutions to the nation's problems that also protect and enhance the environment.

Throughout development of this master plan, these environmental operating principles will be considered and recommendations for best achieving these objectives will be included.

4 RECREATIONAL RESOURCES AND ANALYSIS



According to current Corps regulation, designs for specific areas or facilities will be initiated only in accordance with an approved master plan, when a master plan is required (ER 1110-2-400). In light of this directive, this chapter of the master plan provides a review of recreation opportunities and needs and then summarizes the recommendations for recreation planning at the project area, which are further incorporated into the NRMP attached as Appendix II.

As the nation's largest federal provider of outdoor recreation, the Corps manages 12 million acres of lands and waters at Corps water resource development projects across the country. The recreation mission of the Corps is to manage and conserve natural resources, while providing quality public outdoor recreation opportunities to serve the needs of present and future generations (Corps 2011). This recreational resources analysis follows Corps guidance to determine recreational supply and demand at Elk Creek.

Recreational opportunities available within the Elk Creek project area include consumptive and non-consumptive activities. Consumptive use is limited to hunting, which essentially allows for removal of resources within the area. Non-consumptive uses include activities that do not remove or diminish natural resources. Some examples of these activities include hiking, biking, equestrian use, nature appreciation, and non-motorized watercraft use.

In this chapter, the existing recreation opportunities in the area will be inventoried and the recreational demand of the market community of the Elk Creek project area will be assessed. This information will be combined to determine if a suitable quantity and quality of recreation is available to the market area and the role that Elk Creek currently plays, or could potentially play, in meeting those recreational needs (EP 1130-2-550). Conclusions will include a number of recommendations for meeting recreational demand at Elk Creek, and a review of recreational development currently in progress.

4.1 Elk Creek Project Area Existing Recreation and Management

4.1.1 Consumptive Recreation

Hunting and fishing are the only authorized consumptive recreation activities in the project area. Fishing is not permitted in Elk Creek or its tributaries but is currently permitted at the quarry. The Dixon Wildlife Management Unit (#22) encompasses Elk Creek Project lands and is an administrative unit of the Cascades Management Area established by the ODFW. Species sought by hunters in this area include

large and small mammals, upland game birds, and waterfowl. Local residents report that game fish have been released within the quarry by enthusiastic anglers. Fishing in the quarry is legal only through the proper licensing and fishing elsewhere within the project area is prohibited.

Large mammals sought after by hunters include Columbian black-tailed deer (*Odocoileus hemionus columbianus*), Roosevelt elk (*Cervus elaphus roosevelti*), black bear (*Ursus americanus*), and cougar (*Puma concolor*). In the 2009 hunting season, a total of 1,175 Columbian black-tailed deer were harvested via bow or rifle from the Dixon Management Unit, representing approximately 6% of total deer harvest in Oregon (ODFW 2010). In the same year, 146 Roosevelt elk were harvested, representing 2% of total harvest for Oregon. Of a total of 698 black bears harvested in 2009, 36 bears came from Management Unit #22. Cougar harvests have declined since 2007 in the same area, from 16 in 2007, to 10 in 2008, and 7 in 2009. The 2009 Dixon Unit cougar harvest represents approximately 2.5% of the total cougars harvested in the state. Small mammals in the region include gray fox, coyote, bobcat, raccoon, striped skunk, mink, river otter, beaver, and western gray squirrels.

Upland game birds include mountain quail, mourning doves, valley quail, pheasant, and band-tailed pigeons. Waterfowl are less abundant regionally, due to absence of wintering habitat for resident species, and few migration stopping points for non-resident species.

Additional information regarding these species, their preferred habitats, and presence within the project area is provided in Appendix I, while significant habitat areas and recommended management measures are provided in Appendix II.

4.1.2 Non-consumptive Recreation

There are minimal developed recreational facilities or amenities within Elk Creek project area and vehicular access is only allowed from May 1 to November 15. However, visitors are welcome to enter the area on foot, bicycle, horse or non-motorized watercraft year round.

The primary trail through the project area follows Old Elk Creek Road (Plate 5). Additional unofficial trails have become defined through continued public access. Typically, visitors to Elk Creek park along Elk Creek Road, which runs along the west boundary of the project area, and then hike or bike further in. Vehicular access is limited to one location (Plate 6). Parking availability is limited to two lots within the area and a few pull-outs along Elk Creek Road (Plate 6). Old Elk Creek Road offers a continuous, unbroken path through much of the project area, and is excellent for hiking, jogging, mountain biking, or equestrian use. Smaller unpaved trails lead toward Elk Creek or into the meadows or forests to the west of Elk Creek. There is no trail access across Elk Creek, therefore access to the east side of the project area is limited.

Rafting/Paddling activities are popular in the region, particularly along the Rogue River. Following the notching of the Elk Creek dam, rafters could paddle an additional 2.5 miles downstream from the dam to the Rogue River confluence. Elk Creek provides paddlers a rainy season run, with flows rising and falling quickly depending on rainfall. The run becomes floatable typically in late fall, and seasons lasts until late April or early May. Summer flows are too low to support rafting activities. Whitewater along this run is mostly Class II, II+, and III's and the 33 feet per mile gradient keeps the current moving at a brisk pace (American Whitewater 2011). Logs and other instream obstacles are potential hazards to be closely monitored.

Swimming takes place in Elk Creek as well as within the quarry site near West Branch Elk Creek. At the north end of the project area, Elk Creek forms a series of suitably deep swimming holes. Small streamside sand beaches and rock ledges allow for lounging, picnicking, and rock climbing. Coupled with available unpaved parking areas nearby, these easily accessible pools are a popular summer time attraction,

especially to local community residents. Trash receptacles have been placed near the swimming holes to encourage cleanliness and to reduce introduction of foreign materials into the sensitive stream habitat. However, no other amenities are available. The quarry is less easily accessed, requiring a steep hike in an area with no clear trail. However, some recreation does occur in this area, as evidenced by abundant debris, shotgun shells, and fire pits.

In addition to physical recreation activities, the Elk Creek project area offers a variety of nature appreciation activities. The diversity of habitats, wildlife, and landscapes attracts photographers, birdwatchers, artists, and those seeking the peaceful beauty of this uniquely undeveloped wildland.

Amenities throughout the area are limited to sparse signage kiosks, a few waste receptacles found in areas of highest use, and two vault toilets located adjacent to parking areas along Elk Creek Road (Plate 6). There are no other toilets, parking lots, formal trailheads, or trail signs. No overnight camping is allowed and no motorized vehicles of any kind are permitted outside of the designated roads and parking areas.



Left: Kiosk and waste receptacle. Right: Waste receptacle in poor condition near the swimming hole.

4.1.3 Unauthorized Recreation

A number of unauthorized recreation activities also take place in the project area. Off-road vehicles, overnight camping, target shooting, and looting or damaging of cultural resources are the primary issues at the site. Each of these activities are typically focused in locations that offer additional recreational opportunities, such as near the swimming holes, the quarry, and along West Branch Elk Creek.

Fire pits and cleared areas are evidence of overnight stays. These areas are also often littered with beer cans, food trash, and other debris. Spent ammunition shells and holes in Corps signage provide evidence of target shooting and these typically occur where gravel piles provide a backdrop for target practice. Although hunting with a permit is allowed in the area, target shooting is not. There is evidence of off-road vehicle use, particularly along West Branch Elk Creek, where a well-defined and rutted trail occurs. Used tires, fire pits, and other trash were also found in these areas.

A number of culturally significant sites are vulnerable to looting and damage. Amateur archeologists or others interested in the artifacts that may be present pose a significant threat to these valuable sites. Summary findings of cultural resources in the area have been provided in the HPMP.

Additional recreational issues may include unauthorized vehicular entrance to the site, unpermitted hunting or fishing, or unauthorized access into restricted project operations areas.

Unauthorized recreational activity was more common when the entire length of Old Elk Creek Road was still open to year round vehicular traffic. In 2010, the bridges on the old road were deemed unsafe for vehicle passage and the road was closed beyond the bridges. In addition, vehicle access to the area has been restricted to May through November, which aids in reducing the frequency and level of social disturbances.

4.2 Surrounding Recreational Amenities

Recreation opportunities surrounding the project area are abundant. Numerous parks have been established within Jackson County and near Elk Creek, offering a wide variety of recreation types and locations. Regional, County, and local recreation opportunities are described below.

4.2.1 Regional Recreation

The Rogue River Basin and the adjacent Cascade and Siskiyou Mountains offer a wide variety of outstanding recreation opportunities within and adjacent to Jackson County (Plate 7). The lakes, rivers, and mountains of the region provide a recreation setting that has been formalized with federal, state and local parks and recreation sites. The region contains nationally significant recreation resources such as forests, monuments, wildlife refuges, and trails. Numerous rivers and streams also occur throughout Jackson County, including National Wild and Scenic Rivers and State Scenic Waterways.

Crater Lake National Park (Klamath County), founded in 1902, is home to the deepest lake in the United States at 1,943 feet, and is the seventh deepest lake in the world (National Park Service 2011a). Three visitor center facilities provide information year-round or during the summer, and there are activities led by park personnel during the summer months. Overnight stays are permitted during the summer months in campgrounds at the Crater Lake Lodge or in backcountry areas. Backcountry permits are required for overnight winter-season camping. Lake recreation is limited to boat trips organized by park personnel. Elk Creek runs along Highway 62, which is the only vehicular access route leading to Crater Lake.

Pacific Crest National Scenic Trail in southern Jackson and Klamath Counties is a 2,650 mile national scenic trail that runs from Mexico to Canada through California, Oregon and Washington (Pacific Crest Trail Association 2011). It is one of only 8 National Scenic Trails within the United States, and the only one passing through Oregon. The trail begins in Oregon at the southwest corner of Jackson County, passing over into Klamath County near Crater Lake. Hiking, backcountry travel with overnight camping, outdoor appreciation, and wildlife watching are the main recreational activities on the trail. Elk Creek runs along Highway 62, which is the only vehicular access route to the Pacific Crest Trail.

National Wild and Scenic Rogue River occurs in a stretch upstream and another stretch downstream of Elk Creek (Interagency Wild and Scenic Rivers Council 2011). The Rogue River Basin is a particularly popular site for game fishing and river rafting, but other recreational opportunities include hiking, camping, outdoor appreciation, wildlife watching, kayaking, canoeing, swimming, and picnicking. Between June 1st and September 15 the wild and scenic section of the river is controlled by a permit section; only permit holders are allowed to use the river to limit the amount of people through it per day (Rogue Web 2011). Permits can be obtained through guide services.

Oregon Caves National Monument (Josephine County) located in the northern Siskiyou Mountains of southwestern Oregon, is known primarily for its marble caves. The 488-acre park is located in southeastern Josephine County approximately 24 linear miles south of Grants Pass. Cave tours, hiking, and camping are the primary recreation activities associated with this monument (National Park Service 2011b).

The Illinois River is a wild and scenic river which runs from the southeast, across the Coast Range in a northwestern direction to its confluence with the Rogue River near the community of Agness (Interagency Wild and Scenic Rivers Council 2011). The wild section of the river flows through steep canyons for nearly 29 miles between the confluence of Briggs Creek and Nancy Creek. It has 150 rapids, 11 of which are Class IV and one of which has a most difficult rating of Class V. It is one of the most inaccessible sections of wild river in the country and caters to highly skilled and experienced boaters.

Upper Klamath National Wildlife Refuge (Klamath County) was established in 1928 and is comprised of 15,000 acres of mostly freshwater marsh and open water. These habitats serve as excellent nesting and brood rearing areas for waterfowl and colonial nesting birds including American white pelican and several heron species (USFWS 2011). Birding and wildlife watching are the primary recreation activities here, which are commonly done from canoe or kayak along the 9.5 mile canoe trail. Access is limited to non-motorized watercraft.

4.2.2 Jackson County Parks and Recreation

Jackson County Parks and Recreation operates and maintains 11 recreation areas, providing a range of recreational opportunities, including boating, swimming, hiking, camping, picnicking, playgrounds, and event spaces (Plate 8).

Agate Lake offers 216 acres of boating and park recreation, including 3 miles of lake frontage, approximately 14 miles northeast of Medford. A boat ramp allows for boating and angling activities, and swimming is also permitted.

Britt Gardens is home of the Britt Festival, an outdoor music and performing arts festival. The Britt Gardens are located two blocks from historic downtown Jacksonville. The gardens have hiking trails and picnic areas with tables available for day use.

Cantrall-Buckley Park lies along the Applegate River, and provides four group picnic areas, a campground above the river with a group campsite available by reservation only. The park is located in the southwest corner of Oregon, near the community of Ruch.

Dodge Bridge is a park along the Rogue River, in the southwest corner of Oregon, near the city of Eagle Point. Picnicking, fishing, rafting and boating are the main attractions. A handicap-accessible fishing platform is available.

Emigrant Lake is one of the County's most popular destinations and offers a variety of recreational amenities. An RV park and 42-tent site campground is adjacent to lake swimming, boating, canoeing, kayaking, fishing, and picnicking opportunities. This area is located on the southwest corner of the state near Ashland city.

Howard Prairie Lake Recreational Area, located high above the southern Rogue Valley, is a popular destination for boating, sailing, and fishing. Campsites are plentiful, and the Pacific Crest Trail is easily accessible. Features include fishing, camping, boat launch facilities at Klum Landing, Willow Point, and Grizzly; restroom/shower complex at Klum Landing; group camp facilities at Sugar Pine; camping and group camping at Grizzly, Lily Glen Equestrian Area with corrals, horse trails, picnic tables, camping and

group camping facilities; and Howard Prairie Resort with its restaurant, store, marina, boat rentals, new boat ramp, handicap-accessible fishing platform and picnic area, campground with hookups, restroom/shower complex and camp-trailer rental.

Rogue Elk Park along the upper Rogue River near Shady Cove provides river access for fishing and rafting. This is the County's most popular camping spot, with RV hookups and showers. There is also a boat ramp, barbecue grills, picnic tables and playground available at this location.

Sports Park is a large multisport facility near White City. It has a 10-field little league/softball complex, a drag strip that is the site of major racing events, a go-kart track, dirt oval track, public shooting range, ORV riding area, and fishing ponds.

Takelma Park, located just north of Dodge Bridge near Shady Cove, offers easy access to the Rogue River for fishing and boating via a concrete boat ramp. The park offers vault toilets and paved parking with night lights.

Upper Rogue Regional Park offers access to the Rogue River for rafting and fishing, or for a waterfront picnic. A handicap-accessible fishing platform, barbecue grills, playground, and a boat ramp are also available. This park also hosts the Riverhouse, which may be rented for weddings, receptions, meetings, and other group events. It contains a commercial kitchen, dressing room, furnished meeting area, 1,400 square feet of exhibit space, inside seating capacity for 50, and a deck and garden capacity of 250 people. This area is located in the town of Shady Cove.

Willow Lake includes cabin and yurt rentals, group camping sites, barbecue grills, boating, boat ramp, fishing, hiking trails, picnic areas, RV dump stations and hookups, and a swimming area. This area is located on the southwest corner of the state near Butte Falls.

4.2.3 Local Recreation – Lost Creek Lake

Lost Creek Lake is located 30 miles northeast of Medford on the Rogue River. Recreation activities along the 30 miles of shoreline at Lost Creek Lake include biking, boating, camping, fish hatchery, fishing, hiking, hunting, interpretive programs, picnicking, recreational vehicles, visitor center, water sports, wildlife viewing (Plate 8). Specific facilities and amenities include the following (Corps 2011a).

McGregor Park is located 30 miles northeast of Medford on the banks of the Rogue River along the Rogue-Umpqua Scenic Byway (Highway 62). This facility, with visitor center, is south of Lost Creek Lake and is managed jointly by the Corps and BLM. McGregor Park provides access to fishing ramps and trails, and other amenities include restrooms, picnic areas, a playground, interpretive displays, environmental education programs, and wildlife and salmon viewing.

Joseph H. Stewart State Recreation Area overlooks Lost Creek reservoir. There is a boat ramp near the day-use area and a moorage facility to serve visiting boaters. Boats are offered for rent at the marina, which also has a store and cafe next to the day use area parking lot. Anglers troll the 10 mile long reservoir all year for trout and bass. A fish cleaning station is located next to the boat launch parking lot. Seasonal camping includes 151 electrical sites with water, 50 tent sites with water, paved parking, picnic tables, fire ring at all sites, 2 group tent camping areas, flush toilets and hot showers, pay phone by visitor parking area, volleyball area, RV dump station, and horseshoe pits. There is an 11 mile trail system for hiking or biking through the forest with year-round streams and wildlife viewing.

Cole M. Rivers Fishing Hatchery offers an observation deck overlooking a collection pond and adult Chinook salmon holding ponds. A viewing room overlooks the spawning area. Display ponds feature

trout and steelhead. Anglers may fish at the popular Hatchery Hole for Coho and Chinook during authorized seasons. Public restrooms, drinking fountains, parking and visitor information are available.

The Project Office and Powerhouse are located adjacent to the dam spillway. A small visitor office provides information about the dam and reservoir, including pamphlets and brochures. Public restrooms are available and there is fishing access, paved parking, hiking access, and drinking fountains.

In addition, several additional recreational areas have been developed. A number of picnicking locations are available, including Catfish Cove and Rivers Edge Park. Areas with boat ramps include Bridge Hole Fishing Access and Takelma Recreation Center. Fishing areas include Medco A, Spillway, and Bridge Hole. Campgrounds within the park include Fire Glen and Four Corners, in addition to Joseph H. Stewart State Recreation Area. Both are boat in or hike in campgrounds with restrooms. Scenic views are available at the Dam Viewpoint, Grotto, Viewpoint Mike Trail, and the W.L. Jess Dam and intake structure. Trailheads with hiking and/or biking access include Lewis Road, Lost Creek, and Peyton Bridge.

4.3 Recreational Needs Assessment

4.3.1 Federal and State Recreation Assessment and Guidance

Guidance for recreation development at Elk Creek will follow the guidelines and goals provided in Corps regulations, as well as the recommendations in other federal and state recreation plans. In particular, goals and objectives described in the Corps Recreation Strategic Plan (2011) and the Oregon SCORP (2008) will assist in shaping the recreation recommendations for Elk Creek project area.

4.3.1.1 Corps Regulations

According to current Corps regulations, recreation developments and facilities should be safe, cost effective, and promote the health, welfare, and enjoyment of the public. Each recreation area and facility must be designed for its appropriate carrying capacity, anticipated management implications, and in consideration of the proper balance between the area's capacity with support facilities and preservation of the natural environment (ER 1110-2-400).

4.3.1.2 Recreation Strategic Plan

The Recreation Strategic Plan provides a background of the values of the Corps and their role in managing recreation at water resources development projects (Corps 2011b). The strategic plan recognizes that water resources recreation is a major attraction of Corps land and strives to manage lands in a way that keeps people linked to water. The strategic plan identifies the primary values and roles for the Corps in managing recreation, each of which is derived from existing federal or Corps regulations. These directives apply to recreation development within Elk Creek and include:

- Development of a recreation program that will manage and provide a variety of ways to maintain public access to Corps water resources;
- Management of recreation amenities offered by the Corps, its



partners, and future lessees, and direction of the use of these amenities by the Corps, in a way that protects the safety of the visitor and allows access by all, regardless of ability;

- Protection of lands and resources for present and future generations to use and enjoy;
- Promotion of a healthy outdoor experience for community members, military personnel, and the public;
- Working with partners to ensure quality services for the public; and
- Continuing to provide recreational opportunities throughout the country, through a variety of operational alternatives that include leases, partnering, and direct delivery.

4.3.1.3 Oregon Statewide Comprehensive Outdoor Recreation Plan

The 2008-2012 Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP) (Oregon Parks and Recreation Department 2008) was developed for the primary purpose of providing recommendations to the Oregon State Park System for operation, administration, planning and development of recreation. It is also intended to provide guidance for other federal, state, and local units of government.

In the most recent SCORP effort of 2008, the primary goal was to determine the types of outdoor experiences most needed in Oregon and where those needs were greatest. Following extensive research, it was found that there are four main populations of concern to be focused on when developing recreation, including (1) a rapidly aging Oregon population, (2) fewer youth learning outdoor skills; (3) an increasingly ethnically diverse population; and (4) a lack of many Oregonians getting enough physical activity.

Overall, Jackson County was not identified as high priority for any of these concerns. However, the city of Medford was identified as a high priority city for rapidly aging populations, fewer youth learning outdoor skills, and an increasingly diverse population, due to the rapid expansion of the Hispanic and African American communities.

Each of these populations was surveyed during the SCORP process to determine their levels of recreation participation and what recreation activities they engaged in. Participation statistics from surveys for each population are described below.

Rapidly Aging Population Of the populations surveyed born between 1926 and 1964, walking was found to have the greatest participation overall, with 80% of respondents claiming to engage in this activity. Other popular activities included picnicking (68%), sightseeing (63%), visiting historic sites (62%), day hiking (52%), taking children or grandchildren to a playground (39%), freshwater beach activities (33%), and other nature or wildlife observation (31%). Other activities with participation below 30% included jogging and bicycling.

Surveyed respondents also indicated that their outdoor recreation would increase with increasing trail availability, facilities along trails, information regarding outdoor opportunities, public transportation, and safety.

Fewer Oregon Youth Learning Outdoor Skills Surveys of parents with children between the ages of 3 and 17 found that children participated in a number of outdoor recreation activities. Those with participation of 50% or more included walking, picnicking, day hiking, relaxing outdoors, playing at a playground, bicycling, camping, freshwater beach activities, visiting historic sites, and nature appreciation. It was also

found that the more a parent engages in outdoor recreation activity, the more their child does, and that most parents that engage in outdoor activity began doing so as children.

Increasingly Diverse Oregon Population Hispanic survey respondents indicated their favorite activities through an open ended question format. A total of 21% of respondents wrote in that walking was their favorite outdoor activity, followed by playing soccer and fishing (13%), picnicking (7%), and hiking (6%). When asked if they participated in specific activities, 60% reported walking for pleasure and 20-24% reported jogging for exercise, relaxing, viewing natural features, or engaging in outdoor sports and games. SCORP's Ethnicity Focus Group Report found that African-American populations sought outdoor experiences that allowed for solitude and spending time with family and friends in non-remote areas of aesthetic value.

Oregon's Physical Activity Crisis Regular physical activity lessens many of the health risks associated with overweight conditions and physically active adults in Oregon have lower rates of many chronic diseases than sedentary adults. More hiking and urban trail miles per household per county were associated with increased rates of physical activity.

As a result of these findings, several key planning recommendations were made in the SCORP report for each of the identified issues facing Oregonians' outdoor experience, separated into statewide mandates and local measures. Although the development of recreation within the Elk Creek project area will not directly fulfill the needs of those cities or counties recognized as high priority, it is nevertheless recommended that future recreation development within the project area take into consideration the findings and key planning recommendations provided in the report. The following list provides a summary of the key recommendations as they may be applicable to recreation development at Elk Creek:

Rapidly Aging Population

- Develop accessible, safe, and abundant trails and trail systems.
- Encourage formation of local senior walking clubs and provide trail maps and information.

Fewer Oregon Youth Learning Outdoor Skills

- Provide assistance for innovative outdoor programs for youth.
- Develop appropriate outdoor interpretive programming for local youth groups.

Increasingly Diverse Oregon Population

- Identify under-represented populations in the area and develop framework for encouraging outdoor use for these populations.

Oregon's Physical Activity Crisis

- Develop and market accessible, safe, and abundant trails and trail systems.
- Work with medical community to promote outdoor recreation participation.

4.3.2 Elk Creek Visitation Data

Visitation data for Elk Creek was obtained through a traffic counter set along Old Elk Creek Road, for the dates when this road was openly accessible to the public. The meter reading from the counter is combined into a formula to determine final visitation number. Data has been collected only seasonally since July 2000, but was consistently collected from April to September for the years 2005, 2006, 2008, and 2009

(Stuart 2011). This road is no longer open to public access and no additional counter readings are available.

The formula divides the total counter by two, to account for passage in and out of the area, and then multiplies each car counted by 2.3, which is the national average of people per cars (Stuart 2011). Visitation for these years was ranged from, 13,343 to 15,122 people, with visitation declining over the years of recorded data (Table 4.1).

No additional visitation statistics have been collected. It is unknown where visitors originate from or what activities they are engaging in while visiting Elk Creek. Visitation data does not account for access to the site on foot or by other means, which may occur throughout the year. As a result, it is likely that visitation is greater than that reflected by the traffic counter for the years of data collection.

Nearby Lost Creek Lake visitation is tabulated monthly by fiscal year using the same traffic counter method. From October 2008 to September 2009, a total of 447,491 people visited one of the recreation facilities associated with the lake. No data is available regarding origination of visitors, duration of visitors, or activities engaged in.

Period of Data Collection	Meter Reading	Visitation Count
July – Oct 2000	7,712	8,869
May – Oct 2001	11,399	13,109
2003 – 2004	No consistent data collection	
April – September 2005	13, 150	15,122
April – September 2006	12, 794	14,713
2007	No data collection	
April – September 2008	12,794	14,713
April – September 2009	11,603	13,343

4.3.3 Demographics/Population

In order to determine the recreational needs of the population, it is necessary to identify the population in question. The composition of the market area population can aid in determining the amount of recreational areas needed and the types that are desired. Age and income, in particular, are important determinants of a person's ability to take part in recreational opportunities. Educational background and family composition may also determine the type of recreational interests that are in demand.

Because Elk Creek project area does not offer popular lake-based recreation activities, it is therefore not expected to draw significant numbers of visitors from great distances. Furthermore, the Elk Creek project area does not offer recreational facilities such as overnight camping areas, day use picnic areas, and there is no vehicular access permitted. As a result, the projected market area for Elk Creek is considered to be comprised primarily of the local communities, but may also include all of Jackson County. This definition of the market area is supported by visitation data, which indicates a greater number of visitors than may be accounted for by visits from the local community. Local communities assessed for current demographics included the areas immediately surrounding Elk Creek (Census Tract 27), Trail, Shady Cove, Eagle Point, White City, Butte Falls, Central Point, and Medford (Table 4.2).

Table 4.2 Demographics from Communities Surrounding the Project Area.										
Community	Jackson County	Eagle Point	White City	Butte Falls	Central Point	Medford	Shady Cove	Trail	Census Tract 27 ⁵	
2010 Census Population ¹	203,206	8,469	7,975	423	17,169	74,907	2,904	702	6,921	
Age Distribution	≤ 10 years	11.7%	14.6%	17.7%	8.5%	14.4%	8.5%	8.5%	7.9%	8.0%
	11-18	12.7%	14.8%	15.1%	18.9%	14.7%	10.4%	10.4%	11.6%	13.3%
	19-49	43.1%	37.3%	41.4%	32.4%	38.9%	36.9%	36.9%	39.5%	37.8%
	≥ 50	32.5%	33.2%	25.6%	40.2%	32%	44.2%	44.2%	40.8%	41.1%
Ethnicity	Asian	1.1%	1.0%	0.8%	0.5%	1.0%	0.3%	0.3%	0.0%	0.4%
	Black	0.6%	0.2%	1.1%	0.0%	0.3%	0.3%	0.3%	0.0%	0.3%
	Latino	10.7%	6.8%	28.8%	2.4%	9.0%	4.7%	4.7%	3.4%	4.2%
	Native American	0.9%	1.1%	1.0%	0.7%	0.9%	0.5%	0.5%	2.3%	1.0%
	Pacific Islander	0.3%	0.1%	0.1%	0.2%	0.4%	0.0%	0.0%	0.6%	0.1%
	White	83.7%	88.3%	66.2%	93.4%	86.0%	91.8%	91.8%	91.2%	91.6%
	Other	2.7%	2.5%	1.9%	2.8%	2.4%	2.3%	2.3%	2.5%	2.5%
Median Household Income ²	\$44,640	\$48,125	\$43,011	\$38,333	\$55,236	\$43,422	\$33,182	\$31,292	\$39,429	
Individuals Living Below Poverty Level ²	13.9%	14.0%	29.1%	13.9%	7.6%	14.0%	15.9%	11.9%	10.9%	
High School Graduates ²	61.6%	78%	73.1%	68.6%	68.4%	65%	73.1%	85.1%	55.6%	
Bachelor's Degree or Higher ²	24.5%	20.2%	6%	26.3%	22.6%	25.4%	33.5%	14.7%	15.4%	
Living With a Disability ⁴	20.2%	23.8%	24.6%	25.4%	n/a	20.9%	23.8%	29.6%	n/a	
¹ Data taken from 2010 Census Data, American FactFinder. ² Data taken from 2005-2009 American Community Survey, Census Data. ³ Mixed-race ethnicities reported resulting in a total greater than 100%. ⁴ Data taken from 2000 Census Data, American FactFinder. ⁵ Includes unincorporated Jackson County lands immediately surrounding the Elk Creek project area.										

There are 203,206 people living in Jackson County (Table 4.2). As noted in SCORP, the population in Jackson County is heavily represented by people over the age of 55 and by a growing Latino community. The projected future population for Jackson County is estimated to be 229,377 people by 2020 (Oregon Parks and Recreation Department 2008). The average number of people living below the poverty level is just under 14% and the number of people living with disabilities is 20%.

4.3.1 Stakeholder Workshops

A public outreach meeting was conducted on September 14, 2011 and attendees were asked several questions regarding their current use of the project area and their desires for future development. Surveys and comments sheets were distributed during the public meeting and a website with a comments form was provided. Comments were solicited through September 30, 2011.

A total of 6 recreation surveys were returned by attendees of the public meeting. Their responses indicated that the most popular activity at Elk Creek is nature appreciation, which had the most number of participants and the greatest number of recreation days per year. Also of importance to these respondents were opportunities at Elk Creek to bird watch, walk, mountain bike, hunt, collect berries, day hike, engage in photography, swimming, and simply “be outdoors.” Other activities engaged in less frequently included viewing of natural features and picnicking.

Hunters attending the meeting reported that they have obtained permits to hunt for elk and deer most commonly, but also had hunted bear, cougar, and upland game birds. Hunters also reported successfully harvesting each species, except cougar.

Visitors to Elk Creek reported that they traveled as far as 35 miles to reach the area for the purpose of recreating, although most visitors reported traveling less than 15 miles. Proximity to the project area was correlated with visitation; the closer the visitor lived to the project area, the more often they visited. One nearby resident reported bird watching and nature appreciation activities were engaged in every day of the year.

The most common complaint about recreation at Elk Creek was the level of access to areas that are popular for recreation activities. Verbal and written comments strongly indicated a general desire to see improved access to trails and the creek, where swimming is popular in the summer. Several attendees indicated that they no longer visit the area, or that their visits are limited, because of the locked gates at Old Elk Creek Road. Another common request, reported in many of the surveys and comments sheets, was the improvement and expansion of trails within the project area. One nearby resident reported that a primary concern is the illegal use of the project area after hours or overnight. Yet another resident suggested that visual quality is impaired due to the presence of the dam and remaining aggregate materials, which may hinder appreciation of the natural area.

Overall, comments regarding recreation desires in the area focused on the value of the area of a natural wildland and the opportunities it provides to appreciate nature, view wildlife, and simply be outdoors. The primary desires for changes include adequate and safe access into the project area and improvement of trails. Additional information regarding the coordination and consultation process is provided in Chapter 6.

4.3.2 Elk Creek Recreation Development Constraints

There are several conditions within the project area that constrain recreation development, including restrictions on activities, availability of funding, safety considerations, accessibility, and carrying capacity.

4.3.2.1 Funding Availability

There are no formalized recreation areas within the project area that require funding for operation and/or maintenance. However, several small development projects are currently under review or construction.

Development of Corps land recreation amenities is generally conducted on a cost-sharing basis with a local sponsor that provides a portion of the funding for development, management, and operation and maintenance costs. At this time, no cost-sharing projects are proposed and small development projects would be funded by the Corps Construction General fund.

Options for funding are provided in Corps regulations. The challenge cost-sharing program, as authorized by Section 225 of the Water Resources Development Act of 1992 (ER 1130-2-500), is used to provide opportunities for non-federal public and private groups and individuals to contribute to and participate in the operation and/or management of recreation facilities and natural resources at Corps water resource development projects. Partnering with others provides a way to stretch the Corps budget by sharing the cost of operating and/or managing recreation facilities and natural resources.

Additional regulation also allows for contributions from groups and individuals. The contributions program, authorized by Section 203 of the Water Resources Development Act of 1992 (EP 1130-2-500), authorizes the Corps to accept contributions from groups and individuals in connection with carrying out water resources projects for environmental protection and restoration or for recreation. Contributions of services, such as those provided by volunteers, are guided by regulations specified under the Volunteer Program (ER 1130-2-500).

Another avenue for funding may come from the Corps Foundation. In cooperation with the Corps, the Corps Foundation directs charitable contributions toward significant projects, aiding the Corps with capital construction, historical preservation, education and land protection. The Foundation is committed to the fulfillment of Corps' Natural Resources goals, especially the education of visitors to Corps sites. Applications for assistance from this foundation may be completed online (Corps Foundation 2011).

4.3.2.2 Safety and Accessibility

Vehicle Access Safety is a primary concern of the Corps and must be considered, especially when determining use of a publicly accessible land holding. The Elk Creek project area is currently serviced on site by Old Elk Creek Road, which passes over two vehicle bridges that have recently been deemed unsafe. Because the old road is no longer necessary for project operations access, it is not economically feasible to replace the bridges with new ones that support vehicles. Instead, pedestrian bridges will be installed over West Branch and Alco Creeks. As a result, no vehicular access will be permitted beyond these bridges in the future.

Off-Road Vehicle Use Prior to designation of areas or trails for use by off-road vehicles, district commanders will insure that full and careful assessment and consideration is given to the possible impacts and effects on the environment of the area. As a result of the bridge replacement, as well as the environmentally and culturally sensitive resources throughout the project area, only pedestrian and non-motorized uses will be supported at Elk Creek Dam. Old Elk Creek Road will become a strictly non-motorized vehicle use trail. No off road vehicles will be permitted to travel across these bridges or within the project area. The operation of all vehicles, including, but not limited to, motorcycles, off-road vehicles (ORV's), bicycles, automobiles, trucks, and any other vehicles (see CFR Title 36, Section 327.2 (a) for vehicle definition) off authorized roadways is prohibited, unless otherwise noted at the project site.

Target or Practice Shooting Due to safety considerations, there will be no permitted use of the project area for practice or target shooting. Discharging any weapon (including archery equipment) is allowed only during authorized hunting activities and only during the attempt to take game. State and federal game wardens, as well as local law enforcement personnel, enforce the state and federal hunting laws respectively.

Quarry Access There is no designated trail access to the quarry, though visitors are not prohibited from hiking there on primitive trails. Trash and debris indicate that people do visit the area. The Corps may wish to formalize quarry visitation at some time in the future, to improve safety and regulation of the area.

Equestrian Use Horses are permitted to enter the project area. Restrictions to equestrian access may be developed in the future, as necessary to protect sensitive or culturally or ecologically significant resources.

4.3.2.3 Carrying Capacity

Carrying capacity is the ability of an area to support a given number of visitors and includes both resource based and social considerations. Resource carrying capacity refers to the ability of the natural and developed amenities to provide adequate space and function for recreation. For example, resource carrying capacity may refer to the adequate availability of toilets and parking spaces for the number of visitors the area hosts. It may also refer to the ability of the wildland habitats to sustain the number of visitors to the area without incurring damages to those natural resources. Social carrying capacity refers to the preference of visitor density, which may change depending on the recreation sought. For example, visitors engaging in nature appreciation may seek areas of low human use density in order to facilitate observation of wildlife. Whereas those seeking activities of a social nature, such as enjoying swimming holes or picnicking, may be willing to share the area with a greater number of people.

Carrying capacity at Elk Creek is greatly limited by the availability of conveniences, such as toilets and parking, and the sensitivity of valuable natural resources. There are currently two vault toilets, only limited designated parking areas provided, and only a small number of trash receptacles. As a result, Elk Creek is unsuitable for accommodating a high density of visitors without incurring the possibility of accumulating debris or waste. If additional recreational opportunities are developed, it will be necessary to assess the amount and type of facilities necessary to support the potential increase in visitation. Furthermore, natural and cultural resources in the area are sensitive to overuse. Greater recreational density may result in damage to instream or terrestrial habitats or to historic sites and their associated relics.

Currently, use of Elk Creek recreation is reported to occur within an acceptable carrying capacity by project personnel. In other words, there are no significant high density events during a given year at Elk Creek that cause overwhelming damage that is irreversible or difficult to mitigate. However, during the summer when rafters, swimmers, and hikers are at the highest visitation level, some damage does occur to the natural resources in the area. Meadow damage has been observed where vehicles or large crowds access the area for swimming, rafting, and other streamside activities, especially at the north end of the project area. One indicator of an area's carrying capacity being exceeded is the presence of debris (Urban Research and Development Corporation 1980). However, the presence of trash and other waste materials, which have been observed along the stream and at turn-outs along Elk Creek Road, are more likely the result of careless visitors and a lack of convenient waste receptacles in the area.

Though Elk Creek appears to adequately support the number of visitors it receives, there are opportunities to discourage activities that may cause damage to resources or compromise the aesthetics of the area. These opportunities may include establishing defined parking lots, creating vehicle barriers to keep cars

out of sensitive habitats, placing additional waste facilities, and providing signage to clarify rules and regulations.

4.4 Summary Implications for Planning

Overall, recreation opportunities throughout Jackson County and within the local community are abundant. Nearby Lost Creek Lake and the Rogue River waterway and its associated parks both provide a variety of consumptive and non-consumptive outdoor recreation opportunities to the local community.

In comparison to most Corps water resources developments where significant reservoir recreation activities take place, the value of Elk Creek is in its contribution to the increasingly rare presence of uninhibited stream flows through wildland habitats. It is the Corps goal, as well as the public's wish, to protect the wildland values of this creek, which furthers its role in providing the kind of recreational opportunities that are desired by the members of the market area.

Based on demographics of the market area, and as indicated in SCORP, there is a significant need to address recreational desires of the aging communities (people over age 55), as well as a growing Latino community. In addition, it is necessary to continue to provide recreation opportunities to the existing youth population, those members of the community that are living below the poverty level, and those with a physical disability.

In light of the limitations of the Elk Creek project area, the recommendations made by the Corps strategic plan and the Oregon SCORP, and the desires expressed by interested stakeholders, the visiting public, and local residents, the following recreation related recommendations are made for improvements to the Elk Creek project area, which will further inform the development of management recommendations in the NRMP (Appendix II):

- Improve accessibility to approved land and water recreation opportunities.
- Develop a clearly marked, safe, and readily accessible trail system.
- Develop and install interpretive displays along trails to educate public and increase opportunities for environmental education.
- Work with local communities to develop outdoor programs and opportunities to address needs of aging populations, youth, under-represented populations, and to encourage physical activity.
- Identify and implement methods for ensuring health and sustainability of natural wildland values amidst recreation uses.
- Identify techniques to ensure Elk Creek continues to meet carrying capacity.
- Provide improved monitoring and enforcement of illegal activities.
- Work to improve visual qualities and restore area to maximize nature appreciation.

5 FACTORS INFLUENCING AND CONSTRAINING RESOURCE DEVELOPMENT AND MANAGEMENT



In this chapter, the elements that shape the development, use, and management of the project area are described. These are the factors that have influence over the potential uses of the area and which will guide the development of the NRMP (Appendix II). The development of an overall project goal or objective must consider the limitations described below. The resource use objectives developed in Chapter 7 are based on the information compiled in this chapter. The factors that influence and constrain resource development and management at Elk Creek project area include accessibility, cooperative management and agreements, funding, project operations and maintenance requirements, environmental laws and directives, cultural resources, and existing hazards and safety needs. Limitations to recreational opportunities have been previously described in Chapter 4.

5.1 Resource Management Responsibilities

Elk Creek project area is an integral part of a larger landscape that includes the surrounding watershed, its forests, wetlands, streams, and habitats. There are several plans already in place for management of these surrounding resources. Federal and state agencies have carefully developed watershed and forest management plans for the thorough protection and maximum potential enhancement of these natural resources. It is part of the Corps' environmental operating principles to manage lands in concert with surrounding areas. This allows for the use of existing management principles and techniques across larger tracts of land, which reduces the potential for conflicting management and provides a greater scale for environmental resource benefits.

The Corps has entered into a number of Memoranda of Understanding or Agreement (MOU/MOA) with agencies that provide assistance in management of particular resources. These MOU/MOAs are described where appropriate. Cooperative agreements may restrict or constrain the actions that may be taken within the project area. However, in the case of management plans for adjacent lands, they may be followed only when not in conflict with Corps policy and regulation.

Watershed Management A joint Elk Creek Watershed Analysis was completed in 1996 between the Prospect Ranger District of the Rogue River National Forest and the Medford District Butte Falls Resource Area Bureau of Land Management (USFS and BLM 1996). This provided a description and evaluation of historic and current key disturbance agents and resources. The report addressed all public and private lands within the watershed, and outlined options for management and restoration activities on federally administered lands within the watershed. The Corps has not entered into a formal MOU/MOA

with this watershed analysis, but will consider the guidance therein, as applicable, during development and use of the project area into the future.

More recently, the USFS High Cascades Ranger District headed the preparation of the Elk Creek Watershed Restoration Action Plan (USFS 2011). This plan identifies and prioritizes aquatic and riparian related restoration projects within the watershed for the improvement and recovery of water quality, fish habitat, and riparian forest conditions with an interdisciplinary and partnership approach. The Elk Creek watershed has five subwatersheds including West Branch Elk Creek, Flat Creek, Sugarpine Creek, Bitter Lick Creek, and Button Creek. Again, no formal MOU/MOA has been established. However, guidance within the plan has been used to identify management objectives and actions presented in the NRMP.

Forest Management The Northwest Forest Plan (NWFP) provides directives for sustainable stewardship of the Pacific Northwest's forest resources. With the signing of the NWFP Record of Decision in 1994, a framework and a system of standards and guidelines were established, using a new ecosystem approach to forest management (Regional Environmental Office 1993). By taking an innovative approach based on ecosystem and watershed management, while also addressing economic and social impacts, the NWFP transcends traditional administrative boundaries. Successful implementation of the plan has required and continues to require unprecedented cooperation, coordination, and collaboration, among the participating federal agencies and with States, Tribes, and local governments.

The mission of the NWFP is to adopt coordinated management direction for the lands administered by the USFS and BLM and to adopt complimentary approaches by other federal agencies within the area of coverage. In 2003, the Corps entered into an agency-wide MOU with the USFS and BLM for cooperative planning, improved decision making, and coordinated implementation of the forest ecosystem management component of the NWFP on federal lands. The MOU provides for improved coordination and collaboration with State, Tribal, and local governments as they seek to implement management approaches that support or complement the goals of the NWFP.

Forest plans are required by the National Forest Management Act (16 U.S.C. 1600-1614) for each National Forest. These plans establish land allocations, goals and objectives, and standards and guidelines used by land managers, other government agencies, private organizations and individuals. Current National Forest Plans have been developed for both the Rogue River National Forest (USFS 1990) and Siskiyou National Forest (USFS 1989). Elements of these plans may be considered in the management of lands within the project area, except where Corps regulations prohibit such measures, or where the NWFP supersedes the previous plans.

Forest Insect and Disease Suppression The Corps has entered into an agency wide MOA with the U.S. Department of Agriculture for the suppression of damaging forest insects and disease outbreaks. It is agreed that the agencies will cooperate fully in the planning, coordination and execution of field operations to prevent and suppress damaging forest insect and disease outbreaks whenever it is determined to be necessary. The full MOA is provided in Appendix I of EP 1130-2-540.

Fire Protection A cooperative agreement (MOU) is in place between the Oregon Department of Forestry (ODF) and the Corps, which allows the ODF to respond to fires within the project area. This memorandum deals specifically with protection of Corps' project areas within forested areas under their jurisdiction. The district providing fire protection is the Southwest/Rogue Forest Protection Association. Fire management measures employed are taken from ODF regulation and the Northwest Forest Plan (NWFP).

Law Enforcement Under 36 CFR Chapter III, Section 327, Corps personnel do not engage in law enforcement. However, they do have citation authority to enforce regulations. Most infractions occurring at Elk Creek are minor. Local law enforcement authorities, including the County Sheriff and State Police,

retain the statutory authority and inherent responsibility to enforce all other laws. Corps staff will coordinate with those entities and contact them in the event of a major disturbance. The State Police also provides enforcement by a game warden at the project area.

Catch and bag limits, hunting regulations, and hunting seasons are regulated by ODFW. Title 36 CFR Chapter 3, Section 327 states that hunting, fishing and trapping are permitted except in areas where prohibited. All federal, state, and local laws governing these activities apply on project land and waters, as regulated by authorized enforcement officials. Fishing is not permitted in Elk Creek at any time by provision of the District Commander. Chapter 4 provides additional information regarding restrictions to recreational activities.

Waste Disposal Trash receptacles are in place throughout the project area and that waste is collected by Corps staff from the Lost Creek Lake offices.

5.2 Funding

The Corps currently provides funding for all operation and maintenance costs at Elk Creek project area. Small developments projects under consideration for construction would be funded out of the General Construction fund maintained by the Corps. Future development could also be cost shared with local sponsors, if such sponsors indicate an interest in collaborating on development projects within the area that adhere to all federal, county, state, and local laws and Corps guidance and regulations. Collaboration with local sponsors would require approval from Congress.

5.3 Elk Creek Dam

5.3.1 Status

Although Elk Creek Dam no longer functions as a flood control facility, it remains under Congressional authorization and cannot be fully decommissioned or relinquished without revised legislation. As a result, the dam will remain in place and the Corps will retain fee title ownership of all lands designated as the project area. The Corps will continue to operate and maintain the area under the objectives identified within this master plan document.

5.3.2 Maintenance and Monitoring

Maintenance and monitoring of the remaining dam structure has been reduced significantly by removal, to the greatest extent possible, of utilities, infrastructure, and equipment. As a result, there are few needs for maintenance and no formalized maintenance plan. Maintenance needs are discovered through non-regular monitoring conducted by the Corps. Though no formal monitoring schedule is maintained, project personnel are regularly present on the site and through those visits, provide adequately frequent and thorough visual inspections. Personnel conduct visual monitoring of conditions at the dam, access roadways, and aggregate stockpiles. Maintenance needs for the area primarily include the repair of fencing, gates, and signage, and the clearing or repair of operations access roadways.

5.3.3 Gravel Stockpiles

Adjacent to the remaining dam structure are the original stockpiles of material for construction of the dam. These piles are comprised of aggregate rock in the hundreds of thousands of cubic yards. The federal government retains ownership of these materials and must follow prescribed measures for their use. They may be reallocated to a different project, as the federal government wishes, or they may be sold ad hoc to another agency or entity of the federal government's choice. However, these stockpiles are not currently available for use in parcels and no other agency or entity has expressed an interest in purchasing

these materials altogether. Until such time, these materials will remain onsite and may be used for onsite improvements or developments, as guided by this master plan and applicable Corps regulations.

5.4 Elk Creek Restoration and Continued Management of Fish Passage

Following the decision not to complete Elk Creek Dam, a process for restoring the area for fish passage and fish and wildlife improvements was developed through feasibility studies. The process identified two phases of restoration, including Phase I, or the creation of the fish passage corridor, and Phase II, or the restoration of additional areas of Elk Creek.

Phase I required removal of a portion of the dam and realignment of the stream reaches upstream and downstream of the dam. The notch was created to allow passive fish passage for anadromous fish including the Endangered Species Act (ESA) listed SONCC Coho salmon and two stocks (winter and summer) of steelhead in Elk Creek. The Phase I work elements were constructed in 2008.

Phase II consisted of restoring additional areas of Elk Creek and associated tributaries in the immediate vicinity of the dam. Restoration activities provide additional spawning and rearing habitat as well as tributary access for anadromous fish in Elk Creek. Components of Phase II included (1) improvements to elements created during Phase I such as weirs, riffles, pools, and disposal piles, (2) abandonment of the haul access road and road resurfacing, (3) several culvert replacements, (4) removal of Corps temporary project office and decommissioning of associated utilities, (5) enhancement of two tributaries to Elk Creek to improve fish access and habitat, (6) restoration of sediment ponds to fish and pond turtle habitat, and (7) supplemental vegetation plantings. The Phase II work elements were completed in 2009.

Following completion of Phase II, a monitoring plan was developed to specify the frequency and type of monitoring needed to ensure success of the restoration efforts (Corps 2009b). A five year monitoring period was established, with biannual monitoring to be conducted in the fall and spring. Responsibility for monitoring is divided among the Corps and ODFW, who primarily conduct onsite monitoring visits, and USFWS, NOAA, and private contractors, who assist in technical guidance.

The monitoring plan also specifies a five year, as-needed maintenance plan, which targets plants, channel stability in Elk Creek and restored tributaries, sediment and turtle ponds, haul access road, and restored upland areas. Additional details regarding monitoring and maintenance at Elk Creek project area are provided in the Monitoring Plan (Corps 2009b).

5.5 Environmental Quality

5.5.1 Grazing Issues

Grazing is authorized within civil works water resources development projects by the district commander. No authorization has been made at Elk Creek for grazing. However, incidental grazing does occur where cattle owners have land adjacent to the project area. In the infrequent occurrence that cattle are found on the property, Corps personnel contact cattle owners and request that cattle be removed immediately. This has sufficed for the project area, due to both infrequency of occurrence and the ready and cooperative response of cattle owners.

It has been proposed by adjacent landowners that cooperative measures be undertaken to allow cattle into the project area, but only within areas that are not ecologically or culturally sensitive, or sensitive to grazing damage. Furthermore, stakeholders have pointed out that there may be opportunities for utilizing cattle for habitat restoration, invasive species removal, and erosion control. However, current responsibilities to water quality protection and the SONCC Coho salmon recovery plan would have to be

maintained under any cattle grazing allowance. The Corps reserves the right to review these measures and opportunities to employ them in the future, following adequate and appropriate review.

5.5.2 Invasive Species Control

ODA designated noxious weeds are found throughout the project area and pose a significant challenge to maintaining ecosystem health. Four species in particular require ongoing management actions to control severely invasive populations, including yellow starthistle, scotch broom, Himalayan blackberry and medusahead rye. One additional weed documented within the project site (periwinkle) is not an ODA designated noxious weed, but may also require control and eradication efforts due to its invasiveness in riparian habitats. Of the 237 uniquely mapped vegetation polygons reported by TES (2011), a total of 134 of those polygons had one or more invasive species reported to occur.

5.5.3 Water Resources

Water flowing through Elk Creek is managed by the Oregon Water Resources Department (OWRD). The Corps does not own the water of Elk Creek and does not have the authority to divert it for irrigation or water supply at this time. The OWRD has not awarded water rights to any other entity within the project area and no water flowing through the project area is allocated for irrigation, water supply, recreation, or other needs. The Corps must follow existing federal water quality regulations. Recommendations for protecting water quality are provided in the Natural Resource Management Plan in Appendix II.

5.5.4 National Environmental Policy Act

The scope of this master plan does not include the approved construction of any proposed developments or changes to the project at the ground level. Approval of this master plan, in other words, will not result in the implementation of any proposed development measures. Any physical changes to the project area will require review under Corps policy, which may include review under NEPA. There are three levels of review required under NEPA, including; (1) a categorical exclusion, (2) the development of an Environmental Assessment (EA), or (3) preparation of an Environmental Impact Statement (EIS). If any development is proposed for the Elk Creek project area, it will be reviewed to determine the potential impacts to the environmental and cultural resources within the area in order to fulfill NEPA regulatory requirements. The NEPA process also requires public notification and solicitation of public comments, which ensures that all interested parties will have adequate opportunity to provide input regarding any potential developments.

5.5.5 ESA and Critical Habitat

The habitat assessment prepared by TES (2011) reports the following information for listed species and critical habitat. One bird species listed as threatened under the ESA, the northern spotted owl, is known to occur on or near the project site including. Seven significant fish species are known to occur within the project site, including one listed as threatened under the ESA (SONCC Coho salmon). Several streams within the project site are designated as critical habitat for SONCC Coho salmon, including Elk Creek, West Branch, Flat Creek and Alco Creek (TES 2011). Potential habitat is present for one plant species listed as endangered under the federal ESA (Gentner's fritillary).

Habitats designated as critical habitat are subject to protection under the ESA, just as the species are who use them. These areas must be adequately protected from human encroachment, which may occur as a result of development or recreation in the project area. Resource use objectives for special status species, and those lands designated as critical habitat, will guide the protection of the species and habitats.

5.6 Cultural Resources

Historic preservation is an equal and integral component of resource management at civil works projects. As such, historic preservation should be given just and equal consideration along with other resource objectives in preparation and implementation of a master plan (EP 1130-2-540). A complete cultural resources inventory has been completed for the project area and regulatory coordination has been conducted with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP). However, information relating to the location or character of historic properties will not be released to the public whenever it is determined that disclosure of such information may create a substantial risk of harm, theft or destruction to such properties or to the area or place where such properties are located.

5.7 Hazards and Safety

Health and safety regulations for the Corps are guided by the *Safety and Health Requirements Manual* (EM 385-1-1). Successful management of project resources is dependent to a large degree on identifying hazards and taking preventative measures to assure the safety of employees and visitors. A Project Safety Plan will be prepared to outline the objectives and preventative measures for controlling and eliminating unsafe conditions. Resource management personnel will acquaint themselves with these objectives and enforce those provisions which will achieve safe conditions for project personnel and the visiting public. Signs and posters will be placed in strategic locations to remind employees and visitors to be safety conscious. Specific safety requirements should be emphasized as they relate to office and dam facilities, public use, sanitary systems, potable water concerns, insect and poisonous plant control, and roads and trails. Additional detail regarding emergency response providers is provided in Chapter 3.

In addition to the MOU with ODF to protect the area from fires, the Resource Manager may consider the potential for managing forests to reduce potential fire risks, including implementation of fuel loading risks.

5.8 Planning Implications and Project Wide Resource Use Objectives

A set of Resource Use Objectives (RUOs) has been developed, which are intended to provide a framework to guide management, use, and development of the project area. These RUOs are developed based on the overall goal for the project area, whether it be to develop intensive recreation or to retain a more wildland setting, or both, but also includes the limitations or restrictions on that overall goal, which are based on the elements described within this chapter. The limiting factors determine where the boundaries and constraints occur, and inform the development of the RUOs.

The overall project goal and its derived RUOs are developed in accordance with (1) authorized project purposes, (2) applicable laws and regulations, (3) resource capabilities and suitabilities, (4) regional needs, (5) applicable governmental plans and programs, and (6) interested stakeholder input. Together, these components shape the development of the overall project goal and the associated objectives appropriate to achieving that goal. This chapter describes the constraints and factors that may limit or define the potential development, uses, and management of the project area. Chapter 7 provides the full suite of RUOs for the Elk Creek project area.

6 CONSULTATION AND COORDINATION



Cooperation and coordination may occur through a variety of avenues and are described in Corps regulations (EP 1130-2-550). Development of the master plan begins with assembling an appropriate Corps team, comprised of planners and technical specialists. The next steps include initiating interagency coordination with federal, state, regional or local agencies as early in the process as possible, to expedite any needed assistance and solicit valuable input. The general public is invited to participate, as their expressed needs and desires are essential to creating effective project management, as are any interested congressional parties. Findings from the public outreach process are incorporated into the management of the project area and captured in the NRMP (Appendix II).

6.1 Project Delivery Team

The Corps' Project Delivery Team is made up of a variety of specialists from various backgrounds and sections of the Corps. It includes a project manager from Planning Division, environmental specialists from the Environmental Resources Branch, the Resource Manager for Elk Creek project area, and a public outreach specialist from the Public Affairs Office. In addition, technical specialists were retained to assist in development of the master plan, including a fish biologist, river and wetland ecologist, economist, and project planner.

6.2 Interagency Coordination

U.S. Fish and Wildlife Service (USFWS) The Fish and Wildlife Coordination Act of 1958 (16 U.S.C. 661-667e) requires that any agency impounding, diverting, channel deepening, controlling or otherwise modifying a stream or body of water any purpose whatever, including navigation and drainage, consult with the USFWS. Although no changes or modifications are proposed that would modify a stream or body of water, USFWS has played an integral role in preparation of this master plan. USFWS personnel were invited to participate in an interagency meeting to develop project objectives and land use classifications for the master plan. USFWS is part of the ongoing monitoring plan for the fish passage corridor and habitat restoration efforts, with responsibility toward documenting presence of threatened and endangered fish species.

Oregon Department of Fish and Wildlife (ODFW) The Elk Creek project area Resource Manager works closely with ODFW staff to ensure proper management of fish and wildlife in the area. ODFW personnel were invited to participate in an interagency meeting to develop project objectives and land use classifications for the master plan. ODFW is currently providing technical guidance and turtle surveys for

the monitoring of the restored stream channel. In addition, written comments and recommendations were provided by the district fish biologist.

Bureau of Land Management (BLM) The BLM is the single largest owner of land surrounding the project area. Coordination with BLM to ensure proper management of the area is essential to promoting healthy forests. BLM personnel were invited to participate in an interagency meeting to develop project objectives and land use classifications for the master plan.

Rogue River-Siskiyou National Forest (USFS) The USFS manages the public lands within the Rogue River-Siskiyou National Forest, which encompasses much of the area surrounding the Rogue River.

National Marine Fisheries Service (NMFS) This agency provides anadromous fish oversight and is currently providing technical guidance for the monitoring of restored sites within the project area.

Confederated Tribes of the Grand Ronde A representative of the confederated tribes of the Grand Ronde was invited to participate in the interagency meeting to develop project objectives and land use classifications. Written comments were also submitted.

Other agencies and other interested parties that were consulted with included personnel from the Upper Rogue Watershed Council, Oregon State Police, Jackson County Soil and Water Conservation District, Medford Water Commission, and Rogue Riverkeepers.

6.2.1 Agency Workshop, July 2011

An interagency workshop was held in July 2011. Members of federal, state, and local agencies with jurisdictional interest were invited to participate in a workshop session to review the master plan process and provide input. A total of 20 attendees participated, including representatives from the USFWS, ODFW, BLM, Medford Water Commission, Confederated Tribes of the Grand Ronde, Jackson County, Oregon State Police, local watershed councils, and Rogue Riverkeepers.

The meeting began with a power point presentation of the master plan update process, background, and desired input. Goals for the workshop were to get agency input on several components of the master plan, including the proposed RUOs, land classification plan, and natural resource management units. Breakout sessions were held to allow group and individual discussion regarding each of these components, and attendees were invited to provide comments on hand-outs and maps describing the proposed elements.

RUOs presented were largely from the previous master plan with some revisions. The proposed land classifications were significantly different from the previous master plan, as a result of the absence of a reservoir, and the Corps no longer recognizing some of the classifications. A total of 11 proposed management units were presented, which were entirely new since the previous master plan and were based on geographic divisions identified by project personnel since the dam was decommissioned.

Based on verbal input received during group discussions and written comments collected after the workshop, a number of revisions were made to the RUOs, land classification plan, and management units divisions. RUOs were regrouped by resource area and expanded to include a greater breadth of objectives. The final RUOs have been presented in Chapter 7.

The primary comments regarding the proposed land use classification suggested that both instream and floodplain habitats of all streams and tributaries within the project area should be afforded a higher protection than surrounding land. In addition, workshop participants felt that it was unnecessary to designate a specific area for management of low density recreation. It was felt that the project area would benefit from a greater focus on emphasizing the management of either vegetation or wildlife. These changes have been reflected in the land classification plan described in Chapter 8.

Workshop attendees were overwhelmingly in agreement that the number of management units in the Natural Resource Management Plan (NRMP) should be kept to a minimum; management techniques would not necessarily change across units and dividing them into smaller areas is inconsistent with the ecological principle of managing the area as a whole. As a result, the master plan recognizes larger, continuous management areas, divided by land classification (Chapter 8). Additional comments resulting from the agency workshop and a transcription of the notes taken are provided in Appendix IV.

6.3 Public Coordination

Public involvement is a process by which interested parties and affected individuals, organizations, and government agencies (federal, state, and local), are consulted and included in the decision-making process of a planning effort. In providing public service, the federal role in water resources planning is to respond to what the public perceives as problems and opportunities and to formulate and select alternative plans that reflect public preferences. The NEPA among other federal laws and regulations mandates public involvement. Federal planning policies, Corps practices and regulations have consistently required and encouraged this practice. All this must occur, however, with the awareness that the Corps cannot relinquish its legislated decision-making responsibility.

The purpose of public involvement is to ensure that the Corps programs are responsive to the needs and concerns of the public. The objectives of public involvement are to provide information about proposed Corps activities to the public; make the public's desires, needs, and concerns known to the decision makers; to provide for consultation with the public before decisions are reached; and to take into account the public's views in reaching decisions. Public participation was an essential element in the development of this Master Plan. Community involvement offers an opportunity for the public to voice their concerns and desires for activities permitted in the Basin and also enriches the process with local knowledge of the Basin area. According to EP 1130-2-550, the goal of public involvement and coordination is to open and maintain channels of communication with the public in order to give full consideration to public views and information in the planning process.

6.3.1 Public Outreach Meeting

A public outreach meeting was held at the Upper Rogue River Community center in Shady Cove, Oregon in September 2011. The purpose of the meeting was to inform the interested public about the ongoing master plan update process, and to solicit input regarding the future development and management of the project area. A total of 22 people signed in as attendees to the meeting, though there were an estimated 3 or 4 additional attendees that did not sign in.

During this meeting, the public was given a power point presentation regarding the purpose of a master plan, the components of the master plan, the proposed land classification plan, resource use objectives, current development plans, and the scope of the master plan. In addition, attendees were given fact sheets regarding the master plan components and land use classifications.

Following the power point presentation, attendees were asked to remain and complete two surveys. The first survey posed several questions intended to capture data regarding recreational use of the area, while the second survey inquired as to the level of importance that attendees place on the resource use objectives that have been identified for this project area.

Results pertaining to recreational desires and concerns were reported in Chapter 4. In summary, attendees were overwhelmingly interested in maintaining the natural qualities of the area, while allowing for low density recreation opportunities. The most common recreation concern among the group was the lack of access to the project area. Attendees voiced their desire to see the gates unlocked so that they could easily reach the swimming holes and other recreational opportunities.

Attendees were also asked to provide their input regarding the selected RUOs for the project. Results of this survey and of the recreation survey, as well as notes taken during the meeting, and any written comments received since the meeting, have been provided in Appendix III.

6.4 Pertinent Federal, State and Local Agencies, Representatives and Tribal Councils

In the event of formally entering into the NEPA process, a number of agencies or organization must or should be contacted for proper coordination. Table 6.1 provides a list of those groups.

Table 6.1 Consultation and coordination offices, agencies and organization.	
Honorable Jeff Merkley United States Senate 313 Hart Senate Office Building Washington, DC 20510	Honorable Ron Wyden United States Senate 223 Dirksen Senate Office Building Washington, DC 20510
Honorable Greg Walden House of Representatives 2182 Rayburn House Office Building Washington, DC 20515	Honorable Peter DeFazio House of Representatives 2134 Rayburn Office Building Washington, DC 20515
Honorable Mayor Gary Wheeler City of Medford 411 West 8 th Street Medford, OR 97501	Honorable Mayor Bob Russell City of Eagle Point 325 N. Royal Avenue Eagle Point, OR 97524
Honorable Mayor Ron Holthusen City of Shady Cove 22451 Highway 62 Shady Cove, OR 97539	Honorable Mayor Ron Ormond City of Butte Falls 431 Broad Street Butte Falls, OR 97522
Honorable Mayor Hank Williams City of Central Point 140 S. Third Street Central Point, OR 97502	The Confederated Tribes of the Grand Ronde Natural Resources Division Michael Karnosh 47010 S.W. Hebo Road, P.O. Box 10 Grand Ronde, OR 97347
U.S. Department of the Interior Bureau of Land Management 333 S.W. 1st Avenue Portland, OR 97204	U.S. Fish and Wildlife Service 1936 California Avenue Klamath Falls, OR 97601
Rogue River-Siskiyou National Forest 3040 Biddle Road Medford, OR 97504	NOAA National Marine Fisheries Service Northwest Region 7600 Sand Point Way, N.E., Building 1 Seattle, WA 98115-0070
U.S. Environmental Protection Agency Region 10 1200 Sixth Avenue, Suite 900 Seattle, WA 98101	U.S. Department of Agriculture Forest Service, Pacific Northwest Region R-6 P.O. Box 3623 Portland, OR 97208

<p>Oregon Department of Fish and Wildlife 3406 Cherry Avenue N.E. Salem, OR 97303</p>	<p>Oregon Department of Forestry 2600 State Street Salem, OR 97310</p>
<p>Jackson Soil and Water Conservation District 573 Parsons Drive, Suite 102 Medford, OR 97501</p>	<p>Medford Water Quality Commission 200 S. Ivy Street, Room 177 Medford, OR 97501</p>
<p>Upper Rogue River Watershed Association P.O. Box 1214 Medford, OR 97501</p>	<p>Jackson County Planning Commission 10 South Oakdale Avenue, Room 100 Medford, OR 97501</p>
<p>Oregon Water Resources Department 725 Summer Street N.E., Suite A Salem, OR 97301</p>	

7 RESOURCE USE OBJECTIVES



Resource objectives are attainable goals for the development, conservation, and management of natural, cultural, and manmade resources at the project. They are guidelines for obtaining maximum wildland values inherent in the landscape, as well as providing public benefits. Resource use objectives are developed in accordance with (1) authorized project purposes, (2) applicable laws and regulations, (3) resource capabilities and suitabilities, (4) regional needs, (5) applicable governmental plans and programs, and (6) interested stakeholder input.

7.1 Primary Guiding Objective

The primary asset of Elk Creek and the valley it occupies is derived from a combination of its undeveloped condition, its contiguous federally-owned seven mile habitat connection, its value to wildlife, and its accessibility to the public. This unusual dovetailing of valuable natural resources and human accessibility makes it a unique area both in the opportunities it offers and the protection it requires. As a result, this master plan identifies a number of project wide resource use objectives that are intended to maintain the natural character along Elk Creek, which are guided by a single and overriding project objective.

Primary Guiding Objective

Give priority to the stewardship of wildland values in all public use planning, design, development, recreation and management activities.

To support and implement the overriding goal, a suite of project wide resource objectives have been developed for management guidance within the Elk Creek project area. These resource objectives are applicable to all lands throughout the project area, and serve as the foundation for the development of specific management objectives in the Natural Resource Management Plan (NRMP) provided in Appendix II.

7.2 Project Wide Resource Use Objectives

Resource use objectives have been divided into 8 primary categories, shown below. However, each objective is considered as equal in importance to any other, requiring sound and coordinated implementation in order to achieve the primary guiding objective. For each category, a number of specific objectives have been identified.

Cooperation and Coordination

Develop and manage lands in cooperation and coordination with interested stakeholders, including agencies holding jurisdictional management over surrounding lands or land resources, surrounding communities, and with other appropriate federal, state, county, or private entities.

- Promote a spirit of personal stewardship of project lands through public involvement, coordination, continued public accessibility, and volunteering opportunities.
- Keep open communication with interested stakeholders and provide public feedback mechanism.
- Maintain and manage project lands and waters to support regional and national management programs, to the extent that such management does not conflict with existing operational requirements within the project area or the primary guiding objective. Plans that may benefit the project area include those developed for the Rogue River-Siskiyou National Forest, Watershed Restoration Action Plan (USFS 2011), and Corps Strategic Recreation Plan (2011), as well as plans currently under development or that may be developed in the future.

Threatened and Endangered Species

Manage instream and terrestrial habitats to benefit species listed as federally-threatened and endangered, or which are species of concern in the state of Oregon.

- Maintain inventory of special status species occurring in project area and take proactive steps to increase habitat availability, connectivity, and health to benefit these species.
- Identify, protect, and restore where possible, critical habitat for listed species, and develop adequate protections from human encroachment.
- Proactively manage project lands and waters to reduce, to the extent possible, any non-native fish or wildlife species that may directly diminish the value of habitat for threatened, endangered or special status species.

Fish and Wildlife Habitat

Manage instream and terrestrial habitats to benefit all species of native fish and wildlife and to foster diversity and abundance of species native to the area.

- Proactively manage project lands and waters to reduce, to the extent possible, any non-native fish or wildlife species that may directly diminish the value of habitat for native species.
- Protect and increase connectivity of existing fish and wildlife habitats to expand ranges and facilitate increased abundance and diversity.
- Manage fish and wildlife habitats as contiguous interdependent units and as part of the larger watershed to which it belongs.
- Provide for healthy harvest of species permitted for hunting in the area, especially Roosevelt elk, Columbian black-tailed deer, furbearers, upland game birds, and waterfowl.

Wetlands

Protect, maintain and restore existing wetlands.

- Protect and maintain existing wetlands through signage, fencing, or other means of preventing trampling or damage, and through eradication of non-native invasive plant species.
- Restore wetlands that have become diminished in size or function or that have become disconnected.
- Identify and protect vernal pools from human use or grazing damage.
- Buffer wetlands with appropriate land uses to protect the integrity and function of the wetland.

Vegetation Management

Foster health and diversity of native vegetation communities and proactively manage project lands to reduce, to the extent possible, any non-native vegetation.

- Implement appropriate techniques for reducing or eradicating non-native invasive plant species and revegetate only with approved native plant species.
- Review healthy forest management styles to determine appropriate measures.
- Evaluate options for managing fuel loading.
- Develop interpretive signage to educate the public about non-native plant species and methods for identifying them and preventing their spread, as well as fire hazards and risk management.

Water Quality and Quantity

Maintain high stream water quality for fish and wildlife, water supply, and recreation use.

- Discourage activities that reduce surface or groundwater quality or quantity.
- Foster sustainability through utilization of reclaimed water for irrigation or recreation, and conserve water supply through appropriate landscaping techniques.
- Identify and implement Best Management Practices (BMPs) for maintenance, operation, or other activities that may impact stream water quality.

Recreation

Provide a safe, quality outdoor recreation experience that is suitably accessible to a diverse socioeconomic population and consistent with carrying capacity and aesthetic, cultural, and ecological values.

- Expand public outreach and education about the history of the area, project resources, and the Corps' role in developing and managing these resources to foster a sense of ownership and responsibility.

- Ensure safety of visitors through proper maintenance of infrastructure, signage, and wayfinding indicators.
- Facilitate safe hunting practices, and the safety of non-hunting visitors, through educational signage and clear demarcation of hunting areas.
- Foster stewardship by minimizing encroachments and other non-allowed uses, as well as providing clear delineations between low density recreational areas and sensitive fish and wildlife habitat in order to protect wildland values.
- Improve and expand existing trails within the project area, connect these to adjacent trail systems, and provide clear trailheads and wayfinding.
- Develop recreation amenities using sustainable materials and methods.

Cultural Resources

Preserve and protect cultural resource sites in compliance with existing federal statutes and regulations.

- Encourage stewardship of cultural resources through interpretive educational signage.
- Promote continued appreciation and study of existing cultural sites through cooperative efforts.

Air, Visual, and Auditory Quality

Preserve and protect air quality, views and aesthetic value, and manage noise levels to that suitable for serene outdoor appreciation.

- Protect air quality by preventing activities that would deteriorate air quality beyond that allowed under local ordinances.
- Restrict motorized vehicle use to aid in keeping noise levels down and to prevent air pollution.
- Prohibit activities that would compromise the natural wildland value with high decibel or frequent noise pollution.
- Preserve existing views from Elk Creek Road and make viewpoints accessible and safe.
- Discourage the introduction of visually unappealing construction, signage, or other man-made structures to protect aesthetic value.

8 LAND CLASSIFICATION PLAN



This section defines each land classification, its associated regulations, and presents an updated land classification plan. The 1987 plan identified a number of land classifications that are no longer applicable, due to absence of the reservoir, or are no longer recognized by the Corps.

Each land classification allows for a particular set of management techniques, which must support the authorizations and primary allocations. General management requirements of each land classification are described. However, specific management measures may apply to subsections of each land classification. These subsections have been identified and described, along with appropriate management measures, in Appendix II.

Determination of suitable land classifications is developed based on identified resource use objectives, public and agency input, and assessment of existing land conditions. All 3,502 acres within the project area have been divided into recognized land classifications.

8.1 Land Classifications

8.1.1 Project Operations

Project operations lands are those necessary for the successful and safe operation of a facility to achieve the designated allocations. This classification originally included lands occupied by the dam and its appurtenant facilities. Though flood risk management (flood control) operations are no longer in place, the project will continue under the authority of the original legislation, thereby requiring the continued identification of project operations areas.

At Elk Creek, the land surrounding the decommissioned dam remains under this classification, though it has been reduced in size since the previous master plan. Plate 9 the extent of the project operations areas, including the remaining dam structure, remaining construction materials staging and storage areas, and lands necessary for access. Land no longer necessary to accommodate operations has been excluded from this classification; primarily to allow for a more accurate description of the already ongoing use and management of surrounding land. A wide buffer of project operations land around the dam is no longer needed, and can be reclassified into multiple resource management classifications. The reduction in size results from a more accurate outline of areas needed for project operations. The land comprises 147.1 acres of the project area.

Project operations lands are not accessible to the public, except in cases where they have been specifically designated for certain uses. At Elk Creek, the dam, the remaining construction materials, the aggregate

piles, and the surrounding areas classified as project operations, are not open to the public. Rafters or others traveling by flotation down Elk Creek are permitted to pass through the dam at the existing fish passage corridor (notch).

8.1.2 Recreation

This category includes those lands developed for intensive, or high density, outdoor recreational activities by the visiting public. Based on evaluation of project wide resource use objectives and public and agency input, there are no lands to be designated for high density recreation activities within the project area. However, the majority of project lands will be managed concurrently for low density recreation, as noted in the multiple resource management section below.

8.1.3 Mitigation

This classification includes only those land acquired or designated specifically for mitigation purposes. Mitigation areas were identified in the previous master plan in order to compensate for losses of habitat resulting from creation of a reservoir. The reservoir was not created and, therefore, mitigation is no longer necessary. There are no mitigation lands within the project area.

8.1.4 Environmentally Sensitive

This classification includes land where scientific, ecological, cultural or aesthetic features have been identified. These lands are typically limited in development and/or public uses in order to protect the sensitive resources present. Agricultural and grazing uses are not permitted within Environmentally Sensitive areas. Elk Creek and its tributaries, including instream and floodplain habitats, have been classified as Environmentally Sensitive and amount to a total of 591.8 acres (Plate 9).

The instream habitats of Elk Creek, West Branch Elk Creek, Flat Creek, and Alco Creek have each been designated as critical habitat for SONCC Coho salmon and are therefore considered ecologically significant under this classification. Areas designated as critical habitat under the ESA, or sensitive by the Corps, in the future, may be reclassified into this land use.

The designation of lands under the Environmentally Sensitive classification would result in exclusion of cattle from those lands. However, this classification would not necessarily revise the current procedures in place at Elk Creek, but would provide for greater regulatory limitations in the future, if necessary.

8.1.5 Multiple Resource Management Areas

Areas under Multiple Resource Management (MRM) are managed primarily for one emphasized purpose, but also allow for concurrent management of the remaining of the MRM classifications. The MRM classifications include low density recreation, wildlife management, vegetative management, and future and/or inactive recreation. Within Elk Creek project, two MRM classifications have been selected for emphasis, including MRM, Wildlife Management and MRM, Vegetative Management. However, within both of these land areas, they are also secondarily and concurrently managed for low density recreation and either wildlife or vegetative management.

8.1.5.1 Wildlife Management

Lands in this sub-category shall be managed primarily for the benefit of wildlife. However, all lands under this classification shall also be managed, as appropriate, for vegetation and low density recreation use. All wildlife management areas have been designated for direct management by the Corps, but may be transferred to a separate federal agency for management in the future, if desired by the Corps. Wildlife

management needs will supersede those for other uses. However, benefits to vegetation and recreation are an integral part of wildlife management. Low density recreation activities will be permitted on these lands, except where signage prohibits public access, and as long as activities do not impede wildlife management. A total of 1,341.3 acres has been identified for wildlife management, including all land east of Elk Creek environmentally sensitive areas and project operations (Plate 9). See Appendix II for specific management measures applicable to this area and its associated habitats.

8.1.5.2 Vegetative Management

Lands in this in this sub-category shall be managed primarily for the protection and development of forest and vegetative cover. However, all lands under this classification shall also be managed, as appropriate, for wildlife and low density recreation use. Vegetative management measures are necessary to suppress non-native plants, reduce fire fuel loading, improve habitat, and increase aesthetic value. These needs will supersede those for wildlife management and recreation. However, benefits to wildlife and recreation are an integral part of vegetative management. Low density recreation activities will be permitted on these lands, except where signage prohibits public access, and as long as recreation does not impede vegetation management. A total of 1,421.8 acres has been identified for vegetative management (Plate 9). See Chapter 10 for specific management measures applicable to this area and its associated habitats.

8.1.5.3 Low Density Recreation

Low density recreation activities include those that result in minimal impacts to the resources in the area. This refers to activities such as hiking, swimming, rafting, bicycling, wildlife observation, hunting, or similar low density and low impact recreational activities. For a complete description of recreation opportunities within the project area see Chapter 4. Low density recreation activities will be permitted within all areas classified as MRM (Plate 9) and will be managed as a secondary benefit to areas designated primarily for management of wildlife or vegetation. For example, areas that attract bird watchers or other nature and wildlife enthusiasts will be managed first for vegetation or wildlife, and secondarily for use as a recreation area. Specific management measures applicable to low density recreation areas are provided in Appendix II.

8.1.5.4 Inactive and/or Future Recreation Areas

This classification refers to areas that have been temporarily closed for rehabilitation (typically due to overuse or lack of funding) or that have been identified for future high density recreation development. Currently, there are no lands at Elk Creek that require this designation and no high density recreation is slated for development in the area. The Corps reserves the right to determine areas of overuse that require protection or rehabilitation, and to classify these areas as MRM, Inactive, if necessary in the future.

8.1.6 Easement

Easement lands are those for which the Corps holds an easement interest but not fee title. The Corps currently holds fee title to all lands within the project area and no easement lands have been designated.

9 CONCLUSIONS AND RECOMMENDATIONS



9.1 Conclusions

The Elk Creek project area is a 3,502 acre area held in fee title by the Corps, which will primarily be managed for the purposes of fish and wildlife conservation and enhancement, water quality, and low-density or low-impact recreation.

Land classifications within Elk Creek have been revised since the 1987 master plan and now include 147.1 acres of Project Operations, 591.8 acres of Environmentally Sensitive, 1,341.3 acres of Multiple Resource Management (MRM) – Wildlife Management, and 1,421.8 acres of MRM – Vegetative Management land classifications. There are no lands classified as Recreation (high density), Mitigation, MRM – Recreation, MRM – Inactive/and or Future Recreation, or Easement.

The primary guiding objective provides the overriding statement of goals for the project area. It states that within the Elk Creek project area, managers will “Give priority to the stewardship of wildland values in all public use planning, design, development, recreation and management activities.” This primary guidance, as well as the suite of project wide resource use objectives developed under the primary guidance, have been prepared as a result of input received during the public outreach process and agency coordination, from Corps guidance, and are within the laws of the U.S. and the state of Oregon.

The landscape of the project area is to be protected for the purposes of maintaining and restoring healthy wildland ecosystems, while also providing excellent quality outdoor recreation opportunities that are low impact. Ongoing maintenance of the remaining dam structure, service roads, and construction materials, as well as the continued stewardship of this uniquely beautiful and ecologically and culturally significant land holding, will be administered and overseen by the Resource Manager of the Rogue River Basin Project installed in the Rogue River Basin Project Office in Trail, Oregon.

The development of specific resource management and development plans are provided in the NRMP attached as Appendix II.

9.2 Recommendations

Reclassification of lands within the project area reflects the continuing adaptation of management styles toward more sustainable methods. Managing large areas instead of small, disconnected plats, and the recognition of environmentally sensitive resources needing additional protection, provides a more cohesive and connected management style, resulting in improved protection of ecological resources. However, the reclassification process and the completion and approval of this master plan, does not result in any approval of development within the project area. Development plans and implementation

procedures are determined through a tiered Corps process that must be undertaken when considering any physical changes to a project area.

As a result, though the master plan provides a number of recommendations for managing the area, which may result in the need for physical alterations, the master plan does not itself provide approval of these actions. The following recommendations, therefore, are to be further evaluated through the established Corps process prior to implementation.

The outcome of this master plan is the general recommendation for management of the project area, based on the resource inventory, public and agency input, and in support of the resource use objectives identified, and summarized in Table 9.1. The development of more detailed management measures and policies has been presented in the NRMP in Appendix II.

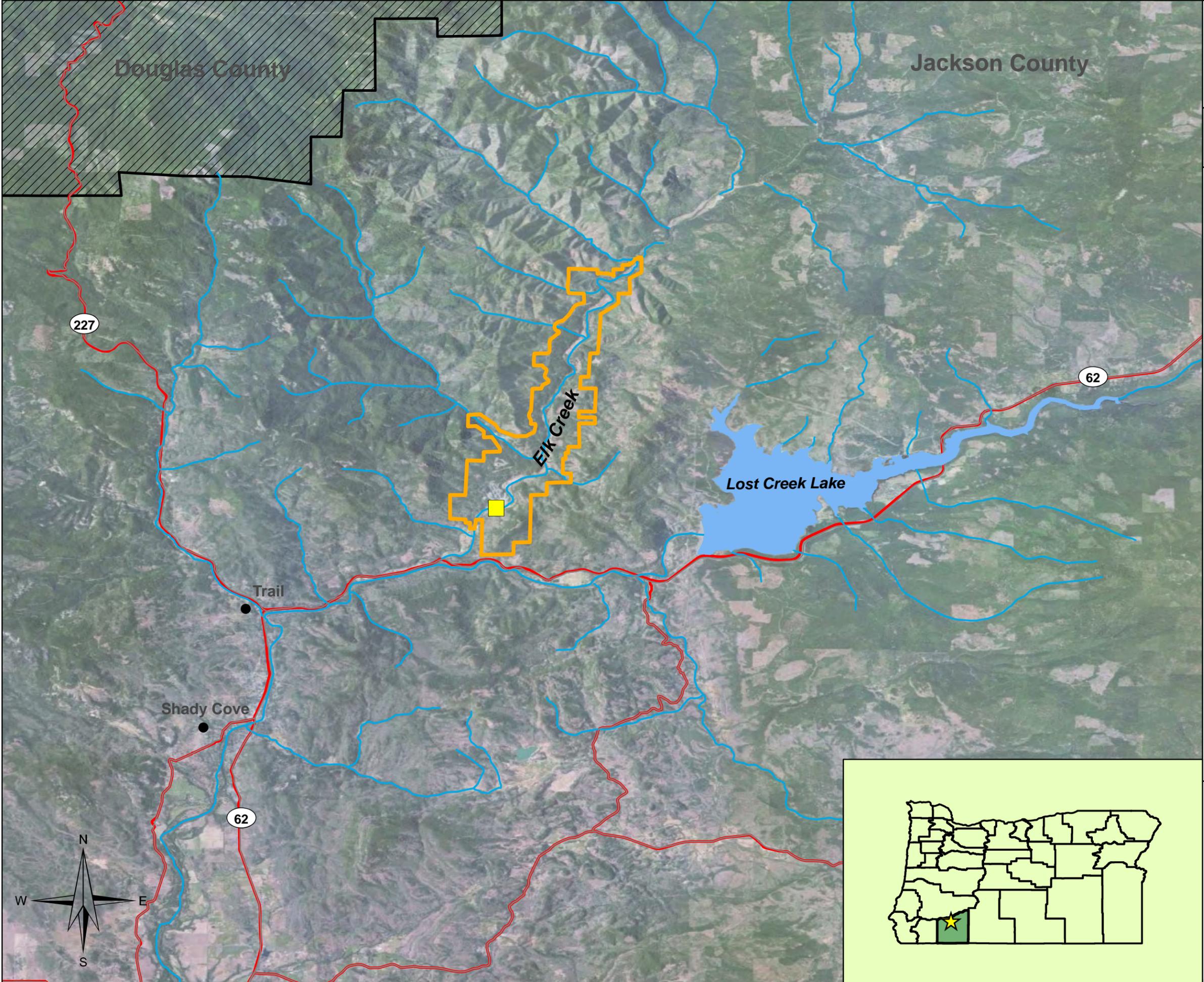
Table 9.1 General recommendations for management and development of Elk Creek project area.



- Identify and implement methods for ensuring health and sustainability of natural resources, while providing access for low density recreation uses.
- Develop a clearly marked, safe, and readily accessible trail system.
- Install interpretive displays and provide educational materials and opportunities.
- Work with local communities to develop outdoor programs and opportunities to address needs of aging populations, youth, under-represented populations, and to encourage physical activity.
- Keep lines of communication open between community members and project managers.
- Provide improved monitoring and enforcement of illegal activities.
- Work to improve visual qualities and restore area to maximize nature appreciation.



10 PLATES

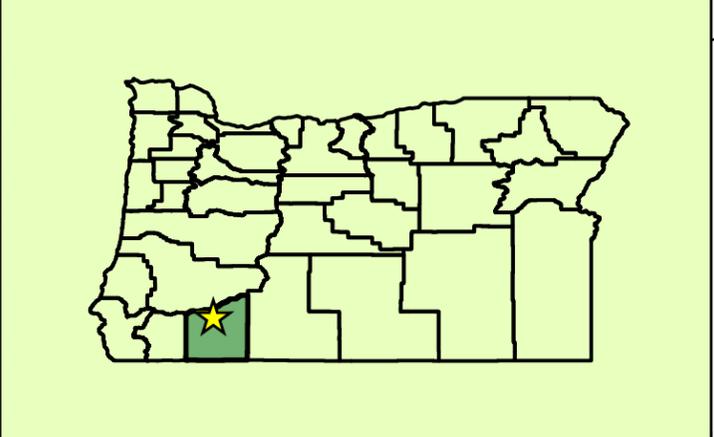


ELK CREEK MASTER PLAN

JACKSON COUNTY, OREGON

PLATE 1. PROJECT LOCATION

-  Project Boundary
-  Fish Passage Corridor



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ELK CREEK MASTER PLAN

JACKSON COUNTY, OREGON

PLATE 2. TOPOGRAPHY

-  Project Boundary
-  Fish Passage Corridor
-  40 ft Contours

0 0.25 0.5 1 Miles



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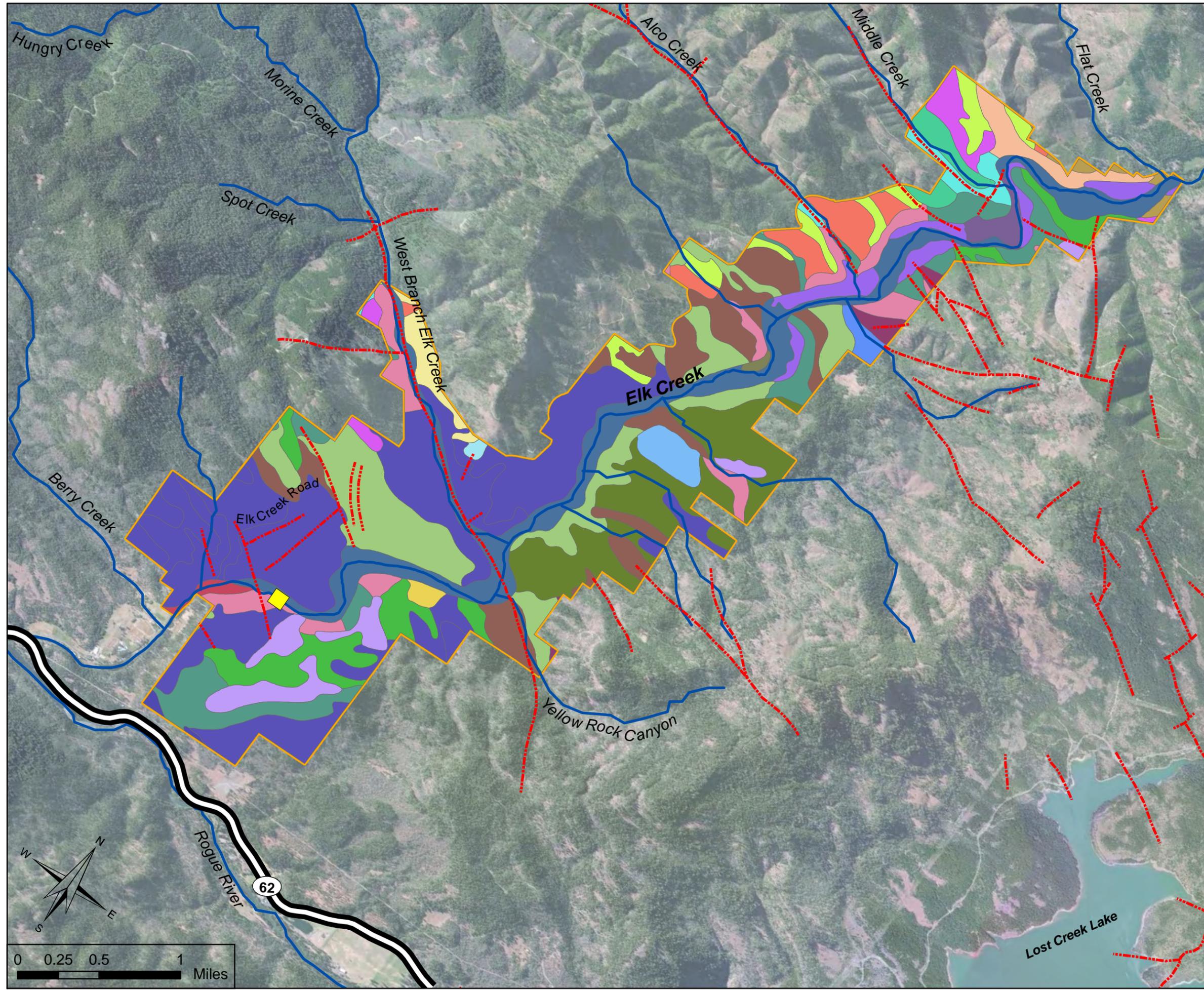
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ELK CREEK MASTER PLAN

JACKSON COUNTY, OREGON

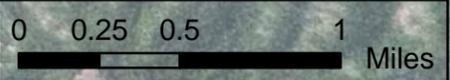
PLATE 3. GEOLOGY & SOILS



Soil Classification

- Camas-Newberg-Evans complex
0 to 3 percent slopes
- Freezener gravelly loam
12 to 35 percent north slopes
- Freezener gravelly loam
12 to 35 percent south slopes
- Freezener-Geppert complex
35 to 60 percent north slopes
- Freezener-Geppert complex
35 to 60 percent south slopes
- Geperter very cobbly loam
12 to 35 percent slopes
- McMullin gravelly loam
3 to 35 percent slopes
- McMullen-McNull gravelly loams
35 to 60 percent slopes
- McMullin-Rock outcrop complex
3 to 35 percent slopes
- McMullin-Rock outcrop complex
35 to 60 percent slopes
- McNull loam
12 to 35 percent north slopes
- McNull loam
35 to 60 percent north slopes
- McNull-McMullin complex
35 to 60 percent north slopes
- McNull-McMullin gravelly loams
12 to 35 percent south slopes
- McNull-McMullin gravelly loams
35 to 60 percent south slopes
- McNull-Medco complex
12 to 50 percent slopes
- McNull-Medco complex, high precipitation
12 to 50 percent slopes
- Medco clay loam
7 to 12 percent slopes
- Medco-McMullin complex
1 to 12 percent slopes
- Medco-McMullin complex
12 to 50 percent slopes
- Medford clay loam, gravelly substratum
0 to 7 percent slopes
- Riverwash
- Sevenoaks loamy sand
0 to 3 percent slopes
- Straight extremely gravelly loam
12 to 35 percent south slopes
- Straight-Shippa extremely gravelly loams
35 to 60 percent south slopes
- Straight-Shippa extremely gravelly loams
35 to 60 percent north slopes
- Takilma cobbly loam
0 to 3 percent slopes

- Project Boundary
- Fish Passage Corridor
- Fault Line



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JACKSON COUNTY, OREGON

PLATE 4. FLOODPLAIN MAP

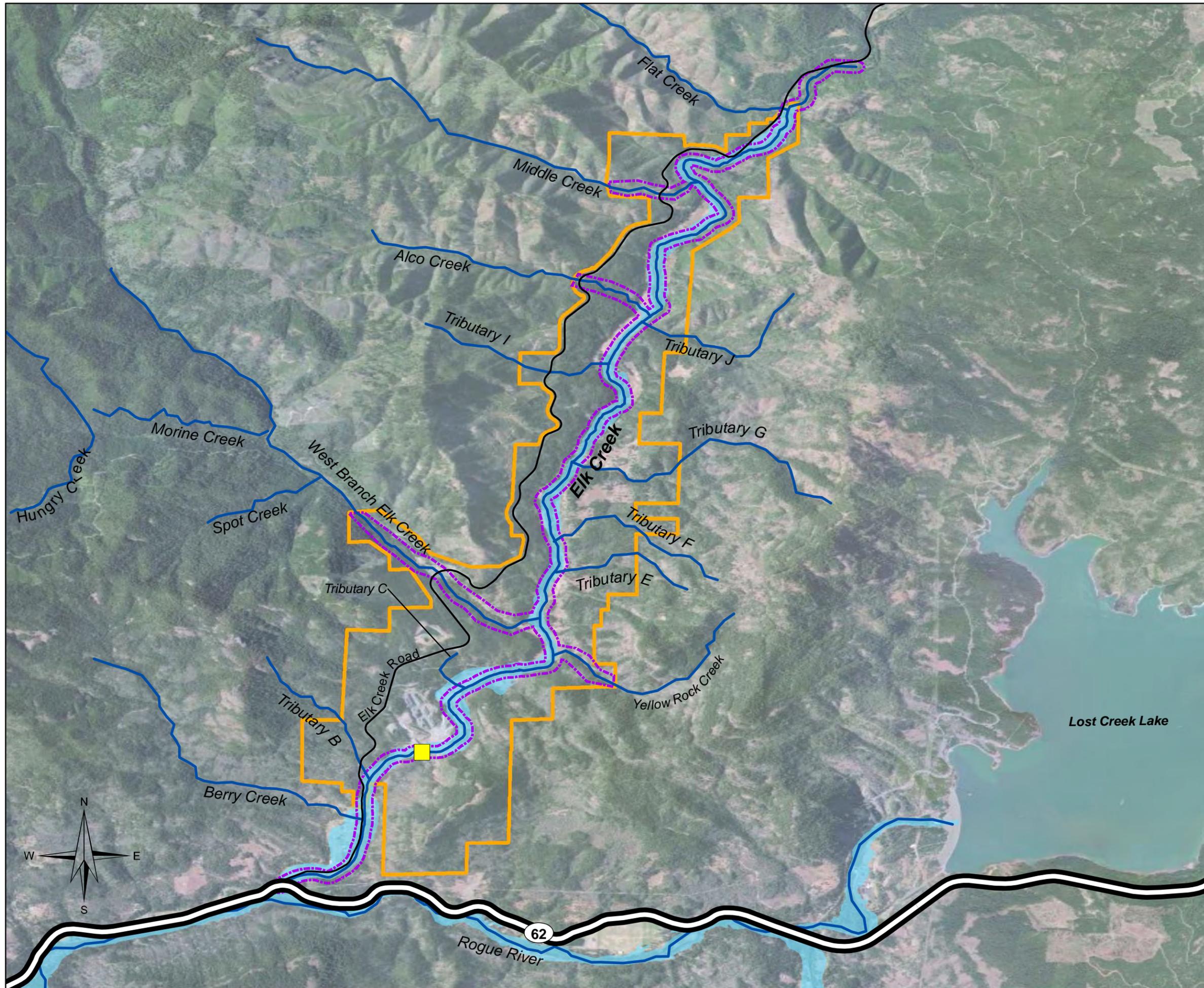
-  Project Boundary
-  Fish Passage Corridor
-  Floodplain (500-foot)
-  Floodplain (100-year)

Data Source for 100-year Floodplain:
Jackson County

0 0.25 0.5 1
Miles



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ELK CREEK MASTER PLAN

JACKSON COUNTY, OREGON

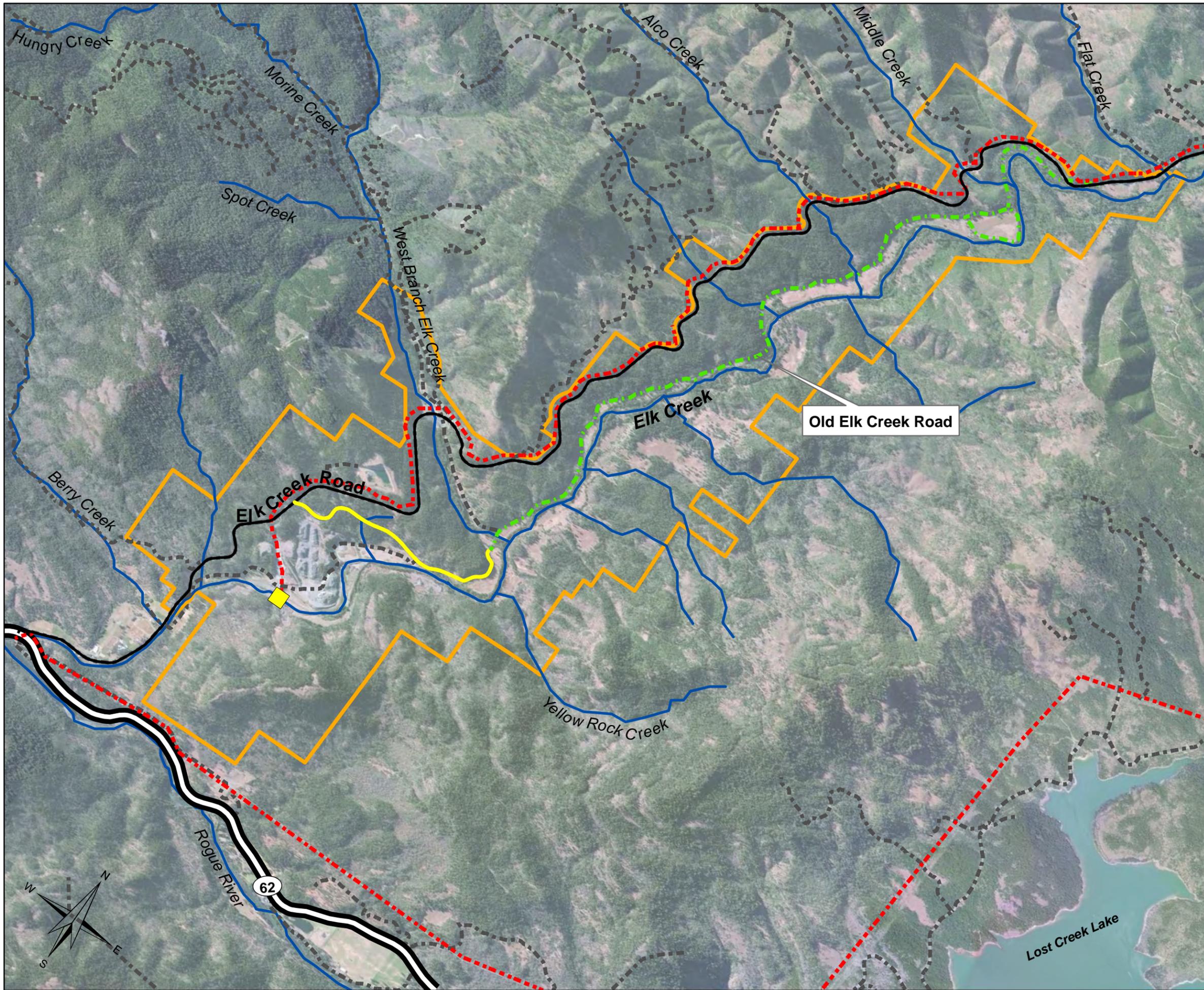
PLATE 5. TRAILS, TRANSPORTATION AND UTILITIES

-  Project Boundary
-  Fish Passage Corridor
-  Power Lines
-  Highway 62
-  Elk Creek Road
-  Paved Road (Open May 1- Nov 15)
-  Gravel Road
-  Trail

0 0.25 0.5 1
Miles



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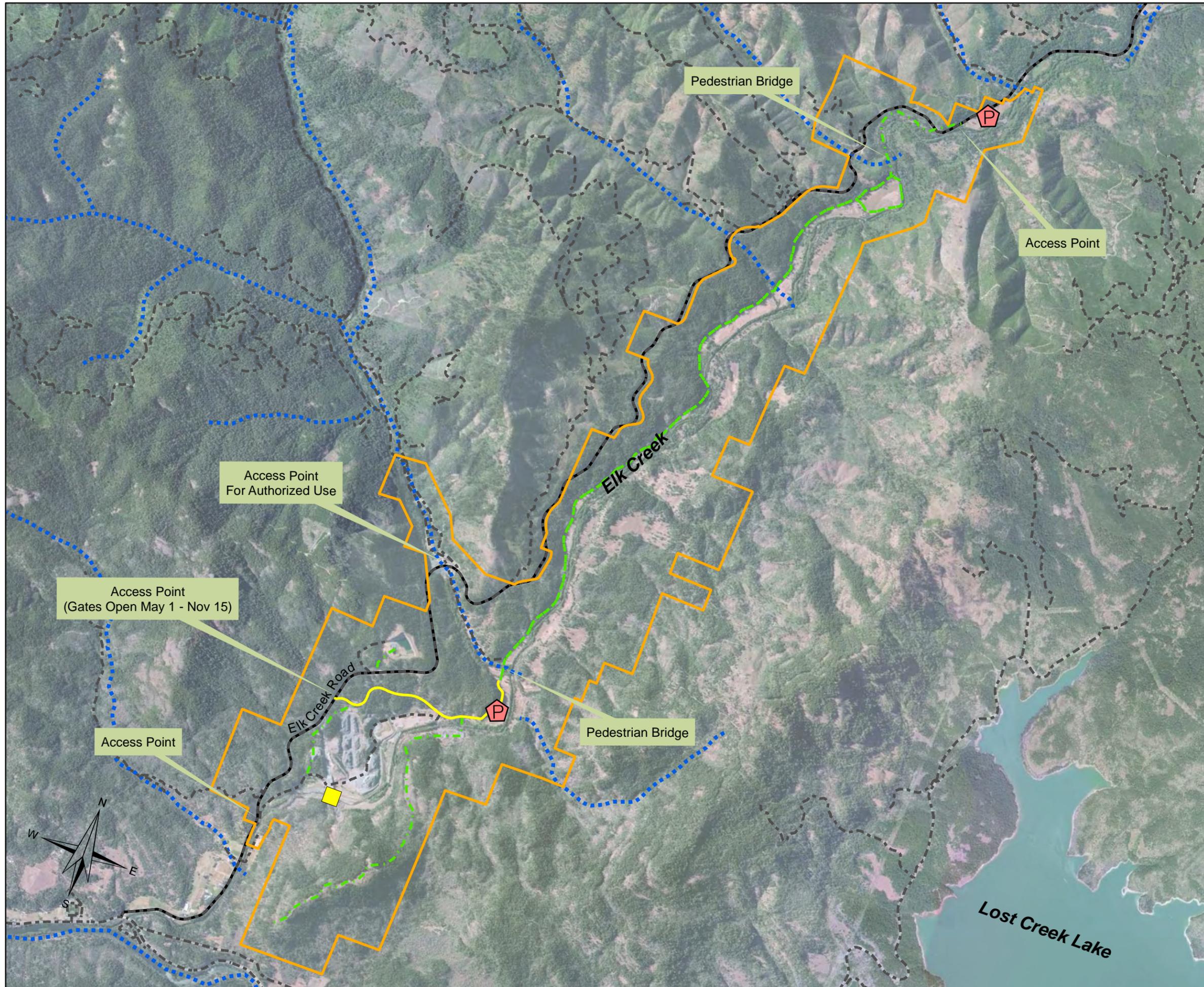
ELK CREEK MASTER PLAN

JACKSON COUNTY, OREGON

PLATE 6. EXISTING FEATURES

-  Project Boundary
-  Fish Passage Corridor
-  Elk Creek
-  Paved Roads
-  Paved Road (Seasonal Access)
-  Gravel Road
-  Trails
-  Parking Lot

0 0.25 0.5 1 Miles



ELK CREEK MASTER PLAN

JACKSON COUNTY, OREGON

PLATE 7. REGIONAL RECREATION

-  Project Boundary
-  National Parks
-  Oregon State Parks
-  Forest
-  Lake
-  Park

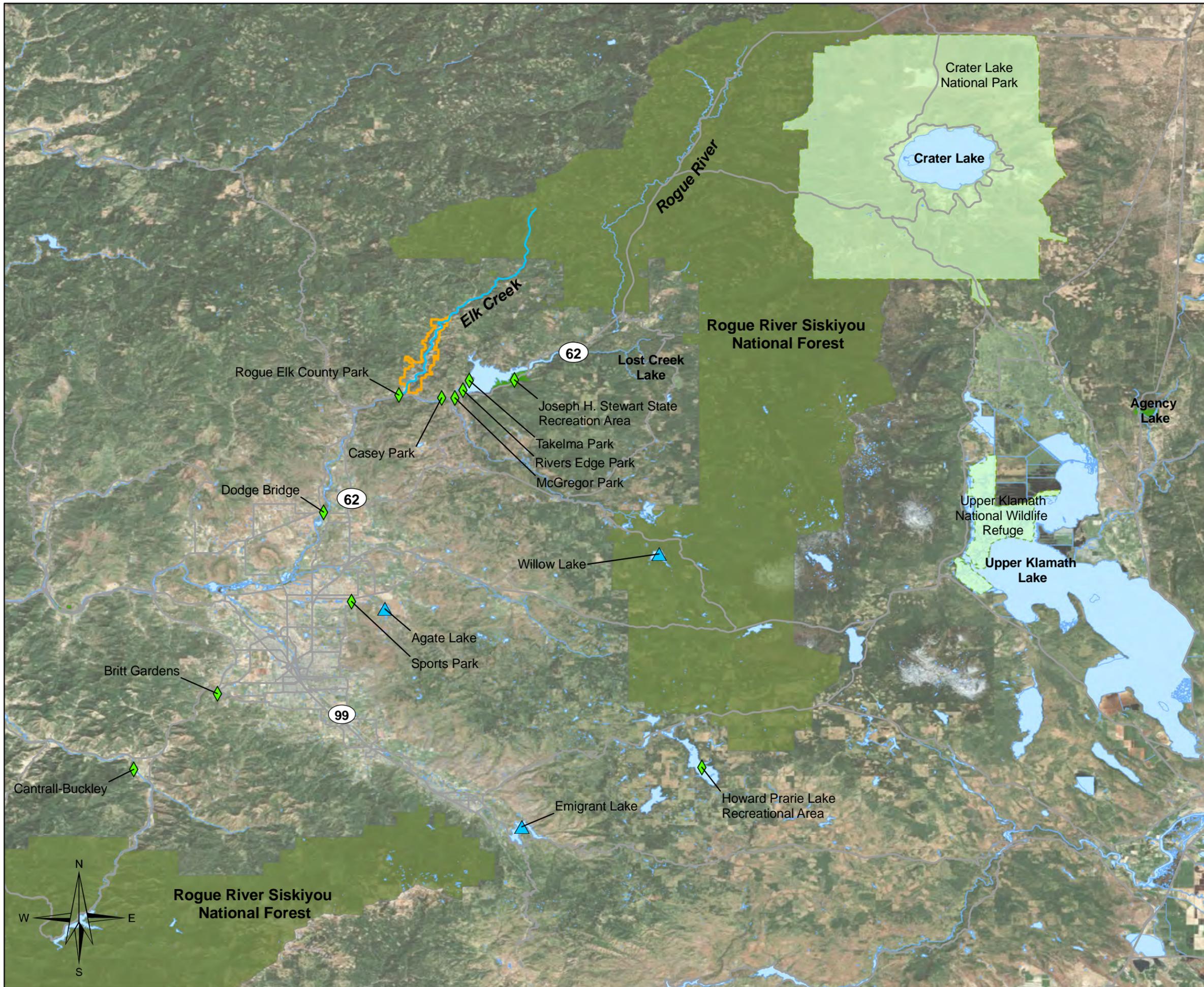
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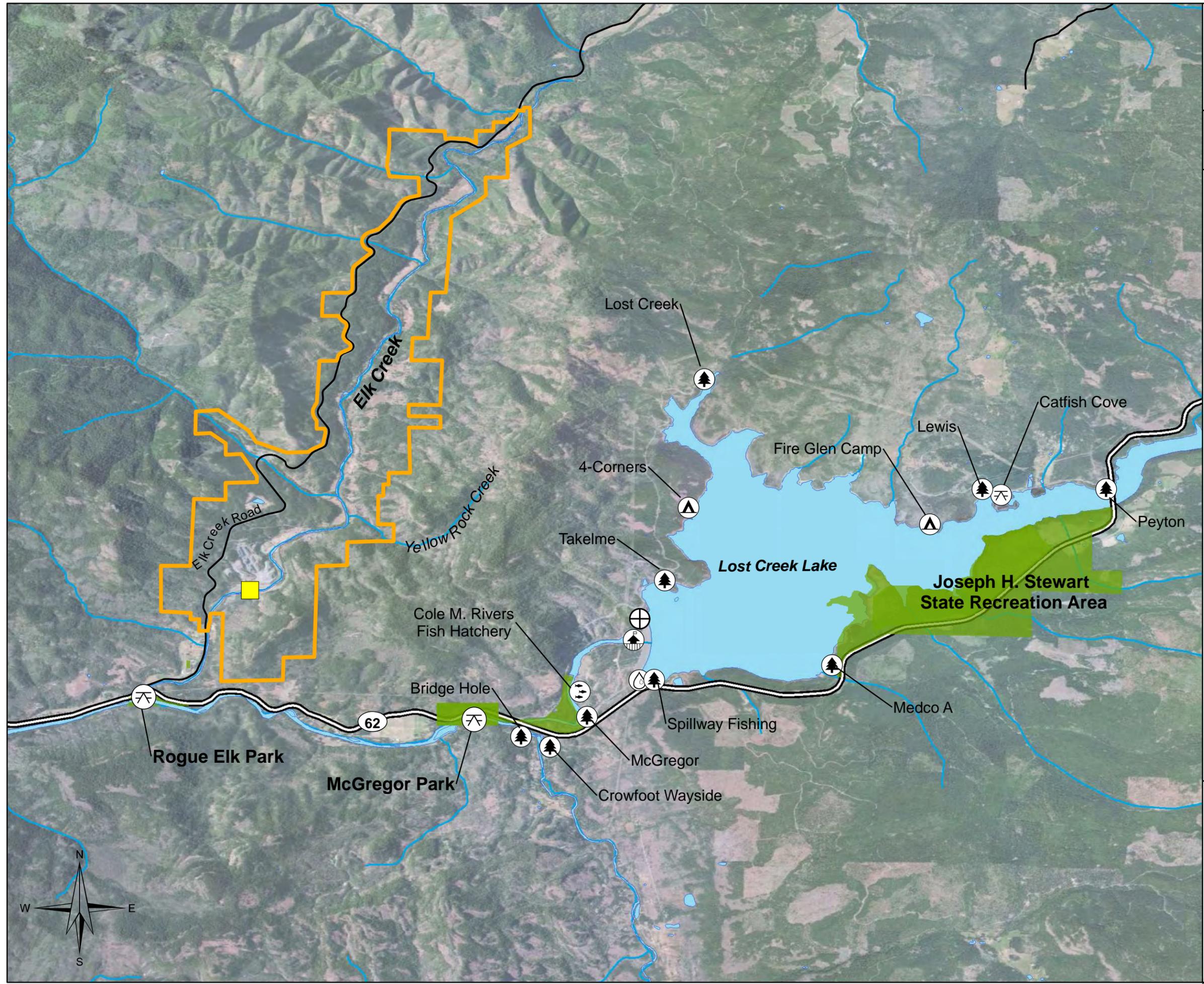


ELK CREEK MASTER PLAN

JACKSON COUNTY, OREGON

PLATE 8. LOCAL RECREATION

-  Project Boundary
-  Fish Passage Corridor
-  Park and Recreation Area
-  Lost Creek Lake
Project Office and Powerhouse
-  William L. Jess
Dam Spillway
-  Campground
-  Fish Hatchery
-  Picnic Area
-  Trailhead
-  Overlook



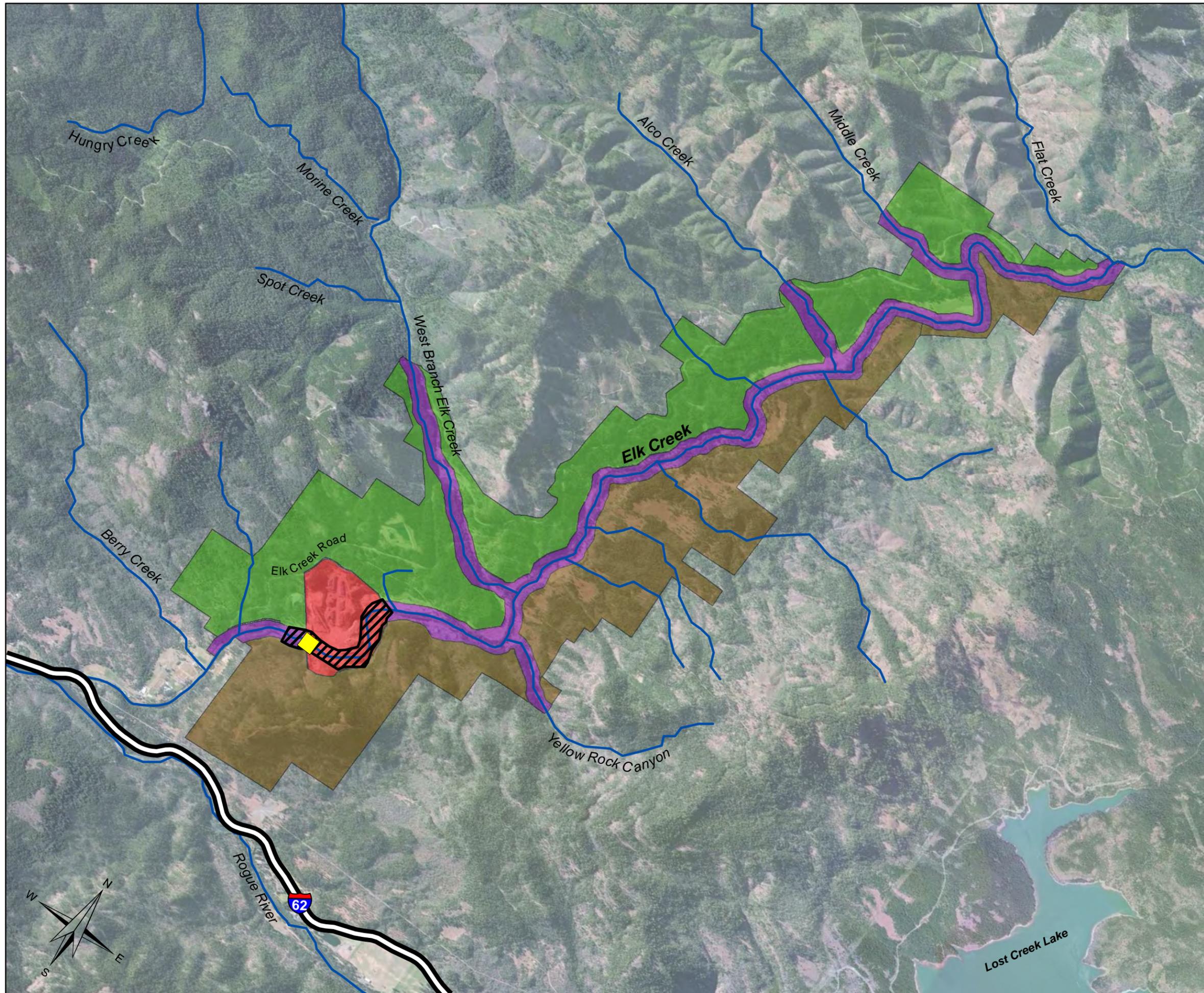
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ELK CREEK MASTER PLAN

JACKSON COUNTY, OREGON

PLATE 9. LAND CLASSIFICATIONS

-  Fish Passage Corridor
-  Phase II Restoration
-  Environmentally Sensitive
-  Project Operations
-  Multiple Resource Management-
Vegetative Management
-  Multiple Resource Management-
Wildlife Management



0 0.25 0.5 1
Miles



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11 ACRONYMS

ACHP	Advisory Council on Historic Preservation
AQCA	Air Quality Conformity Analysis
AQI	Air Quality Index
ARRA	American Recovery and Reinvestment Act
ASTM	American Society for Testing and Materials
ATV	all-terrain vehicles
BLM	Bureau of Land Management
BMP	Best Management Practices
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CERCLIS	CERCLA Information System
CFR	code of federal regulations
cfs	cubic feet per second
CO	carbon monoxide
CO ₂	carbon dioxide
Corps	U.S. Army Corps of Engineers
CR	Conifer Riparian/Wetland Woodland
DMA	Designated Management Agency
E. coli	Enterococcus coli
EA	Environmental Assessment
ECSI	Environmental Cleanup Site Information System
EDR	Environmental Data Resources
EFH	essential fish habitat
EIS	Environmental Impact Statement
EM	Engineer Manuals
EO	Executive Order
EOP	Environmental Operating Procedures
EP	Engineer Pamphlets
EPA	Environmental Protection Agency
ER	Engineer Regulations
ERNS	Emergency Response Notification System
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FTTS	FIFRA/TSCA Tracking System
GHG	greenhouse gas
GWMA	Groundwater Management Areas

HPMP	Historic Properties Management Plan
HRA	Heritage Research Associated, Inc.
HRF	Hardwood Riparian/Wetland Forest
HRW	Hardwood Riparian/Wetland Woodland
HSIS	Hazardous Substance Information Survey
HTWM	Hazardous and Toxic Waste and Materials
IPCC	Intergovernmental Panel on Climate Change
LBUR	Lower Butter Upper Rogue Watershed
LBWC	Lower Butte Watershed Council
LLC	Limited Liability Company
LUST	Leaking Underground Storage Tanks
mg/l	milligrams per liter
MMTCO _{2e}	million metric tons of carbon dioxide
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MRF	Mixed Riparian/Wetland Forest
MRM	Multiple Resource Management
MRW	Mixed Riparian/Wetland Woodland
MTCO _{2e}	metric ton of carbon dioxide equivalent
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO ₂	nitrogen dioxide
NPDES	national pollutant discharge elimination system
NPL	National Priorities List
NRCS	Natural Resources Conservation Services
NRHP	National Register of Historic Places
NRMP	Natural Resources Management Plan
NWFP	Northwest Forest Plan
NWSP	National Water Safety Program
O&C	Oregon and California
O&M	operation and maintenance
O ₃	ozone
OAR	Oregon Administrative Rules
OCCRI	Oregon Climate Change Research Institute
OCS	Oregon Climate Service
ODA	Oregon Department of Agriculture
ODEQ	Oregon Department of Environmental Quality
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife

ODGMI	Oregon Department of Geology and Mineral Industries
ODOT	Oregon Department of Transportation
ORV	off-road vehicle
ORCRL	Oregon Confirmed Release List and Inventory
ORHAZMAT	Oregon Hazardous Materials
ORS	Oregon Revised Statutes
PA	Preliminary Assessment
Pb	lead
pH	potential hydrogen
PM	particulate matter
PW	Permanent Water/Wetlands
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Information System
RM	River Mile
RRWC	Rogue River Watershed Council
RUO	Resource Use Objectives
SCORP	Oregon Statewide Comprehensive Outdoor Recreation Plan
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SLIDO	Statewide Landslide Information Database for Oregon
SO ₂	sulfur dioxide
SPILLS	Oregon Spills
SSURGO	Soil Survey Geographic database
SW	Seasonal Wetlands
SWF/LF	Solid Waste Facility / Landfill
TMDL	Total Maximum Daily Load
TRIS	Toxic Chemical Release Inventory System
UIC	Underground Injection Control Program
U.S.C.	United States Code
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGCRP	United States Global Change Research Program
USGS	United States Geological Survey
VCP	Oregon Voluntary Cleanup Program
WS	Wetland Shrubland
WS-B	Wetland Shrubland-Burned
WSRA	Wild and Scenic River Act

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APPENDIX I. HABITAT ASSESSMENT



Biological resources of the project area were surveyed by Tehama Environmental Solutions, Inc. (TES) in 2011. Data were compiled by TES from several sources, including previously published reports, Corps data, and from onsite field visits. Findings from the report regarding vegetation, wildlife, and special status listed species are provided below and reported by Management Unit (MU). Figure IIA shows the relationship of the MUs used by TES and the MUs identified in this master plan. Additional detail can be found within the report (TES 2011).

APPENDIX II. NATURAL RESOURCE MANAGEMENT PLAN



This Natural Resource Management Plan (NRMP) describes the objectives that have been developed for each habitat or management unit within the project area and the measures that are proposed to achieve those objectives. The measures discussed in this section are intended to encompass the range of development and management strategies that are proposed to achieve the objectives. The management and development measures may be further refined and detailed in subsequent planning and design documents, including Operational Management Plans, Feature Design Memorandums, Plans and Specifications, and project-specific documentation. The ultimate decisions regarding the methods that are implemented will result from coordination between the Elk Creek Resource Manager and staff representing other Corps elements as well as other agencies, where appropriate.

II-1 GENERAL INTRODUCTION

The Elk Creek Dam Project was authorized under the Rogue River Basin Project by the Flood Control Act of 1962 (P.L. 87-874, 21 September 1962) for the purpose of providing flood control and recreation. In 1987, dam construction was halted due to legal challenges related to Endangered Species Act (ESA compliance). Since that time, the Elk Creek project area has been managed under a Master Plan that envisioned that the dam would be completed and closed, and a lake would form behind the dam. Although dam construction has been stopped and the dam has been notched to allow Elk Creek to run freely, the dam is still authorized as a federal project, and could be completed if future conditions warrant additional water storage. The draft Elk Creek Master Plan (2011) and appendices provide a complete project background review and resource inventory of the project area.

II-1.1 Project Area

The Elk Creek project area is a 3,502 acre area held in fee title by the Corps and primarily managed for the purposes of fish and wildlife conservation and enhancement, water quality, and recreation. The Elk Creek drainage basin is located in the southwestern corner of the Western Cascades physiographic province and covers an area of 134 square miles. Elk Creek is the principal headwater tributary to the Rogue River within the Cascade Mountain Range, and is a subwatershed of the much larger Upper Rogue River basin, which covers 1,615 square miles. The headwaters of Elk Creek are at 5,750 feet elevation and convey flows through narrow and steep canyons of the confined drainage area. Approximately 20.7 miles downstream from its headwaters, Elk Creek enters the Rogue River at an elevation of approximately 1,460 feet.

II-1.2 Project Status

Authorized purposes under the operations and recreation allocations of the Elk Creek project initially included flood control, irrigation, water supply, recreation, fish and wildlife enhancement, and water quality control. After dam construction was halted in 1987, operations of the project area transitioned to fish and wildlife enhancement, water quality control, and recreation. In 2008 the dam was further modified under NEPA/ESA requirements to allow unhindered fish passage. The section of the dam crossing Elk Creek was demolished and the streambed of Elk Creek was reconstructed to its historic alignment.

II-1.3 Project Location

Elk Creek Dam is in northern Jackson County, 26 miles northeast of Medford, Oregon. The Elk Creek project area includes 3,502 acres of land that extends from areas west of Elk Creek Road to areas east of Elk Creek. The southern boundary is just downstream of Elk Creek Dam, which is at RM 1.7, and the northern boundary is just upstream of Flat Creek, near RM 9. Access is gained via Crater Lake Highway (State Highway 62) to Elk Creek Road.

II-2. PROJECT OBJECTIVES AND MANAGEMENT MEASURES

This section describes the project objectives that apply to particular resource areas or areas of focus, and may apply to multiple management units. For each area of focus, the project-wide objectives have been described along with a general description of the measures or actions that could be taken to achieve the objectives. Management measures specific to particular management units are described in Section 1.3, along with preliminary cost estimates. Components of applicable management plans for the area, such as the recently developed Watershed Restoration Action Plan (USFS 2011), were incorporated where appropriate.

II-2.1 Cooperation and Coordination

Objective

Develop and manage lands in cooperation and coordination with interested stakeholders, including agencies holding jurisdictional management over surrounding lands or land resources, surrounding communities, and with other appropriate Federal, state, county, or private entities.

Actions

- Manage lands in accordance with authorized project purposes and applicable laws and regulations.
- Coordinate the management of shared watersheds with neighboring landowners and agencies to protect ecological health and water quality. Coordinated management may occur for resources that are found across jurisdictions, such as vegetation, fire, and invasive species.
- Maintain and manage project lands and waters to support regional and national management programs, to the extent that such management does not conflict with existing operational requirements within the project area or the primary guiding objective. Plans that may benefit the project area include those prepared for the Rogue River-Siskiyou National Forest, Watershed Restoration Action Plan (USFS 2011), the SONCC Coho salmon recovery plan (NMFS 2009) and the Corps Strategic Recreation Plan (2011), as well as plans currently under development or that may be developed in the future.
- Review and/or participate in the development of regional plans on adjacent lands to ensure that land use decisions and activities are compatible with those at Elk Creek.

- Continue to encourage and support cooperative planning and partnerships within the Elk Creek watershed between other federal, state, and local agencies, and the public.
- Promote a spirit of personal stewardship of project lands through public involvement, coordination, continued public accessibility, and volunteer opportunities.
- Establish channels of communication between project managers, interested stakeholders, and project visitors.

II-2.2 Threatened and Endangered and Special Status Species

Objective

Manage instream and terrestrial habitats to benefit species listed as federally threatened and endangered, or species of concern in the State of Oregon.

Actions

- Identify and implement management techniques for conserving habitats that support special status fish, wildlife, and plant species.
- Identify and implement restoration efforts for recovery of SONCC Coho salmon.
- Minimize impacts to sensitive natural resources by establishing and maintaining low density or low impact visitor uses.
- Minimize operations and/or construction activities that may impact sensitive species and schedule necessary activities to avoid sensitive lifecycle periods.
- Maintain regular communication and coordination with the Oregon State Police, who provide regulatory enforcement of threatened and endangered species regulations at the project area.
- Increase awareness and stewardship of sensitive species through interpretive signage and publications.

II-2.3 Fish and Wildlife Habitat

Objective

Manage instream and terrestrial habitats to benefit all species of native fish and wildlife and to foster diversity and abundance of species that are native to the area.

Actions

- Manage fish and wildlife habitats as contiguous interdependent units and as part of the larger ecosystem to which they belong.
- Protect and increase connectivity of aquatic and terrestrial habitats to expand fish and wildlife ranges and facilitate increased abundance and diversity.
- Provide for healthy harvest of species permitted for hunting in the area, especially Roosevelt elk, Columbian black-tailed deer, furbearers, upland game birds, and waterfowl.
- Proactively manage project lands and waters to reduce, to the extent possible, any non-native fish or wildlife species that may directly diminish the value of habitat for native species.
- Prohibit the release of any introduced fish or wildlife species without permit from ODFW and review from Corps biologists.

- Restore or enhance native fish and wildlife habitat where appropriate and when opportunities exist.
- Identify areas of sensitive or important fish and wildlife habitat and take steps to limit disturbances and intensive visitor use in or near these areas.
- Prohibit trespass grazing and minimize effects through maintenance and extension of fence lines and posting of signs. When trespass occurs, the Corps will work with owners and local law enforcement for removal of the animals.
- Monitor lands for feral species such as wild pigs that may cause resource damage and control those populations in coordination with adjacent land owners.
- Require that all domestic animals be leashed or caged when on Corps lands except hunting dogs during hunting season.
- Increase awareness and stewardship of fish and wildlife habitats through interpretive signage and publications.

II-2.4 Wetlands

Objective

Protect, maintain and restore wetlands to achieve the national goal of no net loss.

Actions

- Protect riparian areas, wet meadow communities, and vernal pools from disturbance, visitor use, or other degradation through signage, fencing, or other suitable means.
- Enhance or restore wetlands that have become diminished in size or function by reestablishing wetland hydrology, planting native wetland species, and eradicating non-native plants.
- Designate suitable riparian and wetland buffer widths and identify appropriate land uses within the buffers to protect the integrity and function of the wetland.
- Increase awareness and stewardship about wetlands through interpretive signage and publications.

II-2.5 Vegetation Management

Objective

Foster health and diversity of native vegetation communities and proactively manage project lands to reduce, to the extent possible, any non-native vegetation.

Actions

- Protect, restore, and enhance native plant communities for long-term sustainability and viability.
- Identify and protect unique native plants or plant communities.
- Implement appropriate techniques for reducing or eradicating non-native invasive plant species and prohibit the release of any introduced species without permit from ODFW and review by Corps natural resource managers.
- Use only native seed, trees or shrubs for any reseedling or revegetation efforts, such as those associated with mitigation of operations, habitat restoration or habitat enhancement.

- Increase awareness and stewardship of native plants through interpretive signage and publications, with a particular focus on helping prevent the spread of non-native plants.

II-2.6 Water Quality and Quantity

Objective

Maintain good water quality for fish and wildlife, water supply, and recreation use.

Actions

- Identify and implement Best Management Practices (BMPs) for maintenance, operation, or other activities that may impact stream water quality.
- Identify and manage stormwater runoff from paved surfaces to avoid drainage or sediment loading into water bodies.
- Discourage activities that reduce surface or groundwater quality or quantity.
- Minimize the number, extent, and adverse effects of stream crossings for roads, trails, and easements to prevent erosion, sedimentation, and alterations of stream flow regime.
- Confine all vehicles to existing roadways and continue to enforce ban on OHV operation.
- Design, operate, and maintain recreation area facilities to minimize water contamination or erosion issues.
- Foster sustainability through utilization of reclaimed water for irrigation or recreation, and conserve water supply through appropriate landscaping techniques.
- Restore and maintain riparian uplands and lowlands to provide shade to streams.
- Increase awareness and stewardship of water quality through interpretive signage and publications.

II-2.7 Cultural Resources

Objective

Preserve and protect cultural resources and resource sites in compliance with federal statutes and regulations.

Actions

- Comply with applicable federal and state laws and regulations regarding protection of cultural resources.
- Consult with recognized tribal governments to ensure protection of any tribal trust resources or assets and continued tribal access to these resources.
- Maintain data base of known cultural resources, their condition and location, for consultation prior to operations, development, or any other activity that may encroach, damage, destroy or otherwise harm cultural resources.
- Avoid or minimize recreation impacts to cultural resources by maintaining low impact or low density visitor uses in the project area, and installing protective fencing or coverings, as needed.

- Assess damage to cultural resources caused by emergency equipment or natural phenomenon and mitigate or restore when necessary.
- Allow for the permitting of appropriate research efforts to discover, inventory, study, and protect cultural resources.
- Increase awareness and stewardship of cultural resources through interpretive materials.

II-2.8 Recreation

Objective

Provide a quality outdoor recreation experience that is suitably accessible to a diverse socioeconomic population and consistent with carrying capacity and aesthetic, cultural, and ecological values.

Actions

- Promote and allow only low impact and low density wildland activities such as hiking, hunting, backpacking, photography, rafting, and sightseeing.
- Provide sufficiently varied recreation activities to reasonably accommodate all age groups and abilities per the Americans with Disabilities Act of 1990, as amended.
- Upgrade minimum basic facilities such as parking and sanitation facilities which, among other standards, need to protect public health and safety and protect water quality.
- Develop recreation amenities using sustainable materials and methods and provide and maintain appropriate disposal and recycling facilities.
- Encourage visitors to recreate in designated areas in order to protect natural resources from single-event or ongoing damage.
- Improve and expand trails within the project area, connect these to adjacent trail systems, and provide clear trailheads and wayfinding.
- Follow all Corps regulations and federal laws for recreation, such as the Corps policy to prohibit off-road vehicles and recreational shooting.
- Allow hunting in accordance with applicable regulations set forth by ODFW and federal laws and regulations, except where prohibited, and ensure hunting is compatible with the wildlife management goals.
- Allow special events by permit, to be evaluated on a case by case basis.
- Foster a sense of ownership in the visiting public by expanding public outreach and interpretive educational materials and offering means of providing feedback to resource managers.

II-2.9 Air, Visual, and Auditory Quality

Objective

Preserve and protect air quality, views and aesthetic value, and manage noise levels to that suitable for serene outdoor appreciation.

Actions

- Comply with all relevant federal, state, county, and local air quality and noise level regulations.

- Restrict or prohibit activities that result in excessive noise, air pollution, and/or visual disturbance, such as motorized vehicle use, high density recreation use, special events, or operations activities.
- Design necessary development, recreation, or operations activities to ensure that visual, noise, and air quality are not compromised beyond acceptable levels.
- Preserve existing views from Elk Creek Road and make viewpoints accessible and safe.
- Avoid or limit the use of visually unappealing construction, signage, or other manmade structures to protect aesthetic value.
- Reduce smoke production through fire management and by restricting visitor campfires.

II-2.10 Health and Safety

Objective

Provide a safe and healthy project area for project personnel and visitors.

Actions

- Comply with applicable Corps, federal, state, and local requirements and regulations to protect public health and safety.
- Provide and maintain minimum basic comfort and safety facilities such as restrooms, trash receptacles, and wayfinding signage.
- Adopt and implement a project-wide fire management plan to suppress fires that threaten life, property, and public safety to achieve protection of adjacent communities and resource/social values at risk from unwanted wildfire.
- Develop specific safety plans for proposed projects, activities, or special events, as necessary.
- Develop, maintain, and approve agreements with local law enforcement agencies and other local, federal, state, and local emergency responders.
- Address illegal activities through continued law enforcement presence, signage, and education.
- Increase awareness of safety issues and promote safe practices through interpretive education materials.

II-2.11 Management Measures Applicable to All Units

Management Concerns

1. Fire suppression and protection of resources and surrounding properties.
2. Lack of community involvement in operation and maintenance of area.
3. Involvement of youth in outdoor education, recreation activities, and volunteering.
4. Unauthorized access and activities need to be better monitored and laws enforced. Particular concerns include prohibited activities such as after-hours access, campfires, illegal fishing and hunting, cultural resource damage, recreational shooting, and off road vehicle use.

Management Objectives

1. Adopt and implement a project wide fire management plan.

2. Promote the establishment of a community group that assists in the upkeep and proper use of the project area and set up additional volunteer programs to maintain trails, clean restrooms, replace signs, and provide day labor or labor hours to assist in the general maintenance of the area and conservation of resources.
3. Promote youth involvement in recreation and volunteering. Consider creating outdoor youth programs, such as geocaching.
4. Address illegal activities through continued law enforcement presence, signage, and education. Engage Oregon State Police for routine patrols and continue to implement a long-term strategy for an effective law enforcement program between local, state, and federal agencies.
5. Protect significant cultural resources through signage, patrols, and administration of citations.
6. Develop cultural resource monitoring and protection plan.

II-3 MANAGEMENT UNITS

The Elk Creek project area has been divided into four land classifications, based on habitat type, geography, and management needs, including Project Operations, Environmentally Sensitive, Multiple Resource Management (MRM) – Wildlife Management, and MRM – Vegetative Management. These, in turn, have been used as the designated management units for the project area.

Prior to finalization of the revised master plan (2012), the management units were small and disconnected areas. The current management units (synonymous with land classifications) are larger and more cohesive units characterized by habitat types. The Habitat Assessment (2011) utilizes the old management unit convention and for the purposes of clarification, a map has been included as Figure IIIA to show where the previous units were in relation to the current management units.

In the sections below, management units are described in terms of size, vegetative types, topography, and soils. The management concerns for the unit are then introduced, along with the management objectives specific to the unit. An implementation plan is then presented for each management unit that identifies the type of actions that can be taken to achieve objectives. The preliminary costs of these measures and a proposed schedule for implementation are also presented. Estimated costs are based on conceptual plans that have been only preliminarily assessed at a 10 or 35% level. Details regarding cost estimations can be found in Appendix V. The indicated implementation schedule should not be considered a definite schedule.

II-3.1 Project Operations Management Unit

Master Plan Land Classification: Project Operations

Acreage of Management Unit: 147.1 Acres (4.2% total area)

Unit Description: This management unit is located in the southern portion of the project area and encompasses the remaining Elk Creek Dam structure and adjacent operations areas, including the aggregate stockpiles and approximately one mile of Elk Creek that runs through the unit. It also contains a stretch of Elk Creek that has been restored through the addition of root wads, large woody debris, recontouring, and revegetation.

Vegetative Types: Vegetation in this area was cleared for construction and operation of the dam prior to 1987 and has not been restored. As a result, vegetation is generally limited to young trees and shrubs and non-native weedy species. Mixed forest, annual grassland, and riparian vegetation communities are present, though severely disturbed.

Topography: The operations area is comprised of the upland aggregate stockpile area and the Elk Creek channel and floodplain bench. Approximate elevations range from 1,600 to 1,760 feet. Topography is highly variable due to large piles of aggregate rock that were stored here for the construction of the dam and have not been removed. Aggregate piles will remain onsite until they can be disposed of properly.

Soils: Primarily Medco-McMullin complex, 12-50% slopes. The boundary of this unit extends to the lower elevations along the east bank of Elk Creek, including the less steep slopes.

Management Concerns

1. Safety for project personnel and visitors around the dam and aggregate piles.
2. Accessibility of the project area for recreation.
3. Operation and maintenance of the fish passage corridor.
4. Protection, enhancement, and restoration of sensitive Elk Creek habitats.
5. Proper management and/or disposal of the aggregate rock.
6. Distribution of safety and resource protection information to visitors.
7. Unauthorized access and activities.

Management Objectives

1. Operate and maintain the restored fish corridor and realigned streambed for fish passage, spawning, and overwintering habitat.
2. Prevent/control unauthorized vehicle access and develop a safe public access plan including open access hours, needed signage, and parking accommodations.
3. Prevent/control unauthorized pedestrian access to dam and rock piles and prevent unauthorized activities, such as off-road vehicle use and recreational shooting.
4. Identify safe and economically feasible trail alignments through the area.
5. Create central hub for visitors with navigational, interpretive, educational, and safety information.
6. Inventory conditions and restoration needs of fish bearing tributaries to Elk Creek.
7. Enhance western pond turtle habitat near Phase II restoration.

Implementation Plan

Projected Work for Management Unit #1: Project Operations Areas
Design and install 4-sided interpretive kiosk with metal roof downstream of dam, highlighting history of project from authorization to notching. Includes installation of solar lights for kiosk.
Develop and print interpretive materials, including kiosk posters, hand held pamphlets, and self-guided tours.
Develop and implement guided tours for visitors and assign personnel to provide tours.
Design and construct three mile long, gravel pedestrian/equestrian/bicycling trail from USGS gauging station to Eagle Point. Trail includes installation of foot bridge and/or culverts where necessary.

II-3.2 Environmentally Sensitive Management Unit

Master Plan Land Classification: Environmentally Sensitive

Acreege of Management Unit: 591.8 Acres (16.9% total area)

Unit Description: This unit includes most of the length of Elk Creek, as well as all tributaries known and unknown that join Elk Creek except within the project area. It does not include the portion of Elk Creek that runs through the Project Operations areas. Four named creeks include West Branch Elk, Alco, Middle, and Flat Creeks. There are also a number of unnamed fish bearing tributaries within the project area, including Tributaries B, D, E, F, G, H, I, and J. The area includes the floodplains of these creeks, including the 100 year floodplain as identified by Jackson County, or a minimum 250 foot width on either stream bank, whichever is larger.

Vegetative Types: Riparian habitats occur along the main stem of Elk Creek and along smaller intermittent and perennial creeks (e.g. Middle Creek and Alco Creek). Vegetation along Elk Creek is currently a mix of grasslands (dominated by non-native annuals), mixed riparian hardwoods and conifer forest vegetation types. Each of these habitats is typically disturbed, and includes a high cover of non-native species and scattered noxious weed species. Along the intermittent and perennial tributary creeks, vegetation is a mix of conifer forest and moist riparian species, including Douglas-fir, white alder, big leaf maple, and Oregon ash. Understories often include dense patches of Himalayan blackberry.

Topography: This unit includes the lowest elevation in the area, where Elk Creek passes through the lowest part of the valley at approximately 1,600 feet. The highest elevations are found where this unit includes West Branch Elk Creek and Middle Creek, which pass through elevations as high as 2,000 feet.

Soils: Soils underlying Elk Creek are primarily McNull-Medco complex, although tributaries flow over a variety of other soils. Gravelly and cobbly loams are abundant beneath larger tributaries.

Management Concerns

1. Protection of instream habitats and riparian vegetation from recreational activities, cattle grazing, and unauthorized uses.
2. Lack of connectivity of Elk Creek to its floodplain and fish bearing tributaries.
3. Lack of riparian zone health, overstory canopy, and adequate large woody debris recruitment.
4. Lack of off-channel habitat for fish rearing and refugia.
5. Lack of gravel for fish spawning beds.
6. Lack of hydrologic connection to wetlands.
7. Safety for those recreating in the creek or for private landowners who must cross the creek.
8. Education of visitors and promotion of stewardship of sensitive habitats.

Management Objectives

1. Identify methods for excluding people and/or cattle from instream, riparian, and wetland habitats, including fencing, signage, or other measures.
2. Prioritize restoration measures throughout Elk Creek and tributaries, including needs for culvert replacement, fish passage, riparian revegetation, placement of large woody debris, stream bank sloping, gravel nourishment, and creation of off-channel habitat.
3. Identify and prioritize restoration measures for wetlands along streams, including reconnection of hydrology, riparian revegetation, and fencing or other exclusion methods.
4. Conduct inter-agency coordination to identify restoration measures.

5. Create interpretive program to educate visitors about instream and riparian habitat. Displays will be geared toward a variety of age groups and will highlight wetlands, grasslands, forests, fire, local ecology, geology, fish, riparian zones, invasive species, damage done by ORV use, flora, and fauna.
6. Investigate opportunities to develop channel structure through introduced beaver populations.
7. Development of TMDL implementation plan in coordination with BLM.

Implementation Plan

<p>Projected Work for Management Unit #2: Environmentally Sensitive Areas</p>
<p>Restore fish passage at fish bearing tributaries. Priority areas include Alco and Middle Creeks, where culvert drop is too great for fish passage. Will use construction methods that raise pool.</p>
<p>Install gates at Yellow Rock crossing and four additional access points.</p>
<p>Restore 5 wetland areas near Alco Creek and in additional lowland areas. Includes hydrologic reconnection, recontouring, revegetation, removal of non-native plants, and installation of fencing.</p>
<p>Construct two acres of wetland habitat for western pond turtles, including earthen berm, fencing, and riparian vegetation.</p>
<p>Install as many as 12 interpretive displays along Old Elk Creek Trail. May include use of waysides, panels, posters, brochures, and self-guided tours.</p>
<p>Riparian revegetation along Elk Creek, with focus on large woody debris recruitment.</p>
<p>Construct side channel habitat, including placement of large woody debris and riparian revegetation.</p>
<p>Fence 7,500 linear feet of the most sensitive riparian habitat with wildlife fencing. Wildlife fence consists of top and bottom rows of smooth wire and middle two wires are barbed.</p>
<p>Restore connectivity of all fish bearing tributaries to Elk Creek, includes stream bank contouring, large woody debris placement, gravel nourishment, and riparian revegetation.</p>
<p>Target protection and enhancement of two known vernal pool/moist meadows, including native revegetation, removing invasive species and fencing 3 acres at each site.</p>

II-3.3 MRM – Vegetative Management Unit

Master Plan Land Classification: MRM – Vegetative Management

Acreeage of Management Unit: 1,421.8 Acres (40.6% total area)

Unit Description: This management unit includes the area between the Environmentally Sensitive unit of Elk Creek and the project boundary on the west side, excluding tributaries. Elk Creek Road passes through this unit and the quarry is in this area. Most recreational activities will take place here, as all access points and proposed trails are in the area, and the topography lends itself to recreational activities to a greater extent than other management units.

Vegetative Types: Vegetation here has been historically disturbed by homesteading, farming, and grazing. Recent disturbances have occurred as a result of development, road building, and recreation. The primary vegetation communities here include oak savannas in the low valleys, along with annual and perennial grasslands and wetlands. In higher elevations, hardwood and mixed conifer-hardwood forests are present.

Topography: Elevations range from a low average of 1,640 feet adjacent to the floodplain to approximately 2,300 feet along the west slopes of the project area.

Soils: Since this is a very large management unit, over ten different soil classifications are present.

Management Concerns:

1. Control of non-native invasive plant species, especially star thistle, medusa head, scotch broom, and blackberry.
2. Protection of native communities, such as oak savannah and upland conifer forests.
3. Restoration of disturbed areas.
4. Recreational use areas and impacts.
5. Unauthorized uses.
6. Quarry safety and habitat protection.
7. Fire hazards.

Management Objectives

1. Update 5-year invasive species control plan, including integrated pest management techniques and application of targeted herbicides.
2. Target restoration/management objectives to obtain 600 plus acres of native grasslands, 1,600 acres of late successional conifer forests, 100 acres of oak woodlands, 1,000 acres ponderosa pine woodlands.
3. Remove roads no longer needed for access and restore the area vegetation.
4. Develop plan to introduce ESA listed species *Fritallaria gentneri* to special habitats where the plants might thrive.
5. Minimize or avoid sedimentation in tributaries through maintaining culverts and installing bioswales, as appropriate.
6. Determine appropriate recreation use of quarry and develop restoration objectives.
7. Manage recreational trails for pedestrian, equestrian, and bicycle use throughout area and install interpretive waysides or panels or provide self-guided tour pamphlets.
8. Remove and restore non-essential, and unauthorized roads (paved and unpaved) and impacted areas.
9. Review of fuel loading conditions and investigate management opportunities.

Implementation Plan

Projected Work for Management Unit #3: Vegetative Management Areas
Build four hike-in only tent camping sites with no amenities along Seven Mile swimming hole. Includes installation of picnic tables and fire rings within camping area.
Construct 10-car parking lot with access road near West Branch Elk Creek. Includes construction of 1 mile of hiking trail, installation of one picnic table, pad for chemical toilet, and boulders/fence to keep visitors from accessing dam site.
Restore 100 acres of native meadow, includes stripping area of star thistle and medusa head grasses, and reseeding with native grasses.
Install two sided wood kiosk adjacent to Elk Creek Road at seven mile swimming hole access point. Provide brochures and maps to inform the public of recreation opportunities and areas. Requires NRM Section of District Office and ACE-IT approval.
Construct half-mile trail to quarry from Elk Creek Road.

II-3.4 MRM – Wildlife Management Unit

Master Plan Land Classification: MRM – Wildlife Management

Acreage of Management Unit: 1,341.3 Acres (38.3% total area)

Unit Description: This unit extends from the eastern boundary of the Environmentally Sensitive unit to the easternmost project boundaries. This area slopes steeply from ridge to the floodplain and is largely undeveloped. There are no formal road crossings or bridges over Elk Creek and no public access is available.

Vegetative Types: Conifer stands cover the majority of this unit, dominated by Douglas-fir, or a mix of Douglas-fir and Ponderosa pine. The typical conifer stand has an even-sized overstory of midseral trees, and an understory layer that ranges from depauperate (where overstories are dense) to more moderate, where the overstory layer is more open. Understory trees include Douglas-fir, Ponderosa pine, California black oak (*Quercus kelloggii*), and Pacific madrone (*Arbutus menziesii*). Dry chaparral is also present, and includes buckbrush and occasional whiteleaf manzanita, with nonnative annual grasses, patches of native grass (California oatgrass), forbs, and occasional to scattered weeds. Douglas-fir or Ponderosa pine may also occur as single trees.

Topography: This unit ranges from an average low elevation of 1,640 feet along the Elk Creek floodplain, to the maximum elevation for the entire project at 2,500 feet. This area slopes steeply from the high ridge to the floodplain, affording no recreation or development opportunities.

Soils: Steep slope soils dominate the unit, with over ten soil types reported with slopes ranging from 3 to 60%. Soil complexes of McNull, McMullin, and Medco dominate the area.

Management Concerns

1. Habitat enhancements for game species.
2. Upland forest habitat management.
3. Private landowner access issues.
4. Unauthorized access and activities.
5. Fire hazards.

Management Objectives

1. Manage upland forests to attract and support game species and other wildlife.
2. Manage upland forests to progress through historically natural succession, while managing fuel loads and facilitating growth of desired species.
3. Minimize recreational use of area by restricting access across Elk Creek, except for permitted hunting and private landowners with right of entry.
4. Investigate options for connecting hiking trail from Elk Creek to Lost Creek Lake and beyond, possibly including connection to the Pacific Crest Trail, keeping in mind considerations for accommodating seasonal hunting.
5. Designate a Research Natural Area (RNA). A Forest Service RNA protects examples of natural ecosystems for the purposes of scientific study and education and for maintenance of biological diversity. The Forest Service encourages scientific and educational use of these areas.
6. Review of fuel loading conditions and investigate management opportunities.

Implementation Plan

Projected Work for All Project Areas
Construct food plots for target species. Plant approximately 10 acres of upland field with sub clover.
Thin approximately 10 acres of juvenile pines to release oaks and provide open fields for game species foraging. Any pine trees ≤10” diameter shall be cut, pile, and burned at a later date.

II-4 SUMMARY OF MEASURES

Measure
Fiscal Year 2013
Design and install 4-sided interpretive kiosk with metal roof downstream of dam, highlighting history of project from authorization to notching. Includes installation of solar lights for kiosk.
Develop and print interpretive materials, including kiosk posters, hand held pamphlets, and self-guided tours.
Develop and implement guided tours for visitors and assign personnel to provide tours.
Restore fish passage at fish bearing tributaries. Priority areas include Alco and Middle Creeks, where culvert drop is too great for fish passage. Will use construction methods that raise pool.
Install gates at Yellow Rock crossing and four additional access points.
Restore 5 wetland areas near Alco Creek and in additional lowland areas. Includes hydrologic reconnection, recontouring, revegetation, removal of non-native plants, and installation of fencing.
Construct two acres of wetland habitat for western pond turtles, including earthen berm, fencing, and riparian revegetation.
Install as many as 12 interpretive displays along Old Elk Creek Trail. May include use of waysides, panels, posters, brochures, and self-guided tours.
Build four hike-in only tent camping sites with no amenities along Seven Mile swimming hole. Includes installation of picnic tables and fire rings within camping area.
Fiscal Year 2014
Riparian revegetation along Elk Creek, with focus on large woody debris recruitment.
Construct 10-car parking lot with access road near West Branch Elk Creek. Includes construction of 1 mile of hiking trail, installation of one picnic table, pad for chemical toilet, and boulders/fence to keep visitors from accessing dam site.
Construct food plots for target species. Plant approximately 10 acres of upland field with sub clover.

Fiscal Year 2015
Construct side channel habitat, including placement of large woody debris and riparian revegetation.
Restore 100 acres of native meadow, includes stripping area of star thistle and medusahead grasses, and reseeding with native grasses.
Install two sided wood kiosk adjacent to Elk Creek Road at seven mile swimming hole access point. Provide brochures and maps to inform the public of recreation opportunities and areas. Requires NRM Section of District Office and ACE-IT approval.
Fiscal Year 2016
Construct half mile trail to quarry from Elk Creek Road.
Thin approximately 10 acres of juvenile pines to release oaks and provide open fields for game species foraging. Pine trees $\leq 10''$ diameter shall be cut, piled, and burned at a later date.
Fiscal Year 2017
Design and construct three mile long, gravel pedestrian/equestrian/bicycling trail from USGS gauging station to Eagle Point. Includes installation of a footbridge over Elk Creek, and one footbridge crossing a drainage and/or culverts where necessary.
Fence 7,500 linear feet of the most sensitive riparian habitat with wildlife fencing. Wildlife fence consists of top and bottom rows of smooth wire and middle two wires are barbed.
Fiscal Year 2018
Restore connectivity of all fish bearing tributaries to Elk Creek, includes stream bank contouring, large woody debris placement, gravel nourishment, and riparian revegetation.
Target protection and enhancement of two known vernal pool/moist meadows, including native revegetation, removing invasive species and fencing 3 acres at each site.

APPENDIX III. INTERPRETIVE SERVICES AND OUTREACH PROGRAM



III-1 INTRODUCTION

The National Environmental Policy Act (NEPA) encourages the Corps to “enrich the understanding of the ecological systems and natural resources important to the Nation.” By virtue of the land and water resources under Corps administration, there is an inherent responsibility to take an active part in the process of creating a more knowledgeable public and educating the next generation about environmental matters.

According to Corps regulation, an Interpretive Services and Outreach Program (ISOP) shall be implemented at each Corps operated project (ER 1130-2-550, Corps 1996). The type and magnitude of this program shall be determined by the District Commander and shall be commensurate with the type and size of the project, project visitation, funding, and personnel resources. In addition, all ISOP efforts shall provide for universal accessibility where practical.

This appendix shall serve as conceptual guidance for the Elk Creek ISOP. It will provide a comprehensive review of the opportunities for locating interpretive materials, the type of interpretive information to be included in these materials, and the mode of distributing the information to the visiting public.

This appendix is structured to first present the objectives identified for installation or provision of interpretive materials regarding Elk Creek project area. Information regarding the locations for visitors to obtain interpretive information will then be provided. Topics that are considered critical or valuable to convey to visitors of Elk Creek will be described, followed by the modes of distribution that are available. Finally, a suite of examples will be provided to demonstrate the potential installations or brochures that could be produced for Elk Creek. A list of references, partnership opportunities, and future considerations has been provided at the conclusion of this appendix.

III-2 INTERPRETIVE MATERIAL AND OUTREACH OBJECTIVES

Interpretive materials provide an opportunity for the Corps to share a wide variety of information with the visiting public for a number of purposes. Per Corps guidance, all materials designed for the purpose of education or interpretation at Elk Creek will be designed to accomplish one or more of the goals described in A through F below (ER 1130-2-550, Corps 1996).

A. Achieve Elk Creek Management Objectives

Interpretive materials offer a means of communicating the management objectives at Elk Creek to the visiting public. For example, signage can be installed to protect visitors from dangerous areas,

to describe the management objectives of the area, or to delineate and thereby protect sensitive resources.

B. Encourage Stewardship of Resources

A suite of resource related project objectives has been presented in the master plan. Achieving those objectives takes place through preservation, protection, and conservation of resources, which in turn, often becomes the responsibility of the visitor. Many of the techniques for managing project lands include increasing the education of the public. For example, preservation of fish and wildlife species and protection of their habitats requires an understanding on the part of the visiting public not to destroy or deface the native vegetation or instream habitats. An increased sense of involvement and responsibility results in increased protection of native, sensitive, or valuable resources.

C. U.S. Army Corps of Engineers Education

It is the goal of the Corps to incorporate Corps civil works and military missions and accomplishments into interpretive programming.

D. Improve Safety

Improve visitor and employee safety using interpretive techniques. These may include signage that prohibits entrance into dangerous areas, signage that forewarn of dangerous conditions, or educational information regarding dangers that may result from wildlife interactions, or other potentially dangerous situations.

E. Enhance Visitor's Experience

Interpretive materials located within the project area should be designed to enhance the visitors' experience and enjoyment. This can be done by anticipating their needs and providing interpretive resources to meet those needs, as well as by providing interesting educational materials to engage them in an understanding of the ecological, cultural, and community value of the area.

F. Engage in Public Outreach

Interpretive materials may also be used in outreach efforts. Materials designed to provide interpretation of Corps missions, stewardship, saving lives, and solving management problems, can also be taken into the surrounding communities' schools and social centers. This allows for a greater awareness of the project area itself among the surrounding community, but also gives the Corps the opportunity to use the project area as an educational tool. The Corps takes a particular interest in encouraging interest in math and sciences, which can be done through educating the surrounding community about engineering, ecology, biology, chemistry, physics, and other sciences and math applicable to Elk Creek project management.

III-3 EXISTING CONDITION, LOCATION, CONSTRAINTS AND OPPORTUNITIES FOR INTERPRETIVE MATERIALS

Once a visitor decides to travel to Elk Creek, they may seek information from three primary locations. Initial research may be done online to retrieve basic information such as location and access. Once the visitor elects to make the trip to see Elk Creek, they may first wish to stop at a visitor center to speak with project managers or to obtain literature. This may be done at the Rogue River Project Office near Lost

Creek. The last location to obtain information regarding Elk Creek is at the site itself. Interpretive materials should be available at each of these locations.

III-3.1 Internet Resources

The Corps maintains an extensive network of online data regarding its mission, projects, operations, locations, and policies and procedures. Information for potential visitors to Elk Creek may find information at the Corps' main website, or at websites specifically developed for the Rogue River Project, Lost Creek Lake, or Elk Creek. The website developed for Elk Creek has limited information, including general background, operations information, recreation details, and a map of the area. Further development of this website is possible. However, time and budget constraints limit the Corps' availability to update the website regularly. A possibility for increasing online information availability would be to encourage a local interest group to create a website for Elk Creek.

III-3.2 Rogue River Project Office

Visitors to Elk Creek may first stop at the Rogue River Project Office and Powerhouse in order to orient themselves to the area. The Project Office is located adjacent to Lost Creek Lake, but is also the home for Elk Creek and Applegate Lake operations. Interpretive materials have been developed for this region, including general information regarding the Corps and its mission, safety, regulations, and local area history, as well as more specific location information, such as the history and geology of the area and local wildlife and birdwatching lists. There are no brochures specific to Elk Creek at this time. Because the fate of Elk Creek Dam was unknown until recently, the Corps had not pursued development of interpretive materials. However, now that the fish passage project has been completed, and the dam has been functionally decommissioned, interpretive materials can be developed.

III-3.3 Elk Creek Project Area

Interpretive materials available at the Elk Creek project site are currently limited. Signage kiosks have been installed near the two most popular access points to the project area, and house information related to general safety, health concerns, or fire hazards. There is no site specific information provided.

Portland District Corps
<http://www.nwp.usace.army.mil/>

William L. Jess Dam and Lost Creek Reservoir
<http://www.nwp.usace.army.mil/locations/lostcreek.asp>

Elk Creek
<http://www.nwp.usace.army.mil/locations>

The screenshot shows the US Army Corps of Engineers Portland District website. The header includes the Corps logo and the slogan "BUILDING STRONG®". Navigation tabs include NEWSROOM, WHO WE ARE, MISSION, HISTORY, and CONTACT US. A "HOW DO I..." section offers links for finding recreation areas, permits, publications, maps, and a topical index. The main content area is titled "Elk Creek" and features a photograph of a stream. Text on the page describes the history of the Elk Creek project, starting in 1971, and mentions a public meeting on September 14, 2011. A sidebar on the left lists various services like "Aerial photos and maps" and "Flood risk management".



Kiosks are currently the sole means of physically distributing information to visitors arriving at Elk Creek. Kiosks are constructed of horizontal wood planks attached to two wooden posts. The planks are cut to form a triangular top, which is then covered with additional wood to act as eaves to protect posted signage from intensive rain or sun exposure. The primary constraint to providing information to visitors at the project area is the absence of prepared interpretive materials. The opportunity exists to create educational brochures or signage, which could be immediately affixed to the kiosks as soon as they were ready.

The opportunity also exists to create additional kiosks at new locations. Kiosks are simple to construct and easy to maintain. The wooden backing allows for easy adherence of notices and could support the weight of plastic brochure holders.



Additional development of interpretive signage and educational materials for Elk Creek could occur at a number of locations and provide a variety of information. Opportunities for development of interpretive materials at the Elk Creek project area are further reviewed below. In particular, locations that would provide particularly appropriate sites for hosting interpretive materials have been identified, along with the types of materials that could be included. These areas include Elk Creek Dam, the existing and future trailheads and trailways, the Phase II restoration area, seven mile swimming hole, and the north parking area. However, before making specific recommendations, it is worthwhile to further define the types of information that are considered interpretive, and the topics that are pertinent to Elk Creek.

III-4 INTERPRETIVE MATERIALS

III-4.1 Developing Interpretive Materials

Our natural environments are irreplaceable sources of life and inspiration. Through a series of historic decisions, the Elk Creek project area has become a federal land holding of unique conditions and incalculable value. As a result, Elk Creek not only offers the opportunity for visitors to be present in nature and engage in recreational activities, it also offers an outdoor classroom for education of its natural, cultural, and historic characteristics.

Interpretation has many definitions and methods, but is best summarized as “a communication process designed to reveal meanings and relationships of our cultural and natural heritage, to the public, through involvement with objects, artifacts, landscapes and sites”(Corps 2006). However, it should be stressed that interpretive communication is a specific communication strategy that is used to translate from the technical language of the expert to the everyday language of the visitor. The Corps directs all interpretive materials to be designed to follow the Freeman Tilden basic principles of effective interpretation (Tilden 1957), which have been further developed by Cable and Beck. The following are the 8 most pertinent principles to interpretive signage (Beck and Cable 2002, Corps 2006).

1. To spark an interest, interpreters must relate the subject to the lives of the people in their audience.
2. The purpose of interpretation goes beyond providing information to reveal deeper meaning and truth.
3. The interpretive presentation -- as a work of art -- should be designed as a story that informs, entertains, and enlightens.
4. The purpose of the interpretive story is to inspire and to provoke people to broaden their horizons.
5. Interpretation should present a complete theme or thesis and address the whole person.

6. Technology can reveal the world in exciting new ways. However, incorporating this technology into the interpretive sign must be done with foresight and thoughtful care.
7. Interpreters must concern themselves with the quantity and quality (selection and accuracy) of information presented. Focused, well-researched interpretation will be more powerful than a longer discourse.
8. Interpretation should instill in people the ability, and the desire, to sense the beauty in their surroundings – to provide spiritual uplift and to encourage resource preservation.

Natural areas are used as outdoor classrooms by all educational levels, from primary school through college graduate studies. Organizations and groups may use the site for bird watching, native plant study, wetland study, geology field trips, and other natural history pursuits.

III-4.2 Topics for Interpretive Materials

The natural and cultural resources available at the Elk Creek project area are abundant and diverse. It is a unique combination of wild and modified habitats, areas of cultural and historic value, and lessons learned. The remnants of Elk Creek Dam stand in memory of old ideals and remind us that we must no longer neglect our duty as stewards of the ecosystem. Topics for discussion abound, including but not limited to those regarding the history of the project, the notching of the dam, the special issues of endangered species, the value of the land to native, resident, and migrating fish and wildlife, the variety of landscapes and habitats present, and the use of the area by ancient peoples, homesteaders, and today's surrounding communities. Table IIIA presents the array of topics that may be interpreted at Elk Creek.

Please note that the specific content, level of detail, and amount of information provided in interpretive materials will ultimately be determined through feasibility studies and based on economic analysis. For this reason, the examples provided in the table below are conceptual only and do not provide the complete range of topics or detail that could potentially be included. Final design of interpretive materials should incorporate content that is brief in nature, provokes thought, is visually appealing, and provides the reader with the possibility of revelation (Corps 2006). In addition to the conceptual details, each publication or interpretive installation should also include graphics to clarify and augment the written word. Graphics may include historic photos, aerial photos, underwater or habitat photos, drawings of species or habitats, diagrams of life cycles or water cycles, and statistical charts.

Table IIIA. Sample topics for interpretive materials, conceptual details, and questions to pose to visitors.

Sample Topic	Conceptual Details and Questions for Development of Publications
Congressional Authorization	
Purpose	Authorized under the Rogue River Basin Project by the Flood Control Act of 1962 (P.L. 87-874, 21 September 1962). Designed to operate as a system to reduce flooding in the Rogue River Basin and provide irrigation, recreation, fish and wildlife enhancement, and water quality. What is the purpose of a dam? What is the mission of the Corps in relation to creating dams?
Fish Passage	
Trap and Haul	In 1992 a fish collection facility was built below the dam. The purpose of this facility was to trap fish below the dam and haul it to the Cole Rivers Hatchery at Lost Creek Dam until the run was eliminated in Elk Creek. However, without finalization of the dam, the facility became a permanent requirement under the injunction, and was the sole means of sustaining fish runs above Elk Creek Dam. Why was fish passage important?
Solutions	Complications with the trap and haul facility resulted in unacceptable fish mortality and in 1994, the Corps was court ordered to initiate studies for cost effective and efficient fish passage through the dam. How does the Corps decide which projects to pursue? What is cumulative damage?
Coho Salmon	Preservation of coho salmon prompted to reconfiguration of the dam. Why are Coho important? Why is the population endangered? What are the repercussions of not providing fish passage to Coho?
Creation of Fish Passage Corridor	
Feasibility Study	In 2000, the Corps prepared a document detailing the preferred alternative for the fish passage corridor project modifications at Elk Creek. Detailed hydrology and hydraulic modeling, geomorphic assessment and incremental cost analysis indicated that the removal of a portion of the dam to allow passive fish movement throughout Elk Creek provided the least costly and most efficient fish passage alternative. In 2008, the appropriate portion of the dam was removed and restoration of the channel was completed. Minimal operation and maintenance is required for the project. What were the steps involved in this process?
Notching the Dam	Design criteria for removing the dam included the most cost effective and timely method of removing the concrete structure of the dam, rock reaches, upstream backfill areas and upstream berms to clear and to develop a channel as closely replicating the original stream channel as possible to provide fish passage. A total of 69,000 cubic yards (cy) of the main dam and 7,000 cy of the left wing wall were demolished using explosives. Removal of other features was done using hand power tools, wheel/track mounted power equipment and carefully engineered use of explosives. Why are all these piles of rock still here? What will be done with these materials?

Project Data	
Location	Elk Creek Dam is 26 miles north of Medford in southwestern Oregon at the northern limits of Jackson County. The project area begins at river mile (RM) 1.7, upstream of its confluence with the Rogue River. The total project area is 3,502 acres.
Elk Creek Watershed	The Elk Creek watershed is within the larger Rogue River Basin. The Rogue River flows generally from east to west for about 215 miles from its source in the Cascade Range to its mouth at the Pacific Ocean. The basin is within the Western Cascade Geologic Province near the west boundary of the high Cascade Range. The Elk Creek watershed covers 132 square miles.
Operations	Operations in the project area are performed by the Rogue River Project Office at Lost Creek Dam. Operations in the area includes monitoring and maintenance of the fish passage corridor and subsequent restoration work, providing security, maintaining signs, fences, and gates, and removal of debris as necessary. The area has no permanent project facilities, although development of low-density recreation features is underway.
Fish and Wildlife	
Native Fish and Wildlife	The Elk Creek area is home to a wide variety of animal species, including birds, mammals, reptiles, amphibians, and fish. What does the food web look like at Elk Creek project area? What dangerous species are present? How big is the resident herd of elk and what do they eat?
Endangered Species Act	The Endangered Species Act (ESA) of 1973, as amended (16 USC 1531 et seq.), protects threatened and endangered species, as listed by the USFWS, from unauthorized take and directs federal agencies to ensure that their actions do not jeopardize the continued existence of such species. Provide a review of species that are listed under the ESA and within the project area. Distinguish between sensitive species and habitats.
Floodplain	
Definition of Floodplain	Floodplains are land areas adjacent to rivers and streams that are subject to recurring inundation. Questions that may be answered include; What is the importance of a floodplain? What species rely on floodplain habitats? What is the condition of the Elk Creek floodplain? How can the Elk Creek floodplain be protected or restored?
Riparian Zone	Riparian zones are areas along the margins of a stream or river that consist of a unique transitional habitat type between land and water environments. Riparian zones act as buffers to protect surface waters from contamination and are habitats for a large variety of animals and birds.
Restoration	The replication of the historic channel alignment through the dam site was selected based on analysis of predicted hydraulics, fish passage potential and geomorphic stability. The replication of the historic channel would provide the greatest assurance of fish passage as historically available in Elk Creek, would provide the greatest potential for the stream to heal itself, and would require the least amount of maintenance. Altogether, these factors would lend the greatest longevity to the completed project. How was the recreation of the channel bed accomplished? Are coho the only species that benefit from restoration? What other benefits are there to the environment?
Tributaries	Tributaries that feed Elk Creek within the project area include Flat Creek, Alco Creek, Middle Creek, West Branch Elk Creek, and Berry Creek. Why are tributaries important to protect? Do fish use these tributaries?

Vegetation	
Native Communities	Plants in the project area grow in communities, which are groups of plants that live together. These communities occur where the conditions are just right. What are the native plant communities in the area? What does it mean to call a plant “native”? How have these plants been impacted by human activity?
Invasive and/or Exotic Species	Non-native plants may become established through human activity. These plants may compete with the native species, alter the composition of habitats, and reduce the value of the habitat to native fish and wildlife. What non-native species are currently present in the project area? Why are they unwanted? How does the Corps manage these species? What can we do to help?
Edible Plants	Though the project area is not used to farm agricultural crops, there are plants onsite that are edible. Is it okay to collect edible plants at the project area? Are there any poisonous plants to watch out for? Are the edible plants native to the area?
Natural Features	
Geology	The Elk Creek Project area lies within a steep sloped mountainous area with moderate to high stream gradients. Elevations in the project area range between 1,500 to 1,800 feet. How did the rock ridges on either side of Elk Creek form? What other processes have formed this area over geologic time?
Elk Creek Water Quality and Quantity	Rainfall, snowfall, and the soil characteristics in the area determine the quantity of water flowing through Elk Creek. What is the typical hydrograph of Elk Creek? How often has Elk Creek flooded? What are the current water quality issues? How can these be addressed?
Cultural History	
Historic Inhabitants	Occupation and/or use of the Elk Creek drainage is generally attributed to two native peoples, the Takelma, who occupied the bottomlands of the Rogue River Valley, and that of the southern Molala, who lived in the higher elevations of the Cascade Range. How did the historic inhabitants of Elk Creek live? What resources drew them to this area?
Homesteading	More recent occupation of the site occurred during the historic period, estimated to date from the last decades of the nineteenth century and first two decades of the twentieth century. Collapsing log cabins and a trash dump were the primary indicators of a historic period presence. From the 1930s on, further homesteading settlements resulted in the most visible remains at the project area. What drew homesteaders to the area? What evidence remains of homesteading? What should I do if I find evidence of historic homes?
Legislative Protection of Cultural Resources	The Archaeological and Historic Preservation Act, as amended (16 USC 469), requires that Federal agencies consider the effect of their undertakings, including Federally-licensed activity or program, on historic American sites, buildings, objects, and antiquities of national significance when taking actions that include, but are not limited to, flooding, the building of access roads, relocation of railroads or highways, and other alterations of the terrain caused by the construction of a dam. The National Historic Preservation Act of 1966, as amended (16 USC 470 et seq.), requires that Federal agencies consider the effect of their undertakings, including Federally licensed activities or programs, on properties eligible for the National Register of Historic Places (NRHP).

Recreation	
Permitted and Prohibited Activities	Safety information should be provided regarding access limitations, use restrictions, and warnings about hazardous conditions. Why is fishing prohibited in Elk Creek? Why is it prohibited to run off-road vehicles in the area? What other activities are not permitted and why?
Recreational Opportunities	A wide variety of recreational opportunities exist at Elk Creek project area, from rafting and swimming to hiking and mountain biking. What kinds of activities can I engage in while I'm visiting Elk Creek? What are the operating hours? If I have an emergency, what should I do?
Navigation of Trails	Over 10 miles of trails are available within the project area, including the main Old Elk Creek Trail that runs along the creek. Where am I context of the project area? Where are the nearest facilities? Are there additional interpretive materials available elsewhere in the area?

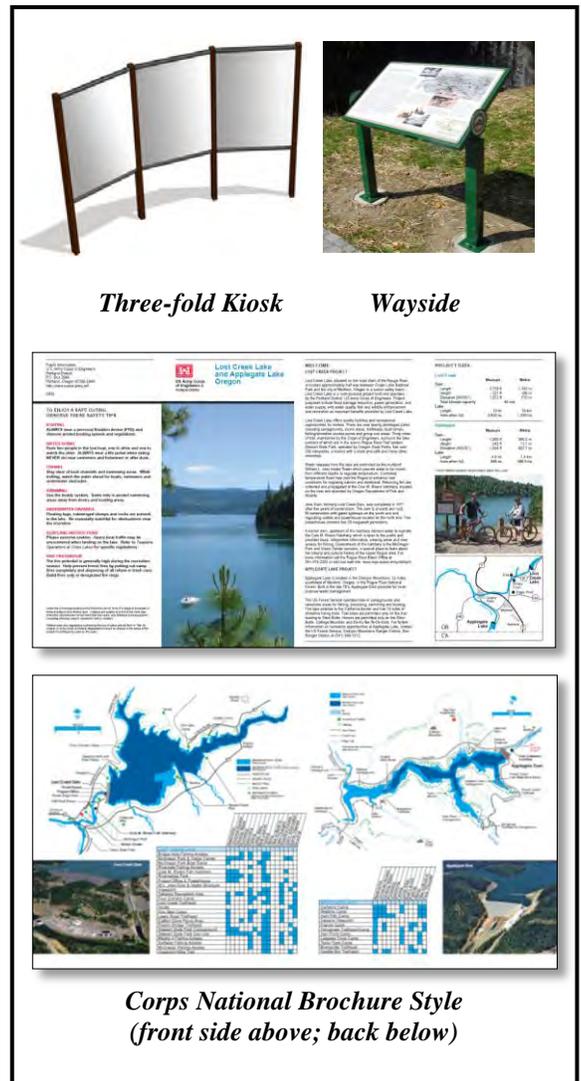
III-5 RECOMMENDATIONS FOR FUTURE DEVELOPMENT OF THE ELK CREEK ISOP

Face to face interpretation by Corps personnel is not currently feasible at Elk Creek, due to availability of labor hours and budgetary constraints. As a result, recommended interpretive materials include static communication techniques such as interpretive signs, publications, and self-guided tours.

III-5.1 Internet Materials

The existing Elk Creek website is limited in scope, providing only the most basic information to online visitors. However, this is representative of the typical web content for any given Corps project. Future development of comprehensive online information will most likely be achieved through local interest groups. It is recommended that the Corps encourage the formation of groups that volunteer their time to ensure that the natural, cultural, and historic qualities of Elk Creek project area are protected. This type of group could develop a website for the area and update it with new content, as needed.

Another opportunity for the Corps to utilize web services is through the establishment of social media accounts. Allowing interested parties to sign up for regular notifications about conditions or news related to Elk Creek would expand the Corps reach to a greater number of individuals. Furthermore, these media options appeal to younger audiences, which are identified as an essential group to reach. The recreation analysis in the master plan reports that fewer youth are learning outdoor skills. Providing youth a more popular means of receiving information, such as through online social media, may increase their interest in



outdoor education. It is recommended that the Corps investigate appropriate social media outlets for this purpose.

III-5.2 Kiosks, Publications, Panels and Waysides

The following sections describe the recommendations for installing or distributing interpretive materials within the project area. The mode of information distribution is presented, along with the topics most fitting for the area. A conceptual suite of kiosk, brochure, or panels and wayfinding information is then presented. Although it is recommended that interpretive materials be designed for either children or adults, it is not always economically feasible to provide multiple versions of interpretive signage (Freeman 1957). For this reason, interpretive materials have been designed primarily for adults, although children aged 12 and above should be reasonably able to understand and learn from the materials.

The types of installations recommended may include kiosks, panels or waysides, and brochures or posters. Development of signage must follow the Sign Standards Manual, which provides the plans and specifications guidelines for installation of signs at Corps owned and operated facilities (Corps 2006). Section 13 of this manual provides guidance specifically for development of interpretive signage, but states that it is more important to develop effective interpretive language, and construction methods can be flexible.

III-5.2.1 Publications

At this time, the most essential interpretive resources to develop are those related to safety. As soon as possible, copies of Title 36, Chapter III of the Code of Federal Regulations, should be posted at the most popular access points of the project area, such as Old Elk Creek Road and the north end kiosk. An assessment of all necessary safety signage should also be made and implemented as soon as possible.

Following these steps, efforts should be focused on creating a thorough map of the Elk Creek project area for visitors. The map should include detailed information regarding parking opportunities, recreational areas, and areas that are prohibited to public access. The most efficient means of making the map available would be via distribution at the site itself. A preliminary draft brochure has been developed based on the national template for the Corps and provided at the end of this Appendix. Once the draft is finalized, the brochure should be printed in bulk and copies placed within plastic containers that can be attached to the existing kiosks.

In addition to the much needed Elk Creek brochure, it is recommended that a variety of publications be created, including posters, fact sheets, or checklists that could be posted at kiosks or provided as stand-alone or handheld literature. Types of information to be provided via publication have been described in the previous section.

Once a kiosk is installed, it can be filled with a variety of written materials. Posters can be created and sized to fill all, or a portion, of the kiosk. This allows for maximum flexibility in selecting the information to be shared. A suite of interpretive materials that addresses many needs can be selected, from safety signage to warnings regarding non-native or toxic plants, to education regarding the natural, cultural, or historic settings in the area.

Brochures provide written information that can be taken from a kiosk area and referred to while traveling through the project area. Handheld information can be used to provide a map of the area, can offer self-guided tours, or may provide a checklist of birds or plants to look for while visiting.

III-5.2.2 Waysides and Panels

Like kiosks, waysides offer opportunities to place information directly adjacent to natural, cultural or historic features that lend themselves to interpretation. In contrast, waysides and panels typically provide information that is permanent in nature. It is recommended that the potential for installing waysides at Elk Creek be investigated by the Corps. Using topics described above, waysides and panels of a variety of topics could be spaced along existing or future trails. Panels could tell an ongoing story, could be related by theme along trails or in clusters, or could share a wide variety of unrelated materials. Conceptual examples have been provided in the tables below. Table IIIA showed a variety of potential wayside topics, along with the details or questions that might be included to provoke thought. Table IIIB provides a bit more detailed look at how the idea of series of themed waysides could be carried out. It shows the topics that could be covered at a series of waysides to be placed along the trail adjacent to Elk Creek, which tell the story of endangered coho in Elk Creek. It also provides examples of the types of graphics that could be used to augment the written portions.

Table IIIB. Conceptual fish-themed waysides for Old Elk Creek Trail			
Trail Mile	Topics	Details	Graphics
Trailhead Mile 0.0	Life History	Coho spawning, rearing, and life cycle information. What is anadromous? How do fish spawn? Why is Elk Creek important to spawning fish?	Underwater photos. Life cycle diagrams. Path from ocean to Elk Creek.
Mile 1.0	Passage	When the dam was built it cut off coho from their spawning grounds in Elk Creek. The Corps was instructed to find new ways to get fish upstream, resulting in the construction of the fish collection facility. Ultimately the best fish passage option was to notch the dam. What's so important about fish passage? Why don't fish just use another stream to spawn? Why wasn't the entire dam removed?	Photos of fish collection facility. Graphs showing mortality statistics. Notching photos.
Mile 2.0	Habitat	Describe each of the components that contribute to good fish habitat. Shade for water temperature, instream diversity for refugia, normalized nutrient cycle, no fish obstacles. What do fish need to survive? How do human actions change habitat?	Diagram of a complete fish habitat, from riparian zone to LWD, to pools and riffles.
Mile 3.0	Tributaries	Value of tributaries in providing cool water and additional spawning areas. How many tributaries are there? Why are tributaries important to fish?	Map of area with tributaries shown.
Mile 4.0	Habitat Restoration	Description of Phase II restoration. Why was it necessary to restore the area? What restoration components were involved?	Habitat diagrams showing inwater microhabitats, especially those created by large woody debris.
Mile 5.0	Endangered Species Act	ESA protects species that are in danger of becoming extinct. Southern Oregon Coho are threatened fish. What does it mean to be threatened? What does it mean to be protected under ESA?	Drawings of T&E species.

Mile 6.0	Fish in the Ecosystem	Historic salmon runs along the west coast have been severely reduced, but remain an essential part of the ecosystem. Why are Coho so special? Where do they fit into the food chain of Elk Creek?	Drawings or diagram of food web of Elk Creek.
Mile 7.0	Sharing the River	Humans and fish share Elk Creek. Human activities have long disturbed fish in Elk Creek. How can we help protect these threatened fish?	Drawings of ways to help protect fish.

Again, signage design and location will be guided by the plans and specifications in the sign manual (Corps 2006). Please note that the specific content, level of detail, and amount of information provided on waysides will ultimately be determined through feasibility studies and based on economic analysis. For this reason, the examples provided in the tables below are conceptual only and do not provide the detail that could potentially be included on selected waysides. Final design of waysides should incorporate content that is brief in nature, provokes thought, is visually appealing, and provides the reader with the possibility of revelation.

III-5.2.3 Kiosks

Kiosks similar to those already existing within the project area may be used, although it is recommended that these kiosks be increased to a 3-fold design. This increases the amount of wood and other materials needed for construction, but does so within a reasonable cost, utilizing materials already in place. This also allows for the area to retain its visual quality, through placement of signage that is compatible to the area’s look and feel. Overhanging eaves or other structural features could be added to improve protection to the materials housed in the kiosk.

As additional developments are made within the project area and to further encourage visitation, it is recommended that a primary kiosk be established at the site of the decommissioned dam, and secondary kiosks be established at the primary trailhead and at the north parking area. The kiosk at the dam site would be installed first and would serve as the main location for obtaining information about the area and allow visitors to best plan their visit. Secondary kiosks could be developed concurrently, or after the main kiosk is installed, and would provide information specific to their locations. Each of these kiosk locations is further discussed in the following sections.

KIOSK #1: Elk Creek Dam Central Hub Interpretive Kiosk

Elk Creek Dam offers the best location as a primary stopping point for the visiting public. At this time, the most essential interpretive resource will be a thorough map of the Elk Creek project area for visitors. The map should include detailed information regarding parking opportunities, recreational areas, and areas that are prohibited to public access. The most efficient means of making the map available would be via distribution at the site itself. A preliminary draft brochure has been developed based on the national template for the Corps. Once this is finalized, the brochure should be printed in bulk and copies placed within plastic containers that can be attached to the existing kiosks.

Additional interpretive materials to be included at the main kiosk must include safety related regulations and notices, and could also potentially include a variety of educational posters or brochures. In particular, the Elk Creek Dam kiosk should be geared toward interpreting the story of how and why the dam was authorized, and ultimately decommissioned, and how the Corps mission of stewardship played a role in this process. From Table IIIA above, the most applicable topics for interpretation would include Project History and Fish Passage.

KIOSK #2: Old Elk Creek Road Trailhead

The development and improvement of a project wide trail system is underway. Part of this development includes the establishment of a trailhead area, which would be adjacent to visitor parking, would provide vault toilets, and would make an excellent area for installation of an interpretive kiosk.

As with the main kiosk, secondary kiosks must have safety related regulations and notices, and could also house educational materials regarding a variety of topics. Applicable topics from Table IIIA include Fish and Wildlife, Floodplain, Vegetation, Natural Features, Cultural Resources, and Recreation. Although Project History and Fish Passage could also be suitable for this kiosk location, it is recommended that kiosk displays or exhibits not overlap topics. History and fish passage information is best located adjacent to the remains of the dam.

KIOSK #3: North Parking Area

The final recommended kiosk location is near the north end of the project in an area currently leased to Jackson County. This area is currently in feasibility for development of a parking lot, which would be equipped with 10-15 parking spaces and a set of vault toilets. The site is an excellent location for interpretive materials since it is adjacent to a primary access point for visitors and is also near to one of the most popular recreation sites in the area, the seven mile swimming holes. Near Elk Creek river mile 7, there is a series of pools that provide summer season swimming. The proposed north parking area offers the closest access to the swimming area.

Again, this kiosk must be equipped with safety related regulations and notices, and could also house a variety of educational material. Suitable topics from Table IIIA include Fish and Wildlife, Floodplain, Vegetation, Natural Features, Cultural Resources, and Recreation. However, as mentioned above, it is not recommended to repeat interpretive displays from kiosk to kiosk. For this reason, it is recommended that topics be divided up and assigned to either the trailhead kiosk or the north parking area kiosk.

III-5.2.4 Mobile Phone and Radio Materials

Interpretive information could also be distributed via telephone or radio. Information provided in brochures, online, or at kiosks could be downloaded directly to cellular phones through the use of matrix barcodes. Natural, cultural or historical information could be pre-recorded and provided to visitors by phone, or broadcast by radio. It is recommended that the following options be investigated further.

A Quick Response code (QR) is a type of matrix barcode, or two-dimensional code, that can be read by a mobile smart phone application. The code consists of black modules arranged in a square pattern on a white background. Users with a camera phone equipped with the correct reader application can scan the image of the QR code to display text, contact information, connect to a wireless network, or open a web page in the telephone's browser. This act of linking from physical world objects is termed hardlinking or object hyperlinking. The QR code is a popular hardlink method due to its fast readability, comparatively large storage capacity, and freedom for use without licensing.

Another way to receive interpretive materials could be through the use of pre-recorded telephone messages. Visitors to the park could dial phone numbers posted on kiosks or in brochures in order to hear safety information or take self-guided tours of the project area.

Park information could also be broadcast on radio. The National Park System provides recorded radio broadcasts on AM stations for many of the parks throughout the U.S. Visitors that tune their radios to the appropriate station may hear information regarding park conditions, events, closures, websites, and phone

numbers, among many other topics. A radio broadcast would be applicable to visitors of any of the Upper Rogue River Project components, including Lost Creek Lake and Applegate Lake.

III-5.3 Self-Guided Tours

A self-guided tour combines written or verbal information with a series of landmarks within the project area. For example, it would be possible to install wooden posts along the Old Elk Creek trail imprinted with numbers that corresponded to written information in a brochure. In this way, visitors would be able to pick up a brochure at the main kiosk and then follow the trail, learning about the natural history of the area as they progressed from marker to marker.

An example of potential content would be Table IIIC above. Using this example, the wooden posts or markers with numbers would be installed at each trail mile from 0 to 7. A brochure entitled “The Fish of Elk Creek: A Self-Guided Tour” would be prepared with the topics/details shown in the Table for each trail mile. Visitors would be able to learn about fish through this option, without the need for permanent waysides to be created and installed.

Similarly, information could be provided on QR codes at each mile marker and scanned with a camera phone that could hardlink to written or verbally recorded information. Another option is to provide a telephone number that dials a pre-recorded message that corresponds to a particular natural, cultural, or historic feature within Elk Creek.

III-6 SUMMARY OF RECOMMENDATIONS AND POTENTIAL IMPLEMENTATION SCHEDULE

The following is a summary of the recommendations for development of the ISOP at Elk Creek. Budget and time constraints limit the interpretive materials that may be produced, published, or installed at Elk Creek. For this reason, a prioritization schedule has been prepared to indicate the materials that are most needed. Because budget availability is unknown, the tentative schedule is conceptual and not based on actual dates. However, with appropriate funding and possibly the assistance of volunteer groups, many of the installations could be complete within a 5 year timeframe. Measures that would likely require a timeframe of greater than 5 years have also been noted.

III-6.1 Immediately: Safety Postings

The Elk Creek project area must have copies of Title 36, Chapter III of the Code of Federal Regulations posted immediately at the most popular access points. An assessment of all necessary safety signage should also be made and implemented as soon as possible.

III-6.2 Within One Year: Publication of Project Area Map

A map of the Elk Creek project area should be developed within a year, or as soon as possible. The map should include detailed information regarding parking opportunities, recreational areas, and areas that are prohibited to public access. The most efficient means of making the map available would be via brochure, such as that shown in the preliminary draft brochure. It would also be valuable to eventually have a large scale version of the project area map permanently installed at kiosks.

III-6.3 Within One Year: Existing Kiosk Augmentation

Existing kiosks are present at the two most popular access points in the project area; the north parking area and the access road near the dam. These kiosks provide an immediate location for posting safety information, Title 36, and the brochure.

III-6.4 Within 2-5 Years: Development of Interpretive Posters and Expansion of Existing Kiosks

A plan should be put in place to develop a series of interpretive posters regarding the project area. These can be laminated and posted at the existing kiosks, and can serve as templates for development of permanent waysides or panels in the future. Existing kiosks can also be expanded to accommodate additional information.

III-6.5 Within 5 Years: Elk Creek Dam Main Kiosk and Investigation of Media Options

A primary stopping point will eventually be the Elk Creek Dam kiosk, which will serve as the project area's main interpretive center. Development of this interactive hub of educational and informational exhibits and brochures should be initiated as soon as possible, as budget and time allow. A reasonable goal for development and installation could be within the next 5 years. During this time, posters and other interpretive publications will be developed and can be installed at the main kiosk upon completion.

It is also recommended that the options for using other media be investigated during this time. Opportunities to use QR codes, radio broadcast, or social media should be researched for application to the project area.

III-6.6 Beyond 5 Years: Secondary Kiosks, Trail Theme Waysides

Once the main kiosk is installed, it is recommended that additional kiosks be designed and installed at the Old Elk Creek Road Trailhead and North Parking Area. These kiosks will provide safety and regulations information, and should be assessed for appropriate educational topics to include.

Other future developments can include the development and installation of waysides or panels. These can be located along intervals throughout the project area or clustered in areas of significant interpretive opportunity. Waysides may tell a themed story or share a variety of unrelated information.

III-7 OPERATION AND MAINTENANCE AND ADAPTIVE MANAGEMENT

Sign maintenance procedures are provided in Volume 2 of the Sign Standards Manual (Corps 1993). The project Resource Manager will establish the means and timeframe for sign inspections. Signs that have been vandalized, destroyed by natural occurrence, or have been otherwise compromised will be noted and procedures for addressing these issues will be put in motion, as time and budget allow.

It is recommended that the project Resource Manager encourage and promote the formation of local interest groups that may be willing to provide oversight, maintenance, and installation of interpretive materials on a voluntary basis.

Future development plans may open up opportunities to install additional interpretive signage, or may require placement of signage to increase safety. For example, if the quarry is eventually provided as formalized recreation, maps will need to be adjusted, and additional interpretive information should be developed. Interpretive materials could include education about the need and method of mining efforts at the quarry, the rock materials provided in the quarry, and the opportunities and concerns associated with fish stocking in the quarry water. Maps showing parking areas and the trailhead and trail into the quarry should be prepared, and kiosks should be installed at the quarry trailhead stating rules, regulations, safety information, and providing phone numbers and webcodes for additional information.

It will remain under the purview of the project Resource Manager to determine the need for additional interpretive materials or installations and the methods used to achieve this.

III-8 CORPS PARTNERSHIPS

In 2010 a total of 54,939 Corps volunteers contributed 1,348,328 hours of work with an estimated value of more than \$28 million. Typical volunteer jobs included hosting parks and campgrounds, hosting visitor centers, providing interpretive programs, organizing clean-up events, fish and wildlife restoration work, and trail and facility maintenance. There are a number of ways for the Corps to create partnerships with organizations that wish to volunteer their services to the project. These are governed by a suite of regulations and guidances, including:

- WRDA 1992 (33 USC § 2325 and 2328, 33 USC 569c) Authority to accept contributions, volunteers, and set up Challenge Partnership Agreements.
- ER/EP 1130-2-500, Partners and Support , including Chapter 9 (Cooperating Associations), Chapter 10 (Volunteers) , Chapter 11 (Contributions), and Chapter 12 (Challenge Partnerships, formerly called Challenge Cost Share), November 1996
- Executive Order 13352, , Facilitation of Cooperative Conservation: Orders agencies to work together to meet conservation goals, August 2004
- Reference guide entitled “Contributions, Fundraising, and Recognition” October 2008

In determining the type of partnership that could be created, the following questions can be asked:

- Does an organized group want to assist with cash, materials, and/or in-kind services? Is there a need to transfer funding to the Corps? Is this a short term, definable project? This is a Challenge Partnership described in Chapter 12 of ER/EP 1130-2-550.
- Does an organized group operate as a “friends group” and want to assist in broad goals such as natural resources management, interpretation, or visitor service activities? These groups are called Cooperating Associations covered in Chapter 9 of ER/EP 1130-2-550.
- Does an organized group want to assist with long term missions such as natural resources management /recreation? These groups can enter into a Memorandum of Understanding/Agreement (MOU/MOA) with the Corps. The agreement spells out responsibilities of each partner and is signed by the District Commander.
- Is an individual or group offering their services? These are covered under the Volunteers section in Chapter 10 of ER/EP 1130-2-550. The volunteer agreement spells out scope of work.
- Is an individual or group offering to give us something without conditions? This is considered a contribution as described in Chapter 11 of ER/EP 1130-2-550. No formal agreement is needed but the action must be contained in the Operations Management Plan contributions plan for Elk Creek. The Corps cannot accept real property donations.
- Does an organized group want to operate an area? This is allowed under a lease or license and authorizes the use of government property or transfers management responsibility to the group.

For further information regarding volunteering at a Corps project, see the Volunteer Clearinghouse online at: <http://www.lrn.usace.army.mil/volunteer/>.

III-9 REFERENCES

- Beck, L. and T. Cable. 2002. Interpretation for the 21st Century: Fifteen Guiding Principles for Guiding Nature and Culture (2nd Edition).
- Tilden, F. 1957. Interpreting Our Heritage. The University of North Carolina Press, Chapel Hill.
- U.S. Army Corps of Engineers (Corps). 1993. Sign Standards Manual, Volume 2. National Sign Program. Available online only at: <http://corpslakes.usace.army.mil/employees/sign/manual.cfm>.
- U.S. Army Corps of Engineers (Corps). 1996. Project Operations – Recreation Operations and Maintenance Guidance and Procedures. Engineering Pamphlet 1130-2-550. Chapter 4, Interpretive Services and Outreach Program.
- U.S. Army Corps of Engineers (Corps). 2006. Sign Standards Manual, Volume I. National Sign Program. Available online only at: <http://corpslakes.usace.army.mil/employees/sign/manual.cfm>. Engineering Pamphlet 310-1-6a, Chapter 13 Planning Interpretive Signs.

APPENDIX IV. PUBLIC OUTREACH AND RESPONSES



IV-1 AGENCY MEETING

IV-1.1 Meeting Notes

The following notes were taken during the agency meeting on July 20, 2011.

Introductions and Background

- Introductions
- Agenda
- Elk Creek Master Plan in need of updating.
- Hired Tetra Tech to assist.
- Reviewed history of the Elk Creek project.
- This meeting is being held to solicit input from the stakeholders.

Overview of Project

- History of the project.
- Reviewed the main components of the master plan.
- The process of the MP update was discussed.
- Biological and cultural resources inventory is currently being conducted.
- NEPA will occur at the specific project level. The Master Plan revision is covered under the original EIS for the project.

Resource Use Objectives

- Would like to get the stakeholders' input on these.

Land Classification Plan

- There are nine land classification plans.
- These need revisions as there is no lake.
- Some of the previous land classifications no longer exist and will need to be revised as well.
- Adjacent land uses shown.

Natural Resource Management Plan

- The NRMP is where the detail of the plan and management actions are discussed.

- Hope to get recommendations from the stakeholders on the objectives and measures for management.
- Land classifications are divided into 11 Management Units (MUs).
- The MUs can be merged, added, or changed.
- The suggested MUs were selected based on topography and other factors.

Meeting Purpose and Participants

- Primary stakeholders are meeting today so that we can understand your priorities and that this plan is designed to meet other agencies' regional or watershed plans.
- Secondary stakeholders include cattle owners, adjacent private landowners, and recreation groups, such as dog walkers.
- The USACE must adhere to their regulations. However, the ideas and priorities of the stakeholders will be merged into the plan.

Resource Use Objectives must address key issues

- Fish – ESA species and notching of the dam
- Invasive Species – the project lands are overrun with star thistle, medusa head, and other non-native species.
- Public access – bridges have been deemed unsafe and shut down. They are open to pedestrians but not vehicles.
- Unauthorized use – ORVs and illegal camping.
- Lack of funding - Enforcement is lacking due to funding.
- Cultural site protection: Ishmael Caballero stated that there are 41 known cultural sites. Some damage and vandalism had occurred. A lot of these sites are covered by vegetation and are not known to the public. However, some have been damaged.
- Grazing: unauthorized use is an issue. The cows come to the Creek in the summer to drink. The cattle owners have been very responsive to calls when the cattle enter the project site to. Areas of revegetation have been fenced to exclude cattle.
- Floodplain: There is a real opportunity to restore floodplain connectivity as a result of the contiguous publicly owned 9 miles of stream at Elk Creek.

Primary guiding objective

- The focus of the project is to protect fish and wildlife, while providing low density recreation opportunities.

Five land classifications have been proposed for review at Elk Creek.

- Project Operations must stay as part of the dam infrastructure still exists.
- Environmentally Sensitive – Elk Creek – this allows the Corps to provide protections, like keeping grazing out of the area.
- MRM – is used for the rest of the areas which highlights multiple uses with focuses on wildlife, vegetation, or low density recreation.

Response to classifications

- Suggested that anything wet including the major and minor tributaries should be classified as Environmental Sensitive Area including the bankfull and riparian areas.
- Is there a possibility that the dam will be rebuilt? Yes there is always this possibility and this will be stated in the master plan.
- It was then questioned if much money should be spent on the other priorities at the project site if the dam could be rebuilt and the area flooded.

Natural Resources Management Plan

- Described that the RMP is a subset of the master plan.
- The primary guiding objective is the 40,000 foot view.
- The RUOs are at the 1000 foot level.
- And the RMP looks at specific actions on the ground.
- The RMP identifies specific projects desired to fulfill the RUOs.
- The goal of the RMP should be specific enough to have teeth but broad enough to be flexible enough to allow for change and relevance 20 years from now.

Break out session Discussion of RUOs and land classifications proposed. Reporting back a ranking of RUOs to determine most important and seeking input on land classifications.

Primary Guiding Objective

- A better word for preservation may be restoration or stewardship.
- Low density recreation opportunities should be included in this.

RUOs comments from group

- It was discussed that there were a lot of overlap between the proposed RUOs.
- There are really only 5 or 6 different objectives.
- Three or four may be priorities.
- Some of these are mandatory.
- A plan to prioritize restoration projects in the Elk Creek watershed is being developed by the Forest Service.
- The fourth objective needs to be clarified. Are you managing the recreation or the land. How can you manage recreation to enhance values? More likely to not impact.
- #6, 7, and 8 could be combined. However, they are required. No need to guarantee access because it is required on public land.
- Sometimes a special need permit is needed for ceremonies.
- Access to restricted areas must be provided.
- #10 An interpretative program provides ownership of the public and promotes stewardship.
- Water quality and species is a good objective as it targets multiple use.
- Management of invasive species with an emphasis on native species.
- #1 Collaboration and Consensus building with the public. – Add “public” to this objective.
- Separate endangered/threatened species from the “other” fish and wildlife species.
- There needs to be a vegetation management component – healthy forests, fire management, could also include invasive species here.
- They should not be ranked as they are all equally important.
- Is the primary guiding objective too narrow?
- Should it include “recreation” as a public use?

Final Six RUOs identified as most important

- Cooperation/Coordination
- Endangered/Threatened Species
- Water Quality
- Vegetation Management
- Cultural Resources
- Recreation

Land classification plan comments

- Expand environmentally sensitive areas to include tributaries. Water management zones should include the floodplains.
- Need a wider band for Elk Creek. The classification is not as important as the width of the band. The floodplain should be the focus of this classification. May include the whole valley bottom. Minimum of 300' width. 7 miles of connected habitat is very unique.
- Change Elk Creek to a less restrictive classification. Change to MRM to allow for cattle goat grazing as tools for invasive species removal.
- Change the recreation MRM to vegetation MRM. If you use recreation restrict it to only specific areas where it occurs – not the whole polygon.
- The size of the floodplain may be determined using the NW Forest Plan – “site potential tree” measurement. BLM and the Forest Service use this on federal lands to determine riparian width.
 - Two – site potential trees would apply here.
 - 1 tree = 180 feet.
 - 2 x 180 = 360 feet on either side of the creek.
- The advantage to using this method is that it is already in use and we would not be reinventing the wheel.
- Restoration should be focused on in Project Operations LUC as well.
- Require BMPs for the Project Operations LUC.
- We can shrink the Project Operations Land but can't change the classification.

Overview of Management Units (MUs)

- There are 11 possible MUs.
- These proposed MUs were drawn based on geography and historical divisions.
- With the stakeholder input there is an opportunity to expand or change the boundaries.
- Go through each MU to provide input on which projects you want to see.
- This is where the rubber meets the road.
- Provide input and priorities for RUOs and actions in each MU.

Existing or current measures and activities at the project area:

- Invasive species removal
- Side channel creation
- Recreation – allowing the lowest level of access.
- Remove dangerous bridges, replace eventually with foot bridges. Use road as a trail.
- Two gravel parking lots are planned on either end of the closed road – one in West branch MU and the other in Flat Creek MU.

Attendee questions: Is there discussion for transferring the lands to another federal agency?

- Not at this time.
- The Corps does have the authority to manage lands outside of “operations”.
- There have been discussions on this topic but no action taken.
- The Corps is moving forward with the master plan update with the intention of continuing to manage the site.

Break out Session #2. Discussing the proposed Management Units and taking comments on their location, extent, definition, specific RUOs and specific management measures.

General MU comments

- Overall, it was questioned why so many MUs had been identified. Management techniques would not necessarily change over the different units and dividing them into smaller areas goes against the ecological principle of managing an area as a whole.
- Proposed 4 units; one to cover the project operations area, one for the entire length and floodplain width of Elk Creek and its tributaries, one to the west and one to the east.
- Need for fish specific RUOs where applicable.
- Need for invasive species RUOs where applicable.
- Need for development of specific invasive species management measures where applicable.
- Need for floodplain connectivity RUO and management measures that achieve floodplain connectivity.
- Need for wildlife management RUOs and measures.

Specific MU comments

- Dam abutment MU needs clarification of gravel status and an outline of potential uses and constraints in those uses.
- Separate MU for Phase II in the dam abutment area. Account for restoration maintenance.
- Specify that a solution for removal of the gravel needs to be actively sought within the Dam Abutment MU, and that those areas should be rehabilitated as much as possible once they are gravel free.
- Lower Elk Creek MU is great spot for trailhead.
- Lower Elk Creek MU has a fish-bearing unnamed tributary entering Elk Creek from the north/west side.
- West Branch MU has quarry; may be better to have an official presence at quarry than to ignore it. Liability of ignoring area or formally sanctioning recreation should be investigated.
- Unnamed tributary enters Elk southwest of Dam and should be assessed for hydrological conditions.
- Footbridges should be installed to replace unsafe vehicle bridges at West Branch MU – this is currently planned.
- There are 3 vernal pools in West Branch MU.
- Persist MU has Alco Creek which has overbank wetlands in the large meadow. There is also another wetland near Alco Creek that flows into an unnamed trib.
- Middle Creek MU would benefit from compaction rehabilitation (Sean from BLM).
- Swimming holes at Flat Creek need management specifics. A parking lot, vault toilets and trash receptacles are proposed for installation here.
- Flat Creek MU has gravel stockpiles that may be used for the parking lot. The stockpile of gravel is leased to Jackson County roads.
- Flat Creek MU – scotch broom removal.
- Spur Peninsula and other east side MUs are inaccessible to vehicles and there are no trails or bridges over Elk Creek.
- All east side MUs need game management measures, have minimal access, more unnamed tributaries flowing into Elk Creek, and there is another vernal pool Yellow Rock.

Other comments

- There are many unnamed tributaries in the area, some which are known to be fish-bearing. These must be assessed for hydrologic and habitat health. ODFW suggested that some of these streams have been altered and no longer flow properly.
- Need cultural resources monitoring and protection plan.

- Project is in need of an area wide fuel loading assessment to determine fuel treatments needed to minimize fire.
- Need forest health assessment with specific management prescriptions written to ensure Forest Health, treat invasives, etc. Allowing conifers to reach old growth through unmanaged succession does not allow for fire management and “healthy forests.”
- The Northwest Forest Plan (Medford RMP) discusses riparian reserve widths
- Decommission old logging roads and off road vehicle trails no longer needed, post signs as necessary to keep area clear, place other access controls (boulders, fences, signs).
- Minimize needed access roads and move existing roads away from creek.
- Aerate compacted areas (old home sites) and revegetate with native species.
- Manage recreation to ensure water quality and provide appropriate management measures to achieve this.
- Need input on wildlife management, hunting issues, winter forage, etc.

Next Steps and Wrap-up

- Public outreach workshop, which will include invitations to all community members, safety providers, cattle owners, land owners, all applicable Tribal Governments, agency and regulatory representatives, and all other interested parties.
- Schedule is under review right now and subject to receipt of the habitat and cultural resources assessments, but currently the master plan is slated to be complete by the end of this calendar year, 2011.
- Written comments were requested to be mailed to the Corps.

IV-1.2 Written Comments Sheets

The following comments were receiving in writing following the July 20, 2011 meeting:

- Stream buffer widths can be determined using Site Potential Tree method, see Northwest Forest Plan – Medford RMP.
- For all management units, a fuels specialist should assess fuel loading and make recommendations for fuel treatments.
- Decommission old off-road vehicle trails and logging roads not needed, or convert to a trail system.
- Rip compacted areas and revegetate with native species.
- Have a forest health assessment completed to determine specific management prescriptions.
- Distribute recreation throughout entire site to minimize illegal activity.
- Balance public use with wildlife and water concerns.
- Ensure public access to lands taken by eminent domain.
- Allow horse access wherever possible.
- Acknowledge historical aspects of area, not just prehistoric.
- Change riparian/floodplain area from environmentally sensitive to less restriction designation to allow for biological control of invasive species, vegetative management, biological planting of seed, and biological land shaping.
- On all units, manage forage: thinning and fuels reduction, remove diseased trees, allow for salvage harvest, etc. Emphasize forest health, not “leave it alone.”
- Operate within County rules regarding open range; work with surrounding neighbors and users.

Summary of comments formally submitted on behalf of the Rogue Riverkeeper, Klamath-Siskiyou Wildlands Center, Oregon Wild, and The Larch Company:

- Manage recreation lands in ways that enhance or maintain benefits to fish and wildlife.
- Manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species.
- We support an emphasis of high recreation at nearby Lost Creek Reservoir and that the Elk Creek area be managed for low-intensity recreation.
- Manage Elk Creek and all tributaries as a distinct, cohesive unit. Floodplain should include the 500-year floodplain, adjacent meadows and wetlands.
- Floodplains should be restored through revegetation, repairing channelized tributaries, restoring connectivity, and encouraging beaver activity.
- Propose that the project area be transferred to the U.S. Fish and Wildlife Service to be managed as a unit of the National Wildlife Refuge System.
- The Corps has a “statutory obligation” to evaluate Elk Creek as a potential Wild and Scenic River.

Summarization of comments formally submitted by the Oregon Department of Fish and Wildlife, District Fish Biologist;

- Revise primary objective to state “Give priority to wildland values and stewardship in all public use planning, design, development, and management activities.”
- Priority management objectives should include managing recreation lands in ways that enhance or maintain benefits to fish and wildlife, manage habitat for threatened and endangered species and to support a diversity of fish and wildlife species, and develop and manage lands in cooperation and coordination with agencies holding jurisdictional management over surrounding lands.
- High use recreation be emphasized as nearby Los Creek Reservoir and that the Elk Creek property be managed only for low intensity recreation.
- Minimal development of trails and facilities.
- No trail connection to Lost Creek Reservoir, or at least no improved access to east side of property.
- Maintain current vehicle restrictions to support big game winter range habitat.
- Maintain hunting access.
- Revegetate floodplain with native trees and shrubs.
- Encourage beavers through revegetation and identify long-term objective to establish a beaver pond wetland complex.
- Repair tributaries by returning them to their historic channel alignment; survey all tributaries to inventory restoration opportunities.
- Restore floodplain connectivity as quickly as possible.
- Manage uplands to maintain tree species diversity and hardwoods.
- Explore options for controlled fire to reduce fuel load.
- Identify all areas of pond turtle use and maintain areas.
- Allow for fish monitoring projects.
- Minimize number of management units from original eleven proposed.
- Inventory of tributaries provided.

IV-2 PUBLIC OUTREACH MEETING

IV-2.1 Meeting and Question and Answer Session

The public meeting was held on September 14, 2011 and had 21 attendees. Tetra Tech provided an overview of the process for updating the master plan, defined the components of the master plan and then

described the recreation and resource use objectives surveys. Following the presentation, a number of questions were posed to the project team and have been provided below.

Q: Why not give the land to the BLM or the Forest Service, as they are larger federal landholders that manage for public access and recreation.

A: It is still an authorized project.

Q: How and why did the notch occur?

A: Through legislative action driven by the listing of SONCC Coho under the ESA – which led to a Supreme Court Decision.

Q: How far are the unsafe bridges from the highway?

A: Three miles to the bridges. The swimming holes are seven miles from the highway. The bridges are very costly to replace as vehicle bridges. It is a low priority item in the Corps' budget and unlikely to be funded.

Q: Why not use the gravel to build the culverts so that they can pass vehicles?

A: The cost would still be prohibitive.

Q: Why not use volunteer work to complete these projects – the Boy Scouts may be able to help?

A: This is a possibility, and must be coordinated through the resource manager for the project.

Q: What about access through the West Branch Road?

A: The grade is too steep on this road for safe public use.

Q: Why not provide a key check-out system like the County provides?

A: Not familiar with this system and will look into it.

Q: Will areas be replanted where vegetation was removed for the lake footprint?

A: Yes. Revegetation has already begun.

Q: We have seen people crossing the river, how is that permitted?

A: These are landowners that have a real estate easement to access property on the other side of Elk Creek.

Q: Are there irrigation or water rights issues?

A: The Oregon Department of State Lands manages water rights. There are no known water rights on the property.

Q: What are the plans for the gravel piles as they affect the visual quality of the area?

A: The Corps is trying to dispose of the gravel.

Q: We want this area to be maintained as a good recreation area for the kids and our grandchildren. They need a place to go swimming and camping and to get to know nature. This is going against our children's future by not allowing these activities.

A: The Corps wants to encourage use of the land. If the community wants camping on the land we have to know this. Camping is a possibility.

Q: Couldn't the sale of the gravel offset the costs of rebuilding the vehicle bridges?

A: The Corps is trying to sell the gravel but running into the issue of it having to be sold to one buyer as it is considered one unit of gravel in the documentation.

- Q: What about the use of those in need of conducting community service as potential labor to offset costs?
A: This population is already being used on projects.
- Q: Cattle are not allowed but they are there.
A: Cattle are not permitted on the project property. We have a working arrangement with the cattle owners who are very responsive in retrieving any trespassing cattle.
- Q: The revegetation efforts attract the cattle. Could it be fenced off?
A: This is being looked into.
- Q: I am an educator that enjoys bringing students up to this area for environmental education due to its proximity to Elk Trail School. Does the Corps have any plans for including environmental education at the site?
A: It is a possibility.
- Q: Is there an opportunity for the public to read and comment on the draft master plan?
A: Since there is not a NEPA requirement – there is no requirement for the public to review and comment on this document. This public meeting provides us with the opportunity to gather public input and comments will be accepted up to the end of September 2011.
- Q: Can an adjacent landowner look at and comment on the draft documents?
A: The final version of the document will be available to the public.
- Q: Are there further plans for public outreach? We at the local congressional office did find out about this until yesterday. We feel that this public outreach effort has been managed poorly.
A: This is the only public meeting planned to date.
- Q: It is very important to the locals that we are kept in the loop as to what the plans are for this area.
A: Coordination is a key component of Corps water resources development projects and continual communication with local stakeholders is a Corps commitment.
- Q: How exactly does the NEPA process play a role in this?
A: The NEPA process will occur on the project specific level when an action is about to take place. At that point there will be more public involvement and input opportunities.

IV-2.2 Written Comments and Survey Responses

Recreation Survey A recreation survey was distributed to all participants and a total of seven were fully or partially completed and returned. According to those surveys, visitors to the area typically travel from areas ≤ 15 miles away, though at least one visitor regularly travels from 35 miles away to visit Elk Creek. The activities engaged in the most number of days of the year included nature appreciation, birdwatching, mountain biking, wildlife viewing, and walking. The activities engaged in by the greatest number of those surveyed include nature appreciation, birdwatching, hiking, walking, wildlife viewing, and just being outdoors. Elk and deer are the mostly commonly hunted species in the area, with bear, turkey, cougar and upland birds also sought.

Resource Use Objectives Survey The RUOs from Chapter 7 of the master plan were presented to meeting attendees and each attendee was asked to rank each RUO on a scale of increasing importance from one to ten. A total of nine surveys were returned fully or partially completed. Table V.A below shows the results

of the survey rankings. Blank boxes were not considered in averaging. Overall, survey results indicate that resource use objectives are supported.

Table IV.A Increasing important ranking of Resource Use Objectives by public meeting attendees.										
Cooperation and Coordination: Develop and manage lands in cooperation and coordination with interested stakeholders, including agencies holding jurisdictional management over surrounding lands or land resources, surrounding communities, and with other appropriate Federal, state, county, or private entities.	9	10	10	10	9	7	10	10	10	9.44
Threatened and Endangered Species: Manage instream and terrestrial habitats to benefit species listed as federally threatened and endangered, or which are species of concern in the state of Oregon.	7	1	10	8	6	8	10	7	10	7.44
Fish and Wildlife Habitat: Manage instream and terrestrial habitats to benefit all species of native fish and wildlife and to foster diversity and abundance of species native to the area.	7	5	10	10	10	8	10	8	10	8.67
Wetlands: Protect, maintain and restore existing wetlands to achieve the national goal of no net loss of wetlands.	7	5	10	9	10	8	10	10	10	8.78
Vegetation Management: Foster health and diversity of native vegetation communities and proactively manage project lands to reduce, to the extent possible, any non-native vegetation.	10	-	10	9	10	-	10	10	10	9.86
Water Quality and Quantity: Maintain high stream water quality for fish and wildlife, water supply, and recreation use.	8	5	10	5	9	-	10	10	10	8.38
Recreation: Provide a safe, quality outdoor recreation experience that is suitably accessible to a diverse socioeconomic population and consistent with carrying capacity and aesthetic, cultural, and ecological values.	-	5	10	10	9	10	8	7	10	8.63
Cultural Resources: Preserve and protect cultural resource sites in compliance with existing federal statutes and regulations.	-	1	10	7	10	9	6	10	10	7.88
Air, Visual, and Auditory Quality: Preserve and protect air quality, views and aesthetic value, and manage noise levels to that suitable for serene outdoor appreciation.	-	2	10	8	10	8	10	-	-	8.00

Written Comments A total of six attendees provided written comments following the conclusion of the public meeting. Comments included the following:

- Create “outdoor classroom” created, use the site to educate adults and children.
- Develop group camp site.
- Utilize group camp site in conjunction with “outdoor classroom.”
- Need better access to site.
- Would like to engage in off road vehicle use.
- Universal access is desired.
- Late night or overnight activity in the project area is disturbing to neighbors.
- Expand hiking trails.
- Restoration of fish habitat is encouraged.
- Visual quality is impaired by the dam and the aggregate rock piles.
- Open main gates to public access or provide key entry.
- Insect infestation along Elk Creek forest area is killing several non-coniferous tree species, what is being done about it?
- Cattle access to creeks is extremely difficult to control.
- Create more opportunities for kids to get involved in nature appreciation.
- In the absence of the dam, land should be returned to the original owner.

IV-3 PUBLIC REVIEW PERIOD COMMENTS

The Draft Elk Creek Master Plan was circulated to the relevant agencies and entities, to the public, and was provided online for a period of more than 30 days. The following comments were received.

Table IV.B Public review period comments.				
Page	Location Detail	Name/ Agency	Comment	Response
General Comments				
General	-	USFS, Saldana/Corps	All references to the Timber Rock Fire should be replaced with Timbered Rock Fire and the date.	Changed.
General	-	Gross/Corps	Document the results of construction sampling/waste removal.	Added.
General	-	USFS	Replace Rogue-Siskiyou NF with Rogue River-Siskiyou NF.	Changed.
General	-	Brazier	Change Coho salmon ESU to Southern Oregon/Northern California Coasts Coho salmon. Incorporate this comment throughout the document.	Changed.
Main Report Comments				
2-2	2.1	BEAL/OD-SR	Explanation of trap and haul purpose: to eliminate the elk creek run? Needs clarification or rewrite.	Clarified.
2-2	2.1	Saldana/Corps	Add word “temporary” as shown.	Added.
2-5	2.1.1	Saldana/Corps	Add completion of FPC restoration as a timeline item.	Added.

2-6	2.3.3.2	BEAL/OD-SR	“Real Estate department” should be Real Estate Division.	Changed.
3-8	3.3.2	Brazier	Unclear to the lay reader what the individual graphs represent. It might be cleaner to display the graphs on 2 separate pages with appropriate titles to describe their content.	Fixed.
3-8	3.3.2	BEAL/OD-SR Saldana/Corps	Graphs need axis labels and titles.	Fixed.
3-9	3.3.2	Brazier	What was the peak flow during the 1996/97 flood?	Added.
3-10	3.4.1	LA/RRK	Is the ACOE a Designated Management Agency for the temperature and bacteria TMDLs?	Added.
3-14	Table 3.4	Brazier	West Branch Elk Creek was listed as 303(d) for temperature, currently managed under 2008 Rogue Basin TMDL.	Added to Table 3.4
3-19	3.8.2	BEAL/OD-SR	Should this section be titled “Special Status Species” to be consistent with Corps language?	Changed.
3-19	3.8.2.1	BEAL/OD-SR	Not much info on noxious species, given their importance, and I know you guys have a big program. How many total invasives, priority (eg. Red list), and acreage affected?	Provided in Biology Report.
3-20	3.8.2.2	RS	Western pond turtle is also state listed (SOC) and occur in project area.	Added.
3-20	3.8.2.3	BEAL/OD-SR	What fish species are present at Elk Creek and when..?	Provided in Biology Report.
3-20	3.8.2.3	Brazier	The correct ESU name is Southern Oregon/Northern California Coasts coho salmon. The common acronym is SONCC coho.	Changed.
3-20	3.8.2.3	LA/RRK	Page 3-20 states, “Coho salmon populations in the Elk Creek watershed are so low that they have lost their resiliency to overcome natural or man-made disturbances that have led to significant population losses.” This statement ignores NMFS’ assessment in the draft SONCC Coho recovery plan that the Upper Rogue Coho population is a “Core, Functionally Independent Population” and should therefore be the subject of recovery efforts to stop its trend toward extinction.	Clarified.
3-21	3.9	Saldana/Corps	Add word “and” as shown. Note that area was open to public until bridges were deemed unsafe, and then it was closed only to vehicle access.	Changed.
3-22	3.10.1	Gross/Corps Saldana/Corps	During 2008 construction of the FPC, all site waste was removed. Data reports show no contaminants remain.	Added.

4-2	4.1.2	Saldana/Corps	Note that vehicular access resulted in increased social disturbances to the area, including drinking, overnight camping, littering, etc.	Added.
4-15	4.4	Gross/Corps	Access for floating?	Clarified under first bullet.
5-1	5.1	LA/RRK	Enter into a formal MOA/MOU with USFS on for watershed management, specifically with the Elk Creek Watershed Restoration Action Plan (USFS 2011).	Info is in NRMP.
5-1 and 5-5	5.1 and 5.5.4	LA/RRK	Enter into a formal MOA/MOU with NMFS regarding the SONCC Coho recovery plan.	Info is in NRMP.
5-3	5.2	Saldana/Corps	Climate of receiving O&M funds is very limiting. Would also need to get money from Congress to collaborate with local sponsors.	Added.
5-4	5.5.1	LA/RRK	Regarding the consideration of cattle grazing in the project area, the current “no authorization” for grazing in the Elk Creek project area is the correct one considering water quality impairments, Clean Water Act obligations and the SONCC Coho recovery plan.	Concur.
5-4	5.5.1	Gross/Corps	Bad idea to allow cattle for invasives removal? Maybe goats...	Concur with LA/RRK above. Language added.
5-5	5.5.2	BEAL/OD-SR	I thought Oregon Water Resources Dept granted water rights, does this mean that Medford Water controls all the live flow?	OWRD grants all water rights. Changed.
5-5	5.5.4	BEAL/OD-SR	How does the designation of critical habitat constrain management of the Project? I think more discussion of how critical habitat influences decision making and determines process would be valuable. Your reader may not recognize how significant the presence of designated critical habitat is.	Clarified.
6-2	6.2	Brazier	Rogue River-Siskiyou National Forest was a participant at the interagency workshop.	Added.
6-4	Table 6.1	USFS/Brazier	Remove Rogue River NF and Siskiyou NF blocks and replace with: Rogue River-Siskiyou National Forest, 3040 Biddle Rd., Medford, OR 97504	Changed.
6-5	Table 6.1	Brazier	Double check the mailing address for Upper Rogue Watershed Association. The Eugene address doesn't seem right.	Changed.

7-2	T&E Species	Brazier	Second bullet statement under T&E species: The bullet statement could be re-worded to describe a goal of restore, maintain, and enhance designated critical habitat...as opposed to “identify” critical habitat which doesn’t convey a meaningful action from USACE.	Changed.
7-2	Wetlands	BEAL/OD-SR	“No net loss” turned out to be a euphemism for “go ahead and fill it – we’ll just mitigate...” We can do better than that. Protect, restore and enhance wetlands wherever possible, period.	Changed.
8-2	8.1.4	BEAL/OD-SR	This might be a good point to say something like “identification of land and water areas determined or proposed to be significant to a special status species may result in additional lands being protected under this designation”...or something to recognize that for example, new turtle nesting sites will be discovered and these should immediately be recognized and protected as ES (my opinion)....	Added.
8-2	8.1.4	BEAL/OD-SR	Suggest avoidance of the term “categorical exclusion” (of cattle) to avoid confusion with its other meaning (NEPA). Recommend you just say “exclusion of cattle.”	Changed.
8-3	8.1.5.2	LA/RRK	Vegetative Management—Fire ecologists have concluded that the fuel loading objectives identified by the Corps will be best met by: (1) reduction of surface fuels, (2) increasing the height to live crown; and (3) retaining large trees. Please see the attached paper, which says in part, "Thinning and prescribed fire can be useful tools to achieve these objectives. Low thinning will be more effective than crown or selection thinning, and management of surface fuels will increase the likelihood that the stand will survive a wildfire."	Added to 5.7 and NRMP, as appropriate.
9-2	Table 9.1	Saldana/Corps	Add continued enhancement of fish passage and invasive species control.	Clarified that detailed resource management info is provided in NRMP.
Plates Comments				
10-2	Plate 2	Gross/Corps	The fish passage corridor is longer than through the dam, expand to be 0.5 miles long.	Added to Plate 9.
10-3	Plate 3	Gross/Corps	Remove repeated soil group, “Medco-McMullin Complex” 12-50% Slopes.	Changed.
10-4	Plate 4	Gross/Corps	Show Tributary C on Plate 4.	Added.
10-5	Plate 5	Saldana/Corps	Primary trail through area follows Old Elk Creek Road.... Add this to the map.	Added.

10-6	Plate 6	Gross/Corps	Is the parking lot as it is shown on Plate 6 or is it at the upstream end of construction area?	It is shown correctly.
10-?	?	Gross/Corps	Suggests showing proposed tent site location on one of the Plates.	Plate 10 shows proposed development.
Appendices				
II-3	II-2.2	LA/RRK	Add an action item to identify and implement restoration actions to assist in the recovery of SONCC Coho salmon.	Added.
II-4 to II-5	II-2.6	LA/RRK	Good water quality actions. Add “Reduce delivery of sediment to streams by reducing road-stream hydrologic connection.”	Added.
II-5	II-2.8	Gross/Corps	Kayaking and rafting?	Added.
II-10	Mgmt Objectives	LA/RRK	To help address floodplain and channel structure inadequacies, increase beaver abundance. Develop a beaver program, including reintroduction.	Added to potential management options, but not a cost estimate item.
II-13	II-3.4	Gross/Corps	What about cattle use of the area?	Not a mgmt. concern for Wildlife MU.
V-1	FY 13 Table	Brazier	It is likely that side channel/off channel habitat creation would require quite a bit more LWD and engineered log jams than what is identified within the estimate. Do you have a site already selected for this action? Recommend an inter-agency approach to help identify aquatic restoration sites, project design, and implementation.	Added as objective in Env Sensitive MU.

